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A STUDY OF SMALL INDUSTRIES IN GUJARAT STATE, INDIA

By

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CHAPTER I

INTRODUCTION

There is a sharp revival of interest in small industries in India. This revival stems, in large measure, from the changed conditions following in the wake of the "green revolution." But interest in the small industries subsector predates the "green revolution."[1]

Since independence, one of the primary objectives of the government of India has been to enlarge that portion of the population which effectively participates in the political, social and economic process of modernization. Consistent with this primary objective, the second Industrial Policy Resolution of 1956 emphasized the importance of the small industries subsector. Then, as now, the government pursued the development of this subsector on the basis of its capacity for creating considerable employment per unit of capital investment, its potential for reducing inequities in existing personal and regional income distribution patterns, and its ability to mobilize otherwise underutilized scarce resources.

However, the policies relating to the development of the small industries subsector have not been pursued energetically. The Administrative Reforms Commission stated that this subsector "has not been given the position of high priority which should be its due." (Hanumanthaiya, K., Chairman, Administrative Reforms Commission, 1970, p. 8)

The reason that a "position of high priority" was not given to the small industries subsector is the presumed trade-off between a high rate of economic growth on the one hand and the political and social objective of the government of India on the other. The theoretical basis of this presumed trade-off is now being challenged.[2]

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[1]The best treatment of the role of small industries in a developing context is given by Staley and Morse (Staley, E. and R. Morse, 1965).

Among the many excellent studies of small industries in India are Ford Foundation, International Planning Team, 1954; Dhar, P.N., 1958; Lakdawawala, D.T. and J.C. Sandesara, 1960; Dhar, P.N. and H.F. Lydall, 1961; Ford Foundation, International Perspective Planning Team, 1963; Shetty, M.C., 1963; Banerji, H., Project Director, Jadavpur University, 1964; Hoselitz, B.F. (ed.), 1968; and Kuz'min, S.A., 1969.

[2]Received doctrine is predicated upon the primacy of capital accumulation. Accordingly, key policy measures should foster saving at the expense of consumption, production of producer goods at the expense of production of consumer goods, and capital intensive production techniques at the expense of labor intensive production techniques.

An entirely different approach has been suggested by A.K. Cairncross (Cairncross, A.K., 1962, pp. 111-113). This approach is being developed by Uma J. Lele and John W. Mellor (Lele, U.J. and J.W. Mellor (as revised). See also Mellor, J.W. (forthcoming); Lele, U.J. and J.W. Mellor, 1972; Johnston, B.F., 1970; Ohkawa, K., 1969 and Lee, T.H., 1971).

By releasing the food, or wages goods, constraint to rapid economic growth, the "green revolution" presents to Indian policy makers an opportunity to reverse the capital intensive, low employment development strategy adopted two decades ago.

> Such a change has far-reaching implications not only for the industrial structure, but for the choice of production technique, the domestic savings rate, the scale of industrial organization and the level and composition of trade. Further, because of its distributional bias toward the rural elite, technological change in the agricultural sector may itself be turned into an engine for growth in industrial employment (Lele, U.J. and J.W. Mellor, 1972, p. 24).

The rural elite will demand increased quantities of production goods, such as fertilizers, pesticides and agricultural implements, from the industrial sector. The rural elite, already well-fed, also will demand increased quantities of consumption goods from the industrial sector. The resulting expansion of employment opportunities will depend on the choice of techniques adopted by specific industry groups and on the prevailing structure of Indian industries. Appropriate supporting policies are essential.

To the extent that these supporting policies result in the rapid development of the small industries subsector, they will contribute substantially to enhanced employment opportunities, improved patterns of personal and regional income distribution, and increased utilization of scarce resources. But the detailed and comprehensive data essential to the formulation of effective policy measures are lacking.

The policies which have evolved to date are designed to enhance the productive efficiency of industrial firms. Accordingly, these policies permit greater access to improved credit facilities, modern machinery, sophisticated technical skills and more efficient management practices. These policies appear to be particularly appropriate to the needs of industrial units of medium size, industrial units for which useful data are readily available.[3] These policies are not necessarily appropriate to the needs of small industrial units.

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[3]There are, of course, many ways of interpreting the available data. A case in point is the informative interchange between Sandesara and Mehta (Sandesara, J.C., 1966; Mehta, B.V., 1969; Sandesara, J.C., 1969a; and Sandesara, J.C., 1969b).

This paper presents a descriptive analysis of small industrial units in Gujarat State. Chapter II explores, very briefly, the industrial terrain in India and fixes the position of small units in that terrain. Chapter III outlines the approach adopted by the author in conducting a field survey of small industrial units in Gujarat State. Chapter IV highlights some of the chief economic characteristics of the small industries subsector. Chapter V examines the "materials intensive" nature of small industrial units and discusses the commercial orientation of the owners of these units. Chapter VI deals with the economic interdependence of small industrial units in the form of a statewide input-output table. Chapter VII concludes the study with a discussion of some of the policy implications of the findings presented in Chapters IV, V, and VI.

CHAPTER II

THE CLASSIFICATION OF INDIAN INDUSTRIES

Introduction

Discussions of the industrial sector in India suffer from problems caused by overlapping nomenclature.[1] In order to overcome these problems, this section provides a brief introdution to the two industrial classification schemes adopted by the Government of India. The first of these two schemes classifies industries according to the number of employees. The second scheme classifies industries according to the value of invested capital.

On Registered and Unregistered Industries

The legal definition of a "factory" in India is given in the Factories Act, 1948. A factory is an industrial unit employing ten or more persons (if using power) or twenty or more persons (if not using power) on any day of the preceding calendar year. All factories are required by law to register under the provisions of the Factories Act. These factories, collectively, are referred to as the "registered" industrial subsector.[2]

Registered industrial units must comply with the detailed provisions of the Factories Act governing health, safety, hours of employment, child and female labor, vacation benefits, and many other aspects of industrial and labor relations. Some industrial entrepreneurs consider these legal provisions inhibiting to proper and profitable management. A number of these entrepreneurs display considerable ingenuity in maintaining the unregistered, or non-factory, status of their industrial firms.[3]

For statistical purposes, all registered units are classified as "census" registered units or as "sample" registered units. The census industrial subsector refers to the collection of all factories which employ

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[1]These problems have been examined in detail by van der Veen. (van der Veen, J.H., 1972).

[2]This paper describes as "registered" those industrial units which fall under the purview of Sections 2m(i) and 2m(ii) of the Factories Act, 1948, as amended. The very small number of units which fall under the purview of Section 85 are not considered in this paper.

This paper describes as "unregistered" those industrial units which are not covered by any of the provisions of the Factories Act. Many of these "unregistered" units fall under the purview of the Shops and Establishments Act, 1948; some are enrolled with the various State Directorates of Industries. Nevertheless, they are described as "unregistered" in this paper.

[3]There are several other pieces of labor legislation in India. In general, the larger the industrial unit, the more "restrictive" is the labor legislation which applies.

on average 50 or more workers (if using power) or 100 or more workers (if not using power). These units are surveyed on a census basis, that is, a full one hundred percent sample basis, and the results are published in the Annual Survey of Industries.[4]

The sample industrial subsector refers to the collection of all industrial units which, although too small to qualify as census registered units, are large enough to qualify as legally defined factories. These units are surveyed annually on a sampling basis through the Directorate of the National Sample Survey. The survey results are published in various National Sample Survey Reports.[5]

All industrial units which are not in the registered industrial subsector are called "unregistered" industrial units.[6] Indian statistics often relfect this distinction between registered and unregistered industrial

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[4]Central Statistical Organization, Annual Survey of Industries, Government of India, New Delhi, (annual) hereinafter referred to as ASI. The data published in the ASI refer to industrial units which are virtually --but not exactly-- conterminous with the units of the census subsector. For example, data on installations and petroleum warehouse facilities are deleted. The differences are taken to be negligible. For details, see the indtroductory notes to the ASI.

[5]See, for example, Directorate of the National Sample Survey, National Sample Survey Report Number 132, Tables with Notes on the Annual Survey of Industries--1964, Sample Sector: Summary Results, Government of India, New Delhi, 1969. In the body of this text, the National Sample Survey publications will be referred to by report number, such as NSS Report 132. For details of coverage, precise definitions and statistical approach, refer to the introductory notes of the appropriate NSS report.

[6]More precisely, the unregistered industrial subsector includes "all manufacturing and processing activities, including repair and maintenance services undertaken by households and nonhousehold 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" (Central Statistical Organization, Brochure on Revised Series of National Product for 1960-61 to 1964-65, Government of India, New Delhi, 1967, p. 32). All other industrial units fall in the registered industrial subsector. Construction forms a separate sector. Hotels, restaurants and other eating houses; laundry, dyeing and dry-cleaning units; and recreation and sanitary service units all are included in other sectors.

subsectors. Thus, when the Central Statistical Organization (CSO) publishes its estimates of national product by sector of origin, it classifies industrial units into two categories: the registered industrial subsector and the unregistered industrial subsector.

As noted, adequate data on the census and sample industrial subsectors are available. The same cannot be said of the unregistered industrial subsector. No systematic and comprehensive flow of data exists to assist policy makers deal with the very peculiar problems of the growth and development of the unregistered industrial subsector.[7]

The size of the unregistered subsector is sufficient to warrant some attention. According to the CSO, well over one-third of the contribution of the industrial sector to gross national product originates in unregistered units. Relevant figures are presented in Table I, below.

On Small Scale Industries

The second classification scheme distinguishes between industrial units on the basis of differences in the value of invested capital. Industrial units are defined as "small scale," "medium scale," or "large scale." Most of the programs designed to assist small industrial units are administered by agencies which rely on this second classification scheme.

Small scale industrial units are those with a total investment at undepreciated purchase value, in machinery and equipment only, not exceeding 7.5 lakhs rupees (Rs. 750,000). The stated purchase price of the machinery and equipment involved is the only price considered. Questions such as whether the goods were or were not purchased at prevailing market rates are not raised. Units which are defined as ancillary units are classified as small scale if the total investment in machinery and equipment does not exceed 10 lakhs rupees (Rs. 1,000,000). The definition of an ancillary unit incorporates considerable discretional latitude.[8]

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[7]This statistical lacuna is being overcome. At present, on the state level, detailed and comprehensive field surveys of industrial units belonging to a well-defined slice of the unregistered industrial subsector are being conducted. These units belong to what is called in this study the "urban unregistered" industrial subsector.

[8]In general, the investment criteria for small scale units are rather liberally interpreted, just as was the case a decade ago (Berna, J.J., 1960, pp. 142-43). The crucial decision faced by an entrepreneur is whether the state bureaucracy will be able to help him overcome his particular problems more efficiently than the central bureaucracy. If so, then he will use whatever means he can to gain and maintain his classification as a small scale unit.

TABLE 1. Size and Share of Industrial Product in India in Constant (1960/61) Prices

	60/61	64/65	65/66	66/67	67/68P	68/69P	69/70P
1. Gross National Product*	14101	17044	16175	16456	17959	18401	19350
2. Gross Product of Industrial Sector*	1994	2815	2836	2906	2970	3096	3252
a. Percent of GNP	14.1	16.5	17.5	17.7	16.5	16.8	16.8
3. Gross Product of Registered Industrial Subsector*	1189	1782	1821	1875	1892	1976	2094
a. Percent of GNP	8.4	10.5	11.3	11.4	10.5	10.7	10.8
b. Percent of Industrial Product	59.6	63.3	64.2	64.5	63.7	63.8	64.4
4. Gross Product of Unregistered Industrial Subsector*	805	1033	1015	1031	1078	1120	1158
a. Percent of GNP	5.7	6.1	6.3	6.3	6.0	6.1	6.0
b. Percent of Industrial Product	40.4	36.7	35.8	35.5	36.3	36.2	35.6

* -- In rupees crores (one crore is ten million)

P -- Provisional estimates

Sources: Central Statistical Organization, Estimates of National Product, New Delhi, annual (various).

Medium scale industrial units are those with a total investment exceeding 7.5 rupees but not exceeding 25 lakhs rupees. Large scale industrial units are those with a total investment exceeding 25 lakhs rupees.

Governmental assistance programs to small industrial units focus on the small scale industrial category. Unfortunately, comprehensive data on the small scale industrial subsector are not available.[9] The partial data that do exist can be very misleading.

It is clear from the definition of a small scale unit that virtually all sample registered units qualify as small scale units.[10] In addition, a great many census registered units qualify as small scale units. However, the overwhelming majority of small scale units are not registered under the provisions of the Factories Act. They are too small. The owners of these units, employing perhaps seven or eight persons, confront problems substantially different from those confronted by owners of units who employ one hundred or more persons.

In an effort to help solve these problems, a bewildering number of organizations have been established.[11] Unfortunately, these organizations seem to respond more readily to the needs of the owners of the larger and

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[9]National surveys are not comprehensive in scope. Surveys conducted on the state level are similarly deficient. Thus, for example, the survey of the small scale industrial subsector in Gujarat State was confined to small scale units which had enrolled voluntarily in specific state assistance programs. See Gujarat State Directorate of Industries, Survey of Small-Scale Industries, Gujarat State, Government of Gujarat, Ahmedabad, 1969.

[10]In 1964, there were 34,596 units in the registered sample subsector in India. With an average total work force of a little over 21 employees, these units possessed on average roughly 0.5 lakhs rupees of total fixed capital. Separate figures on machinery and equipment are not available. See NSS Report 132.

[11]The institutional structure includes, on the national level, the All-India Small Scale Industries Board, the Small Scale Industries Development Organization (SSIDO), the National Small Industries Corporation (NSIC), the State Trading Corporation (STC), the Materials and Metals Trading Corporation (MMTC), and the Federation of Associations of Small Scale Industries (FASSI); on the state level, the Small Scale Industries Board, the State Directorate of Industries, the State Financial Corporation (SFC), the Small Industries Service Institute (SISI), the Small Industries Development Corporation (SIDC), and the Small Industries Corporation (SIC). These institutions are charged, in part, with facilitating the growth and development of small scale industries.

registered, small scale industrial units than to the needs of the owners of the smaller and unregistered, small scale industrial units.[12]

Subjective observation suggests that vigorous promotion of unregistered, industrial units may be most consistent with the stated objectives of the government of India. Programs being implemented by existing organizations tend to favor a different set of somewhat larger industrial units. As a result, the unregistered units are left to face their peculiar problems largely on their own.

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[12]Whether these institutional channels are or are not relatively more responsive to the needs of the owners of larger industrial establishments is not germane. Small businessmen act on their perceptions, and they perceive that more valuable concessions are granted to owners of industrial units larger than their own.

CHAPTER III

THE UNREGISTERED INDUSTRIAL SUBSECTOR IN GUJARAT STATE

Introduction

As indicated in Chapter II, considerable data on census registered and sample registered units are available. Comparable data on unregistered units are not available. In an attempt to provide some data comparable to that generated annually for registered units, this paper presents the findings of a field survey of a specific subset of unregistered industrial units in Gujarat State.

The list from which the field survey sample was drawn is described in section 2, below. Section 3 relates some of the purposive sampling procedures adopted in preparing the sample. Estimates of the share of several different subsets of Gujarat's industrial sector to the state's industrial product and of the state's industrial work force are presented in section 4.

The Enumeration List

The Gujarat Bureau of Economics and Statistics recently completed a statewide enumeration of selected unregistered industrial units.[1] The units enumerated were too small to be covered by the Factories Act, employed at least five persons, and were located in one of the 180 "urban" areas of the state. These 180 areas were designated as urban by the Director of Census Operations in the 1961 census.[2] With a few exceptions, an urban area is a town or a city with a population in 1961 of at least 5,000 persons.

The industrial units which met these three criteria during the enumeration period form the industrial subsector with which this study is concerned. This collection of units is called the "urban unregistered industrial subsector."[3]

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[1]Gujarat State Bureau of Economics and Statistics, "Listing Survey of Small Industrial Units," (mimeograph, no date). The enumeration was conducted in 1970. The enumeration is presumed to be exhaustive.

[2]See Gujarat State Bureau of Economics and Statistics, Handbook of Basic Statistics, Ahmedabad, 1970, pp. 84-94.

[3]To reiterate: the urban unregistered industrial subsector is a subset of unregistered units. Unregistered units located in villages and towns not designated as urban areas by the Director of Census Operations are not included. Unregistered units employing four or fewer persons according to the enumerators who helped compile the listing survey also are not included.

The Field Survey Sample

The urban unregistered industrial units enumerated by the Gujarat Bureau of Economics and Statistics were separated into twelve industry groups. Five of these groups were disaggregated to permit analysis of specific industries. Thus, as indicated in Table 2, samples were drawn for twenty different industries and industry groups.

The overall size of the sample was serverely limited by the usual constraints of time and manpower. An initial sample size of 250 units was set. Purposive random samples of varying size were drawn by district. Large samples were drawn from industries which relate directly to the agricultural sector. These industries are the fertilizer and pesticides industry, the agricultural implements industry and the industries comprising the milk food and malted food industry group.

Other industries of particular interest were oil engine pumpsets and diamond cutting industries. A high degree of heterogeneity was anticipated in the other chemicals and plastics miscellaneous subgroups. Relatively large samples were therefore drawn from these subgroups. In general, subgroups characterized by a high degree of homogeneity were sampled only sparingly.

It is clear that the author's subjective judgements played a major role in determining the number of units sampled in each industry or industry group.

Of the 250 units sampled, eight had been classified incorrectly by the enumerators of the Gujarat Bureau of Economics and Statistics. These eight units belonged either in the agricultural sector or in the registered industrial subsector at the time the listing survey was conducted. Of the 242 remaining units, respondents in thirteen refused their cooperation. Data obtained from twelve other units was found to be incomplete or internally inconsistent.[4] Six units were closed. Five units could not be located.[5]

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[4]Information submitted by two other units also is internally inconsistent and is considered unreliable. The repondents of these two units were the only respondents in the transport equipment industry group to grant even partial cooperation. The information gathered from these respondents has not been dropped.

[5]Unregistered units frequently are difficult to locate. Nevertheless, it is likely that some of the five units which could not be located were in fact closed. Summing the six closed units and the five unlocated units suggests that eleven units may have gone out of business in the period between the time the subsector was enumerated and the time the units were surveyed for the purposes of this study. That period was almost exactly one year. Thus, the maximum failure rate for the sample comes to 11/242 or about 5.4 percent per year.

TABLE 2. Industrial Structure, Sample Size and Sample Response of the Urban Unregistered Industrial Subsector, Gujarat, 1970-71.

Industry and Industry group	Sample Size: No. of Units	Sample Size: % of Estimated Population	No. of Responding Units	Est. No. of Units in Subsector
1. Milk food & malted food	25	54.3	17	46
2. Grain & oil milling	4	2.0	4	197
3. Other food & agro based	20	2.2	15	870
a. Tobacco	10	1.6	7	612
b. Other (bakeries, sweets)	10	3.8	8	258
4. Art silk & manmade fibers	11	.4	11	2453
5. Textiles	26	1.6	22	1531
a. Jari	7	2.1	6	321
b. Dyeing & printing	8	1.7	7	529
c. Other (weaving)	10	1.4	9	681
6. Wood, paper, leather, rubber	17	1.9	15	885
7. Chemicals & chemical products	19	8.1	17	232
a. Fertilizers & pesticides	6	66.7	6	9
b. Other chemical	13	5.8	11	223
8. Nonmetallic mineral products	15	3.5	12	426
9. Basic metals & metal products	14	2.0	11	706
10. Machinery	56	5.4	51	1042
a. Oil engine pump sets	20	6.9	18	288
b. Agricultural implements	27	40.3	25	67
c. Other (machinery)	9	1.3	8	687

Table 2.

Industry and Industry Group	Sample Size: No. of Units	Sample Size: % of Estimated Population	No. of Responding Units	Est. No. of Units in Subsector
11. Transport Equipment	7	4.2	2	165
12. Miscellaneous manufactures	36	2.0	29	1760
a. Diamond cutting	15	1.2	15	1281
b. Plastic buttons	12	10.4	6	115
c. Other plastics	8	10.5	7	76
d. Other (miscellaneous)	-	-	-	288
Totals	250	2.4	206	10313

Source: See text

Some minor errors in the enumeration list were discovered during the field work. These errors were errors of judgement. Thus, on occasion, sweet shops were classified by some enumerators as milk food industrial units (industry group 1) and by others as bakery goods industrial units (industry group 3).

Appropriate corrections were made in the number of units attributed to each industry and industry group in the urban unregistered subsector. Estimates of the size and composition of the urban unregistered industrial subsector can be found in Table 2, above.

The Industrial Product of Gujarat State

The urban unregistered industrial subsector is an important part of the industrial structure of Gujarat State due to its high labor absorption capacity and its potential for rapid growth in the near future. At present, it accounts for only a small fraction of the State's gross industrial product. That share is comparable to the share of the sample registered subsector, as indicated in Table 3, below.

TABLE 3. Size and Share of Industrial Product and Work Force in Gujarat State, 1964.

Sector	Gross Product (Rs. Lakhs)	Percent Share	Work Force (Number)	Percent Share
1. Registered Subsector	13,835	69.0	400,219	36.8
a. Census Units	11,910	59.4	324,857	29.9
b. Sample Units	1,925	9.6	75,362	6.9
2. Unregistered Subsector	6,228	31.0	688,055	63.2
a. Nonhousehold Units	4,003	20.0	195,571	18.0
b. Household Units	2,225	11.1	492,484	45.3
Totals (1 + 2)	20,063	100.0	1,088,274	100.0
3. Urban Unregistered Industrial Subsector	1,967	9.8	95,810	8.8

NOTES: The estimates presented in Row 3 for both gross product and work force are adjusted downward at an annual rate of 1.6 percent over the six-year period 1970-71 to 1964-65. The procedures followed and the deflators used are the same as those adopted by the

Gujarat State Bureau of Economics and Statistics in its estimates of the gross product and work force of the nonhousehold unregistered subsector. See "The Methodology Used by the Gujarat SSB for Estimating State Domestic Product (SDP) from Small Scale Manufacturing Sector (Revised Series)," Gujarat State Bureau of Economics and Statistics, 1970 (unpublished, no pagination).

Sources: Row 1a: Government of Gujarat, Bureau of Economics and Statistics, Handbook of Basic Statistics, Ahmedabad, 1970, pp. 214-15. Row 1b: NSS Report 132, pp. 17-20. Row 2a and 2b: Gujarat State Bureau of Economics and Statistics. Row 3: Gujarat State Bureau of Economics and Statistics: this study, Table 7, below, as modified. See the notes to this table.

CHAPTER IV

THE ECONOMIC CHARACTERISTICS OF URBAN UNREGISTERED INDUSTRIAL UNITS IN GUJARAT STATE

Introduction

This chapter presents estimates of some economic characteristics of the urban unregistered industrial subsector of Gujarat State. The reference year is 1969-70. Sample units were chosen according to the purposive sampling procedures explained in Chapter III.

Section 2 details some of the procedures adopted in conducting the field research. Section 3 defines and describes the concepts used in this study. Sections 4 and 5 discuss the estimates, presented in Tables 4 and 5, of the economic variables which characterize the twelve industry groups of the urban unregistered industrial subsector. A brief concluding section offers some comparisons with estimates relating to the larger industrial units of the registered industrial subsector.

The Field Research

Direct personal interviews were conducted with representatives of 206 units.[1] Interviews were conducted in Gujarat in almost all cases. A few respondents expressed a preference for English.

The first substantial problem was one of gaining the willing cooperation of the respondents. The suspicions of small industrial entrepreneurs are well known and generally justifiable. Introductory conversations were usually friendly as well as informative. The respondents, for the most part, were soon satisfied that the interviewer was neither connected with the government nor interested in closely guarded industrial "secrets."[2]

A questionnaire was used in the interview process, but the interview itself was loosely structured. The most productive interviews covered a broad range of information in addition to that directly requested in the questionnaire itself. The entire interview process took perhaps one hour.

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[1]The author is particularly indebted to R.R. Bhatt and K.L Aiya who acted as translators, field investigators and research analysts as the occasion demanded.

[2]Respondents were particularly apprehensive about tax officials and "inspection" officials who might determine that the units should be registered under the Factories Act. Respondents also were concerned that other firms might learn about the specific trade channels they employed. While the cost structure and production process used in particular firms may be well known by competing manufactures, the trade channels used usually are closely guarded secrets.

If additional time was considered desirable, a subsequent visit was arranged. Only on rare occasions did individual interviews last more than one hour and then only at the insistance of the respondent.

The field work was conducted during the period April-July 1971. The reference year was taken as the accounting year ending Diwali 1970, that is, roughly mid-October, 1970. The "Diwali year" is the accounting period used by most of the respondents interviewed. A few used the western calendar year. In these cases, information was requested for the year ending December 31, 1970. No attempt was made to reconcile the difference caused by the use of different accounting periods.

Many of the unregistered units contacted did not keep formal accounts. Many others maintained only very basic accounts, confined to records of the purchase of raw materials. A majority of the units which did keep some books were forced to hire part-time accountants. As a part-time employee, the accountant was not always fully trusted: records which would reveal profits or precise marketing channels frequently were kept only by the owner himself and, if so, were seldom kept in written form. A few of the owners were illiterate and kept no written records.

Of the units maintaining accounts, some maintained a dual set. In general, there are two reasons for maintaining a dual set of accounts: first, a desire to evade or avoid taxes; second, a need to record transactions made in illegal markets where, quite frequently, raw material can be purchased when unavailable through legally sanctioned channels.[3]

Of the units not maintaining accounts or maintaining insufficiently complete accounts, recall data would be the only kind of data available. Consistency among units suggested recourse to recall data for the entire sample. It soon became clear that the owners of these urban unregistered units were extremely knowledgeable about the costs of production, sources of inputs and potential as well as actual markets for their products. Suggestions that these businessmen, many of whom have been exposed to very little formal education, did not possess the information requested in this research project simply were not borne out. Having granted their willing cooperation, respondents generally gave freely the data that was requested. The greater problem, as always, was one of eliciting a response which accurately reflected the knowledge of the respondents.

Some responses were vague, impressionistic, and, at best, crude estimates. Other responses, especially from those who have operated in illegal markets for a sustained period, were precise, internally consistent, and patently misleading. It is considered that these kinds of responses have been minimized in this study.

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[3]For elaboration these points, see Chapter V, below.

Concepts and Definitions

For reasons explained below, some of the concepts used in this study are slightly different from those of other studies of industrial units. Applicable definitions are presented in this section. Key terms are underlined.

Data was gathered on all material inputs used in production by the firm. A detailed breakdown of these material inputs, by origin, provides the basis for the four-quadrant interindustry analysis presented in Chapter VI, below. The value of material inputs is the purchased value of all raw materials, lubricants, fuels (including electricity) and other material inputs consumed on current account by the unit during the year. Purchase value is value at the premises, including trade margins, transport charges and taxes. The purchase value of traded goods, or goods sold in the same condition as received, is not included.

A significant problem relates to the valuation of goods which are not in fact purchased by the firm. These inputs, called contract inputs, are inputs supplied by others. Typically, the suppliers are either traders or other industrialists engaged in a different stage of the same manufacturing process. These inputs are valued at cost and are included as material inputs in the manufacturing process of the firm to which the inputs are supplied. Were this procedure not followed, two otherwise identical firms, one a contract unit and one an independent unit, would exhibit remarkable different economic characteristics. About half of all the inputs used by the urban unregistered industrial subsector in Gujarat are contract inputs.[4]

The information gathered on nonmaterial inputs is also presented in greater detail in Chapter VI, below. Nonmaterial inputs include charges for repair and maintenance of plant and machinery, charges against work done by others, and an amorphous category labeled charges against other nonmaterial inputs. This last amorphous category must be described in some detail.

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[4]Contract units frequently are found in industry groups (4) art silk, (5) textiles and (12) miscellaneous manufactures. The units of the dyeing and printing industry, a component of the (5) textile industry group, engage in a considerable amount of contract work for the cloth traders of Bombay. Many of the units in the jari industry, also a component of the (5) textiles industry group, engage in contract work. However, in the case of the units in the jari industry, the actual owner of the contract inputs is likely to be not a trader but another industrialist who also is involved in the manufacture of jari.

Other nonmaterial inputs include nonindustrial services (such as legal fees, telephone charges, etc.) consumable stores, inward transport charges (such as the costs incurred by members of the firm in obtaining raw materials), and certain types of indirect taxes such as license fees and purchase taxes if applicable. These are standard inputs.[5]

The other nonmaterial inputs category also includes two items not considered standard inputs into the industrial process. These two items are, first, excise and sales taxes paid by the unit on its sales and, second, packaging and transport costs if incurred by the producing unit. In the ASI, excise and sales taxes would be considered part of the value added and packaging and transport costs and would be excluded from both input and output categories. Thus the data yield estimates of value added which are biased downward, estimates of input values which are biased upward, and estimates of output values which are biased upward when compared to ASI data. These departures from standard ASI definitions create relatively minor problems.[6]

The gross output of a sample unit was calculated in terms of sales price of the goods produced. If the market dictated that this selling price include some costs in addition to the ex-factory price, then this higher selling price was the price in terms of which the businessman calculated his costs. It was found that most of the respondents simply were unable to give information on the admittedly artificial but more commonly used concept of ex-factory value of output.

Thus, the estimation for industrial gross output is biased upward when compared to ASI estimates. This is wholly attributable to the inclusion of packaging and transport costs, insofar as they are borne by industrial enterprises as small as those of this study. Gross output is defined as goods sold, corrected for net inventories, plus work done for other firms.

One other point should be noted. Data generated in this field survey of urban unregistered units exclude the category goods sold as received from calculations of both inputs and outputs with the understanding that such transactions are trading and not manufacturing activities. However, both the ASI and NSS Report 132 specifically include goods sold as received in both the input and output categories. Excluding goods

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[5]See the "Concepts and Definitions" section of the Annual Survey of Industries, annual

[6]It was considered inadvisable to attempt to obtain any information relating to taxes from the respondents of this study on urban unregistered industrial units. The inadvisability was borne out in the pilot study during which respondents questioned on taxes became singularly uncooperative.

sold as recived will bias downward the estimates of total inputs and total outputs for the unregistered industrial subsector.

Value added is the difference between gross output and the sum of material and nonmaterial inputs. Value added also is the sum of total emoluments, depreciation, rent, and, as a residual, profits. Unless otherwise explicitly stipulated, value added is gross of depreciation.

Emoluments are defined as the total value of payments in the form of wages and salaries including bonuses, dearness allowance, and the value of any payments in kind. Emoluments include explicitly the wage payments of the proprietor or, when applicable, the active partners of the firm. An attempt was made during the interview process to obtain from the respondent the salary he would offer to another person for performing the tasks that the respondent himself performed for the firm. In this way, an admittedly crude distinction was made between wages income and investment income. In light of the fact that the difference between the proprietors' tasks and the workers' tasks frequently is fuzzy, this distinction is an important one.

For the same reason, the definition of total employment includes all proprietors or, when applicable, active partners. Employment is measured by the number of jobs. A seasonal job of nine months duration or more is counted as one job. A seasonal job of less than months duration is counted as one-half job. A part-time job is counted as one-half job.

The concept of depreciation is well understood by the owner of a small unit. However, until the small unit reaches a profit level that attracts the attention of the central income tax authorities, depreciation as an accounting concept is of no interest to the owner.

The real problems with the concept of depreciation involve the fact that much machinery in use in this subsector is old, some of it fully depreciated many times over. An arbitrary definition of depreciation was adopted. A depreciation allowance of five percent per year was applied to the value of land and buildings. All other fixed assets were depreciated at a rate of ten percent per year. This procedure probably results in a somewhat inflated estimate for depreciation on the fixed assets involved in manufacturing activities in the small industrial subsector. There was no more suitable alternative.

Most of the sample units paid rent for the use of their premises. However, these rental charges fluctuated very widely from firm to firm. In some cases in which rental payments seemed to be extremely low, the landlord turned out to be a close relative of the proprietor. In other cases in which rental payments seemed to be extremely high, the landlord again turned out to be the close relative of the proprietor, but in the latter case the tax burden of the firm was substantially reduced as a result of the high rental payment. Due to tenancy laws, rentals vary considerably

with the length of time that a unit has remained in a given location. Older units tend to pay substantially less rent than newer units.

As a result of these and other problems, respondents were asked to evaluate the land and buildings of the premises and a rent of seven percent was imputed to all units across all industry groups. This imputed rent probably underestimates the rental charges to industry groups characterized by newer, "modern" industries such as the plastics industry. It probably overestimates the rental charges to industry groups characterized by older, "traditional" industries such as the weaving industry.

Deducting emoluments, depreciation and rent from value added leaves, as a residual, profits. Profits should be understood as embracing interest on capital, interest paid on outstanding loans, and pure "profit." Profits ranging between, say eleven and fourteen percent on total capital might be considered acceptable.[7]

Total capital employed is divided into three parts. Land and buildings and other fixed assets together comprise fixed capital. Both were evaluated by respondents on a replacement basis at market prices at the end of the accounting year. The other fixed assets category includes machinery and equipment, tools, and transport equipment owned by the firm. It also includes furniture and fixtures in the office of the unit located at the manufacturing site.

Working capital is the third part of total capital. Working capital is defined to include the value of stocks of materials, stocks of finished goods, cash on hand and cash held in banks, and the net of receivable and payables, also evaluated as of the end of the accounting year.[8]

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[7] The prevailing rate of interest demanded by the nationalized banks on loans to qualified small industrial units is about eleven or twelve percent.

[8] There is some discussion on an appropriate measure of "working capital." Some analysts have used a "current assets" measure (Dhar, P.N., 1958; Banerji, H., Project Director, Jadavpur University, 1964). Others use the "net current assets" measure used in the ASI.

In this study the net measure is used. There are two reasons. First, where feasible, consistency with the ASI measures is essential. Second, net current assets measures the value of nonfixed capital actually tied up in production, under prevailing market conditions, by the industrial unit in question. The simple current assets measure overstates this value. The size of the entries under "outstanding credit" and "outstanding debt" are determined by traditional practice, modified by fluctuation in financial markets. The net measure directs attention to these fluctuations.

In evaluating the profit rate on total capital it is necessary to take into account only the two categories other fixed assets and working capital. The sum of other fixed assets and working capital is called "productive capital" for the purposes of this study. Productive capital explicitly excludes the capital value of land and buildings.

Productive capital, so defined, is the amount of capital required by the industrialist to engage in production. If the businessman does a substantial amount of contract work, his working capital requirements are relatively low, for the value of his stocks are close to nil. The trader with whom he contracts supplies much of his working capital requirements. If the businessman does little contract work his working capital requirements are likely to be very high. In this sense, the estimate for productive capital understates the total amount of capital socially required to produce goods in the urban unregistered industrial subsector. Unfortunately, no estimate of the amount of working capital held by traders and used in dealing with contract units is available.

Economic Variables

The estimated values of selected economic variables are presented, by industry group, in Table 4. These variables are then used to derive the key economic ratios presented in Table 5.

Estimates of profits, calculated on a residual basis, are found to be negative in one industry group. This is industry group (11) transport equipment.[9] As indicated in Chapter III, data generated by the sample units of this group are not considered reliable. The profit rate for the sector as a whole lies between thirteen and fourteen percent on productive capital.

The spread in the profit rate, by industry group, is considerable. Industry group (12) miscellaneous manufactures shows a profit rate of almost fifty percent. This is led by the very rapidly expanding diamond cutting industry, many units of which show profit rates in excess of one hundred percent on productive capital. The rapid expansion of the diamond cutting industry suggests very strongly that growth in this subsector is highly responsive to high profit rates. Were this one industry group to be dropped from consideration and a new estimate of the overall profit rate made, that new profit rate would lie between ten and eleven percent on productive capital.

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[9] In 1964, according to official government data, only one industry group in the registered industrial subsector was "earning" negative profits. This was the transport equipment industry group. See Table 7, Chapter VI, page 55, below.

TABLE 4. Estimated Values of Economic Variables Relating to the Urban Unregistered Industrial Subsector, Gujarat State, 1969/70.

Urban Unregistered Industry Group	Number of Units (#)	Employment (#)	Emoluments (Rs. '000)	Gross Output (Rs. '000)	Material Inputs Charges[a] (Rs. '000)
	(1)	(2)	(3)	(4)	(5)
1. Milk food & malted food	46	285	520	6,275	4,999
2. Grain & oil milling	197	1,576	2,733	63,212	57,229
3. Other food & agro based	870	10,782	13,607	135,376	103,129
4. Art silk & manmade fibers	2,453	16,926	30,797	258,189	203,711
5. Textiles	1,531	14,412	27,884	330,365	282,982
6. Wood, paper, leather, rubber	885	7,257	15,003	76,907	47,206
7. Chemicals & chemical products	232	3,255	6,849	103,201	78,000
8. Nonmetallic mineral products	426	3,834	5,581	27,484	16,050
9. Basic metals & metal products	706	6,919	13,953	112,525	85,226
10. Machinery	1,042	10,377	21,928	114,214	70,715
11. Transport equipment	165	1,073	1,345	2,351	495
12. Miscellaneous manufactures	1,760	28,606	52,728	276,127	198,208
Totals	10,313	105,302	192,968	1,506,226	1,147,949

TABLE 4. (Continued)

Urban Unregistered Industry Group	Contract Inputs Value (Rs.'000)	Goods Sold as Received (Rs.'000)	Non-Material Inputs Charges (Rs.'000)	Work Done by Others (Rs.'000)	Land and Buildings, Value (Rs.'000)
	(6)	(7)	(8)	(9)	(10)
1. Milk food & malted food	-	2,052	258	1	1,024
2. Grain & oil milling	20,039	-	1,576	-	4,531
3. Other food & agro based	12,805	-	4,304	2,092	16,469
4. Art silk & manmade fiber	115,057	10,950	5,151	-	39,694
5. Textiles	211,982	-	3,960	2,563	57,450
6. Wood, paper, leather, rubber	9,399	112	3,735	325	21,476
7. Chemicals & chemical products	-	-	6,692	789	12,619
8. Nonmetallic mineral products	266	107	2,293	-	13,447
9. Basic metals & metal products	37,309	-	4,493	1,329	11,424
10. Machinery	2,286	152	5,441	4,406	25,182
11. Transport equipment	-	-	132	25	2,888
12. Miscellaneous manufactures	159,014	-	3,368	331	26,128
Totals	574,149	13,372	41,402	11,859	232,333

TABLE 4. (Continued)

Urban Unregistered Industry Group	Other Fixed Capital, Value (Rs.'000)	Total Working Capital, Value (Rs.'000)	Productive Capital (Rs.'000)	Value Added (Rs.'000)	Total Depreciation Value (Rs.'000)
	(11)	(12)	(13)	(14)	(15)
1. Milk food & malted food	843	447	1,290	1,018	136
2. Grain & oil milling	5,521	1,803	7,324	4,408	779
3. Other food & agro based	10,805	54,522	65,326	25,851	1,904
4. Art silk & manmade fibers	43,396	80,882	124,278	49,328	6,324
5. Textiles	24,131	31,175	55,307	40,861	5,286
6. Wood, paper, leather, rubber	16,331	27,907	44,238	25,641	2,707
7. Chemicals & chemical products	7,976	42,450	50,426	17,720	1,429
8. Nonmetallic mineral products	6,891	11,751	18,641	9,141	1,361
9. Basic metals & metal products	7,907	18,029	25,936	21,478	1,362
10. Machinery	28,085	44,783	72,868	33,652	4,068
11. Transport equipment	825	701	1,526	1,699	227
12. Miscellaneous manufactures	14,006	20,296	34,320	74,220	2,707
Totals	166,717	334,745	501,462	305,016	28,288

TABLE 4. (Concluded)

Urban Unregistered	Depreciation Land and Buildings Value (Rs.'000)	Depreciation Fixed Assets, Value (Rs.'000)	Imputed Rent (Rs.'000)	on Bank Loans (Rs.'000)	Residual[b] (Rs.'000)	Profit Rate (percent)
	(16)	(17)	(18)	(19)	(20)	(21)
1. Milk food & malted food	51	84	72	20	290	22.5
2. Grain & oil milling	227	552	317	-	539	7.4
3. Other food & agro based	823	1,081	1,153	866	9,187	14.1
4. Art silk & manmade fibers	1,985	4,340	2,779	-	9,427	7.6
5. Textiles	2,873	2,413	4,022	318	3,670	6.6
6. Wood, paper, leather, rubber	1,074	1,633	1,503	342	6,428	14.5
7. Chemicals & chemical products	631	798	883	231	8,559	17.0
8. Nonmetallic mineral products	672	689	941	57	1,258	6.7
9. Basic metals & metal products	571	791	800	340	5,363	20.7
10. Machinery	1,259	2,809	1,763	344	5,894	8.1
11. Transport equipment	144	83	202	-	- 74	-4.9
12. Miscellaneous manufactures	1,306	1,401	1,829	153	16,956	49.4
Totals	11,617	16,672	16,263	2,671	64,497	13.46

Notes: [a]Includes contract inputs and excludes goods sold as received.

[b]Includes interest on bank loans.

Totals may not sum due to rounding

Source: See text.

However, when evaluating these profit rates, the details on concepts and definitions noted in the preceeding section must not be forgotten. Profits are a residually determined category and substantial amounts may be disguised as rental payments or as emoluments. For example, rents actually paid may be less than the estimates suggested by the arbitrary application of a seven percent annual rental rate. Payments ascribed to the labor supplied by the respondents may be overestimates. On the other hand, it is also possible that estimates for the replacement value of fixed capital equipment may be too high. To the extent that this is true, the profit rates shown in column 21 of Table 4 would underestimate true profit rates.

Economic Ratios

Tne economic ratios presented in Table 5, below, are derived from the values given in Table 4. The first two columns of Table 5 present estimates of capital/output ratios. For the subsector as a whole, an investment of only eleven rupees in other fixed assets, the principal component of which is machinery but which also includes tools, transport equipment, furniture and fixtures, yields a gross output of one hundred rupees. Gross output, as defined above, includes distribution costs when incurred by the manufactures and includes excise and sales taxes; it closely approximates a measure of total sales less goods sold as received. The same one hundred rupees of gross output requires an investment of thirty-three rupees in productive capital.

The industry groups with the lowest capital/output ratios are (12) miscellaneous manufactures, which is dominated by the diamond cutting industry, (9) basic metals and metal products, (5) textiles, especially the dyeing and printing industry which has a fixed assets/gross output ratio of about 0.04 and a productive capital/gross output ratio of about 0.11, and (7) chemicals and chemical products.

The industry groups with the highest capital/output ratios are (8) nonmetallic mineral products, (11) transport equipment, and (10) machinery. In no case is the capital/output ratio for a particular industry group greater than unity.[10]

Columns 3 and 4 of Table 5 present estimates of capital/value added ratios. For the urban unregistered industrial subsector as a whole, an investment in other fixed assets of fify-five rupees would yield, on average,

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[10] If rents were capitalized and included with productive capital to form an estimate of total capital, the total capital/gross output ratio would be 0.49, still less than one-half. Working capital supplied by others for contract work are not included in this measure of total capital.

TABLE 5. Estimated Values of Economic Ratios Relating to the Urban Unregistered Industrial Subsector, Gujarat State, 1969/70.

Urban Unregistered Industry Group	Other Fixed Assets / Gross Output	Productive Capital / Gross Output	Other Fixed Assets / Value Added	Productive Capital / Value Added	Working Capital / Other Fixed Assets	Land and Buildings Productive Capital
	(1)	(2)	(3)	(4)	(5)	(6)
1. Milk food & malted food	0.13	0.21	0.83	1.27	0.53	0.79
2. Grain & oil milling	0.09	0.12	1.25	1.66	0.33	0.62
3. Other food & agro based	0.08	0.48	0.42	2.53	5.05	0.25
4. Art silk & manmade fibers	0.17	0.48	0.88	2.52	1.86	0.32
5. Textiles	0.07	0.17	0.59	1.35	1.29	1.04
6. Wood, paper, leather, rubber	0.21	0.58	0.64	1.73	1.71	0.49
7. Chemicals & chemical products	0.08	0.49	0.45	2.85	5.32	0.25
8. Nonmetallic mineral products	0.25	0.68	0.75	2.04	1.71	0.72
9. Basic metals & metal products	0.07	0.23	0.37	1.21	2.28	0.44
10. Machinery	0.25	0.64	0.83	2.17	1.59	0.35
11. Transport equipment	0.35	0.65	0.49	0.90	0.85	1.89
12. Miscellaneous manufactures	0.05	0.12	0.19	0.46	1.45	0.76
Averages	0.11	0.33	0.55	1.64	2.01	0.46

TABLE 5. (Continued)

Urban Unregistered Industry Group	Other Fixed Assets Emoluments	Productive Capital Emoluments	Emoluments (Rs.'000) Employment (#)	Emoluments Gross Output	Emoluments Value Added
	(7)	(8)	(9)	(10)	(11)
1. Milk food & malted food	1.62	2.48	1.83	0.08	0.51
2. Grain & oil milling	1.99	2.64	1.76	0.04	0.63
3. Other food & agro based	0.79	4.80	1.26	0.10	0.53
4. Art silk & manmade fibers	1.41	4.04	1.82	0.12	0.62
5. Textiles	0.87	1.98	1.93	0.08	0.68
6. Wood, paper, leather, rubber	1.09	2.95	2.07	0.20	0.59
7. Chemicals & chemical products	1.16	7.36	2.10	0.06	0.39
8. Nonmetallic mineral products	1.23	3.34	1.46	0.20	0.61
9. Basic metals & metal products	0.57	1.86	2.02	0.12	0.65
10. Machinery	1.28	3.32	2.11	0.19	0.65
11. Transport equipment	0.61	1.14	1.25	0.57	0.79
12. Miscellaneous manufactures	0.27	0.65	1.84	0.19	0.71
Averages	0.86	2.60	1.83	0.13	0.63

TABLE 5. (Concluded)

Urban Unregistered Industry Group	Employment (#) Other Fixed Assets (Rs. lakhs)	Employment (#) Productive Capital (Rs. lakhs)	Employment (#) Total Capital (Rs. lakhs)	Employment (#) Gross Output (Rs. lakhs)	Employment (#) Value (Added) (Rs. lakhs)
	(12)	(13)	(14)	(15)	(16)
1. Milk food & malted food	33.82	22.10	12.32	4.54	28.01
2. Grain & oil milling	28.44	21.52	13.30	2.49	35.76
3. Other food & agro based	99.79	16.51	13.18	7.96	41.71
4. Art silk & manmade fibers	39.00	13.62	10.32	6.56	34.31
5. Textiles	59.72	26.06	12.78	4.36	35.27
6. Wood, paper, leather, rubber	44.44	16.40	11.04	9.44	28.30
7. Chemicals & chemical products	40.81	6.46	5.16	3.15	18.37
8. Nonmetallic mineral products	55.64	20.57	11.95	13.95	41.94
9. Basic metals & metal products	87.50	26.68	18.52	6.15	32.21
10. Machinery	36.95	14.24	10.58	9.09	30.84
11. Transport equipment	130.06	70.30	24.31	45.63	63.14
12. Miscellaneous manufactures	204.24	83.39	47.34	10.36	38.54
Averages	63.16	21.00	14.35	6.99	34.52

Source: Constructed from data in Table 4.

a value added of one hundred rupees. The same one hundred rupees would require an investment in productive capital of one hundred sixty-four rupees.

Again, the lowest capital/value added ratio is that of industry group (12) miscellaneous manufactures. For this group, an investment of about nineteen rupees of fixed capital yields one hundred rupees of value added; an investment of forty-six rupees in productive capital yields the same one hundred rupees of value added. Other industry groups with low capital/value added ratios are (11) transport equipment and (9) basic metals and metal products. While (3) other food and agro based is characterized by a low other fixed capital/value added ratio, it is also characterized by one of the highest productive capital/value added ratios. The high working capital requirements of the tobacco industry are largely responsible. Industry groups (7) chemicals and chemical products, (4) art silk and manmade fibers, and (11) machinery also are characterized by high productive capital/value added ratios.

Column 5 presents the working capital/other fixed assets ratios by industry group. The overall ratio for the subsector is just over 2.0, suggesting a strong requirement for working capital.

Industry group (7), the chemicals and chemical products industry group, is characterized by the highest working capital/other fixed assets ratio in the urban unregistered industrial subsector. The accounts of these units, especially the soap manufacturers, show extremely large entries under "outstanding credit." The owners of these units tie up considerable amounts of their working capital to ensure markets for the products they manufacture. Their investment is largely an investment of working capital. The returns appear to be substantial.

The lowest working capital/other fixed assets ratio is that characterizing the industry group (2) grain and oil milling. Looking ahead to Table 6 in Chapter V, we note that this industry group has the highest material inputs/total inputs ratio. Considerable amounts of working capital clearly are required.

As it happens, most of the urban unregistered milling units in Gujarat are contract units. Merchants bear almost all of the costs of working capital for these units. For the relatively few small units which are independent of the merchants, the trading orientation described in Chapter V produces strong incentives to reduce turnover time to gain access to interest free credit where possible and to hold idle industrial capacity rather than maintain high inventories.[11] Due to a heavy dependence on

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[11]The working capital/fixed capital (including owned land and buildings) ratio for census registered flour mills in 1964 was roughly 1.62. The average for all factories in Gujarat was 0.36 (Gujarat State Bureau of Economics and Statistics, 1970, pp. 214-215).

contract work, the working capital/other fixed assets ratio is not an appropriate measure of the working capital socially required in production by urban unregistered milling units.

Column 6 shows a very high ratio of land and buildings to productive capital for all industry groups, with a subsector average something under one-half. It is clear from this column why virtually all urban unregistered industrial units rent, rather than own, their premises.

Columns 7 and 8 present data on capital/emoluments ratios. The overall other fixed assets/emoluments ratio is something greater than 0.86. Using productive capital as the numerator, the ratio increases to almost 2.60. The industry group characterized by the lowest capital/emoluments ratio is (12) miscellaneous manufactures. The group with the highest ratio, which is almost three times the subsector average is (7) chemicals and chemical products.

Columns 9, 10 and 11 of Table 5 relate emoluments to employment, gross output, and value added respectively. There is a considerable spread in the emoluments/employee ratio, by industry group, as anticipated. The average for the subsector, which can serve as a measure of the per employee annual income, is Rs. 1,830.

Columns 12 through 16 inclusive are measures of the number of jobs per lakh rupees of investment in other fixed assets, productive capital, and total capital respectively, and measures of the number of jobs per lakh of rupees of gross output and value added. On average, about sixty-three jobs are associated with an investment in other fixed assets, principally machinery and equipment, of one lakh rupees. About twenty-one jobs are associated with an investment of one lakh rupees in productive capital. The figure falls to something over fourteen if the capitalized value of land and buildings is also included in total capital investment. The employment requirements per one lakh rupees in gross output and value added are roughly seven and thirty-five respectively.

The industry group with the highest employment creation capacity per unit of investment is (12) miscellaneous manufactures, with over forty-seven jobs associated with a total investment of one lakh rupees. Industry groups (11) transport equipment and (9) basic metals and metal products also are characterized by high employment/total investment ratios. If the other fixed assets measure of investment is used, then (3) food and agro based industry group ranks high in employment creation capacity. If the productive capital measure is used, then (5) textiles ranks high in employment creation capacity.

The employment/gross output and employment/value added ratios by industry group reveal few surprises. In the industries in which wage rates are high and emoluments are a small fraction of value added, such as (7) chemicals and chemical products, only about eighteen jobs are associated with each one lakh rupees of value added. Conversely, when wage rates are

low and emoluments are a large fraction of value added, the number of jobs associated with each one lakh rupees of value added is very high: for example, over sixty-three in industry group (11) transport equipment. Obviously, both prevailing wage rates and the labor intensity of the production processes, measured here by the emoluments/value added ratios, are important factors in determining the job creation capacity of any particular industry group.

Comparisons with Registered Units

On average, the industrial units of the urban unregistered subsector are profit-making; some are exceptionally so. The evidence presented in this chapter does not suggest that urban unregistered industrial units form a barely tolerated, unproductive, noncompetitive subset of the India industrial sector.

This point can be made most convincingly if the estimates just presented are compared to similar estimates which refer to larger, registered units.[12] For every one lakh rupees of value added, the units of Gujarat's urban unregistered industrial subsector: (1) employ almost 35 persons, (2) pay Rs. 63,260 in emoluments, (3) engage Rs. 164,410 worth of productive capital, and (4) engage Rs. 54,600 worth of other fixed assets.

A comparable study of larger units in India presents substantially different estimates. For every one lakh rupees of value added, these industrial units (1) employ just over 15 persons, (2) pay Rs. 36,951 in emoluments, (3) engage Rs. 173,456 worth of productive capital, and (4) engage Rs. 62,521 worth of other fixed assets.[13]

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[12]The ideal comparison would be between urban unregistered units, registered sample units, and registered census units. Unfortunately, the time lag between available ASI data and the 1969/70 data on Gujarat's urban unregistered subsector presented in this study mitigate against such a comparison.

[13]These estimates can be found in an unpublished study of small scale units conducted for the World Bank. The reference year also is 1969/70. The units involved are relatively large, tend to be "modern," and are considered "successful." These units produce, on average, Rs. 1, 127,456 in output and Rs. 344,469 in value added. In so doing, these units employ, on average, over fifty-three persons and engage, on average, Rs. 283,034 in fixed capital. The average annual income per employee is Rs. 2,385. Most of these units are in the sample registered subsector but a large fraction are in the census registered subsector.

Figures for Gujarat State in 1964 are published in the Annual Survey of Industries. In the census subsector, for every one lakh rupees of value added, the units paid Rs. 62,526 in emoluments and engaged Rs. 286,395 worth of total capital, of which Rs. 210,550 was fixed capital. In the sample subsector, for every one lakh rupees of value added, the units paid Rs. 38,338 in emoluments and engaged Rs. 173,246 worth of total capital, of which Rs. 83,844 was fixed capital (Central Statistical Organization, ASI-1964, 1969, and National Sample Survey, NSS Report 132, 1969).

While the data are not strictly comparable, they strongly suggest that: (1) urban unregistered units employ more persons per unit of industrial product, and (2) urban unregistered units are more "efficient" in the use of capital, whether measured in terms of productive capital or in terms of other fixed assets.[14] It must be remembered that working capital supplied to contract units is excluded, in both surveys, from the category defined as productive capital. This may result in relatively greater requirements of socially necessary working capital for unregistered units than for registered units. But in terms of private calculations the unexpected result remains: urban unregistered units are profit making, and use relatively less capital and create relatively more employment opportunities per unit of value added than do larger industrial units.

[14] A similar result obtains among enrolled small-scale units in Gujarat State (van der Veen, J.H., 1972a).

CHAPTER V

THE COMMERCIAL ORIENTATION OF INDUSTRIAL ENTREPRENEURS

Introduction

The business attitudes of the owners of urban unregistered industrial units in Gujarat State are characterized by a marked "commercial Orientation."[1] This commercial orientation is a rational response to certain economic factors which impinge with particular force upon the industrial units of the urban unregistered subsector.

Section 2 of this chapter defines "commercial orientation." Section 3 argues that this commercial orientation describes the behavior of the owners of urban unregistered industrial units. Section 4 explores some of the important economic causes of this commercial orientation. Section 5 presents case studies of two industries which illustrate the operation of these economic causes. Section 6 concludes this chapter.

The Commercial Orientation

It is quite likely that much of the scorn reserved for traders in India stems from the relatively invisible nature of the services they provide, especially when contrasted with the very tangible goods produced by manufacturers. Some of the scorn, however, stems from the economic behavior of the traders, which quite frequently is perceived as being antisocial.

In general, traders tend to be concerned with rapid turnover and an attendant short time horizon. In contrast to industrial entrepreneurs, traders place a high premium on flexibility of capital and generally are unwilling to invest large amounts of money in fixed assets.[2]

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[1] Although the underlying economic causes of this commercial orientation transcend regional boundaries, generalizations to other states of India should be made with great care. Gujaratis are well known for their outstanding business acumen and their strong interest in commercial activities (see, for example, Nafziger, E.W., 1971).

[2] Berna characterizes traders as "opportunistic businessmen with very short time horizons, interested only in fast turnover and quick profits, completely unconcerned with technology, unwilling to invest more than the bare minimum in fixed capital, and still preoccupied far more with trade than with industry" (Berna, J.J., 1960, p. 217).

The scope of this chapter is restricted to only one aspect of entrepreneurial activity: the pronounced commercial orientation of the industrial entrepreneurs operating unregistered units in urban areas of Gujarat State. This implies a primary interest in the first four of the thirteen key functions of an entrepreneur enunciated by Kilby. Concerns with productive efficiency would result in a primary interest in the last five of Kilby's thirteen key entrepreneurial functions (Kilby, P., 1971, pp. 27-35).

A comprehensive description of the commercial orientation of small traders in India is presented by Fox (Fox, R.D., 1969, pp. 143ff.). Starting from the widely accepted observation that traders are "chary of investment" and determining from his own observations that petty traders tend to regard their business activities as "an adjunct" of family activities, Fox describes "a general commercial orientation that perhaps is best called 'subsistence type'" (Fox, R.D., 1969, p. 143).

Fox argues that the relatively small routine business profits earned by small traders provide sufficient subsistence level incomes for themselves and their families. These relatively small profits do not require substantial fixed investments. As a result, many traders are able to hold relatively large amounts of liquid capital. This liquid capital allows the traders great flexibility, flexibility used to advantage whenever opportunity presents itself. In effect, the traders have determined that the potential profits foregone by not pressing for higher routine profits are more than compensated by the profits realized as a result of enhanced operational flexibility. "The businessman lives in anticipation of a scarcity or, what since World War II has become even better, a governmentally regulated or licensed commodity; then he takes full advantage of the situation" (Fox, R.D., 1969, p. 151).

Historically, fluctuations in the output of agricultural commodities has no doubt been one of the principal sources of the windfall gains of traders. In recent times the forced rapid growth of the economy has resulted in manmade, artificial scarcities which can be exploited for windfall gains in precisely the same way. Governmental efforts to eliminate or reduce these windfalls usually are not successful. More commonly, these efforts result in the creation of illegal markets in which the economic payoff to political influence is considerably enhanced (see Bhagwati, J.N., and P. Desai, 1970).

A more significant point is this: if situations involving windfall gains are increasingly frequent, or if the absolute size of the gains to be made in these windfall situations is growing, then the economic system is rewarding individuals who wish to hold ever larger amounts of liquid capital. Conversely, the economic system is punishing individuals who wish to tie up capital in long-term investments in, for example, equipment and machinery.

On the Behavioral Patterns of Industrialists

This system of rewards and punishments applies with particular force to industrialists operating urban unregistered units. As a result, these industrialists tend to expend considerable effort on the purchasing and marketing aspects of their enterprises and tend to expend neglibible effort on the production aspects of their enterprises. Rather than applying their energies to reducing the costs of production, they apply their energies to reducing trade margins on purchased inputs and to gaining control of the marketing channels for their products.

It is usually presumed that these patterns of behavior are inappropriate to industrial entrepreneurs.[3] Industrial entrepreneurs must be concerned with all aspects of an enterprise: purchasing, production, and marketing. But their primary concerns, especially in a country trying to industrialize rapidly, are "supposed" to be related to production: utilization of full capacity, appropriate technology, labor productivity, and so on.

This supposition is part of the basis of the "seedbed" argument for development of very small industrial units. It is argued that the small industries subsector nourishes latent entrepreneurial talent, much of which eventually is brought to fruition (Ford Foundation, International Planning Team, 1954; Staley, E. and R. Morse, 1965). The general argument is correct.[4] But instead of learning to grapple with production oriented questions of capital capacity and technology, these emerging entrepreneurs learn how to solve more pressing problems. They learn how to manage in highly imperfect markets, how to cope most effectively with conditions of scarcity and uncertainty, and how to use to their own best advantage the flexibility which is their principal asset. Their success can be measured in terms of their profit rates, which average roughly fourteen percent on productive capital.[5]

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[3]This presumption is shared by nearly all analysts and accounts for the focus of most studies of industrial units on questions of capital/labor ratios, capacity utilization, and returns to investment.

[4]Indeed, one author defines power-using unregistered industrial units as "entrepeneurial" enterprises (Mitra, L.K., 1967, p. 133).

[5]For appropriate definitions refer to Chapter III above. As is true of the traders studied by Fox, the industrialists of this study consider their businesses to be adjuncts to their overall family activities. Routine profits, which in this sense include the total income of the owner, are largely determined by the consumption demands of the owner's family. The appropriate concept of family is that of the extended family. Of course, the nuclear family unit is a crucial part of the extended family. For example, management positions in the firm should be available to the sons of the owner when they come of age. Thus, the profits extracted from and the growth of the industrial unit are, in part, dependent on the size and structure of the owner's family, in its nuclear and extended aspects.

There have been some case studies of the impact of kin and caste relationships on merchant entrepreneurs in India (for example, Hazlehurst, L.W., 1966 and Mines, M., 1970).

It has been noted that proprietors of small manufacturing firms are loath to reveal the precise sources of and outlets for the goods in which they deal. To a very considerable extent, the bargains that the manufacturer can strike on the costs of his inputs or on the prices of his finished products determine his profits.

Very small units are most concerned with problems of purchasing raw materials: timely deliveries of appropriate materials in the quantities demanded (Lakdawala, D.T. and J.C. Sandesara, 1960, pp. 146-166 and pp. 184-187). But this set of problems comes in two distinct forms, depending on whether the manufacturing firm involved actually purchases its own raw materials or is a contract unit, working on the materials supplied by and still owned by others.

Contract units tend to be very small, are constrained by very serious capital shortages, and are highly dependent upon the businessmen, usually traders, who let out the contracts. Contract units have little opportunity to engage in purchasing or selling activities. The universal desire of the proprietors of contract units is to gain independence from their traders. This universal desire reflects, on one level, the knowledge that overall profits in trade are good. On another level, it reflects an understanding that the markets in which traders deal are imperfect and, as a result, are often sources of very profitable activity.

Under the prevailing contract system, the contracting manufacturers have almost no prospects of ever making significant profits. Firms which engage only partially in contract work regard that work as temporary, eventually to be halted, as they gain full independence from their traders. Of course, contracting manufacturers recognize that the traders perform extremely valuable functions. The traders are highly knowledgeable and can take advantage of large economies of scale in trade. A manufacturer who is still very small may find it very costly to try to develop the trading skills and knowledge which are needed even if he wished only to maintain relatively low profit rates. Potential windfall gains may turn out to be disastrous financial setbacks instead. Nevertheless, there being for the most part only small profits to be made by the small unit in production activities, the desire to gain control over associated trade channels is very strong.

The owners of very small units who are not tied contractually to specific traders spend a great deal of effort on purchasing problems. When questioned on those aspects of the business which most concern them, respondents rarely cite technology, nonavailability of capital equipment, labor problems, or other problems relating to production activities. But the difficulties involved in obtaining appropriate raw materials at low cost are invariably noted.

The owners of somewhat larger unregistered units do not emphasize purchasing problems to the same degree. Their primary concern appears to be how to gain control over marketing channels. The major exception to

this generalization includes those industrial units making goods for final use by, and direct sales to individual consumers. All other units, having reached a certain size and having solved more fundamental problems involving material inputs, attempt to deal with marketing problems. Initial efforts are made to try to gain control of the actual sales of the manufactured product. Thereafter, or occasionally in conjunction with achieving this control, efforts are made to differentiate the product, open advertising campaigns, stress quality control, and the like. Respondents frequently justified attempts to expand the scope of their operations into trade with the comment that the profits in manufacturing, though usually steady, are not large, whereas the potential for large profits in trade is great, although perhaps infrequent.

As was the case with the owners of the very small unregistered units, these repondents rarely cited problems explicitly relating to production such as technology, nonavailability of capital equipment or problems with their work force. All these production-oriented concerns remain distinctly secondary.

Underlying Economic Causes

There are several causes which contribute to the strength with which small manufacturers adopt a commercial orientation. Central among these is the often highly materials intensive nature of the production process in small industries.

This is not to argue that large industrial units cannot be materials intensive as well. Often the very nature of the goods produced or the production technology adopted requires that the production process be materials intensive. Two clear cut examples have been ably documented by others. The first is concerned with the rice milling industry in India; the second with the groundnut oil extraction industry in Gujarat itself (Lele, U. J., 1970; Desai, D. K. and AG. K. Murty, 1968).

With regard to the rice milling industry in India, Lele has argued that the cost of materials is the key to understanding problems of capacity utilization.

> The data from modern and traditional rice mills shows that even when less than 50 percent of the capacity is utilized, variable costs including the price of paddy constitute as much as 96 percent of the total operating costs, with the cost of the raw material and interest itself being slightly over 90 percent of the total. Variable costs would constitute even a higher percent of the total costs with increase in the capacity utilization. Where variable costs form such a major portion of total costs decline in average costs as a result of increases in capacity utilization are insignificant and, therefore, do not provide an incentive for

extending capacity utilization (Lele, U.J., 1970, p. 23, emphasis added).

Thus, Lele can argue that "examination of the nature of variable costs of rice mills emphasizes the fact that rice milling is predominantly a trading operation involving mainly storage and little value added in actual processing" (Lele, U.J., 1970, p. 23, emphasis added). Rice mills throughout India are characterized, inversely to the size of their milling operations, by low capacity utilization and high operational flexibility. It is clear that owners of these mills face high incentives to use their greater flexibility to conduct trade oriented activities.

Precisely the same point is made with regard to the Saurashtra groundnut industry. An inverse relationship holds between the size of the firm and the rate of capacity utilization. "Because of a high raw material cost the efficiency of a firm depends on the procurement of raw materials at lower prices. This, to a large extent, is dependent on the maneuverability available to the firms" (Desai, D.K. and A.G.K. Murty, 1968, p. 7). The smaller the unit, the smaller are the raw material requirements of the unit and the greater is the flexibility of the unit in a fluctuating market.

The raw material cost is roughly ninety-two percent of total costs, excluding interest charges. "Thus the raw material plays quite a major role in the cost structure of the industry, the efficiency of a firm depends upon at what price the firm can procure the raw material. In the fluctuating groundnut market, it is the business (i.e.: trading) acumen and maneuverability in buying that helps a manager rather than anything else" (Desai, D.K. and A.G.K. Murty, 1968, p. 21).

Again, the size relationship is inverse. The smaller and less fixed capital using the firm, the smaller is the potential to reduce average costs by reducing excess capacity. There is correspondingly a greater potential for profit through "investments" of time and talent in commercial operations, such as purchasing raw materials at lower cost. The returns to such trading activities are even greater if the markets involved are sufficiently imperfect. And as Desai and Murty show, the size group roughly corresponding to unregistered manufacturing units do in fact obtain raw materials at lower cost than do their less flexible, larger sized counterparts despite the disadvantages of being unable to obtain reduced per unit prices through bulk purchasing (Desai, D.K. and A.G.K. Murty, 1968, p. 24).

There is little doubt that the industries cited -- rice milling and oil extraction -- are exceptional. The raw materials component in total costs is extremely high, exceeding 90 percent. And, although small sized firms within these industries tend to be characterized by somewhat higher raw materials components of the total cost structure, the industries appear dominated by a trade oriented approach to manufacturing across all size groups.

The data presented in Table 6, below, suggest that in addition to the grain and oil milling industry group, raw materials account for a relatively large percentage of total costs in the textiles, chemicals and chemical products, art silk and manmade fibers, and miscellaneous manufactures industry groups, especially in the urban unregistered, industrial subsector.

With the exception of the food, drink and tobacco industry groups, the unregistered units exhibit substantially higher relative materials costs than do larger registered units of the same industry group. There are several reasons for this. First, small units tend to be one-process units, involving a relatively simple operation on raw materials inputs. Second, the value of fixed capital per unit of value added tends to be less in smaller units. Third, labor inputs, although greater in terms of man-hours, are reduced by the lower prevailing wage rates paid in the small industrial sector. Finally, per unit costs of raw materials can be significantly reduced by bulk purchasing. As a result, most urban unregistered industrial units spend a larger share of their total costs on material inputs than do their larger industrial counterparts.

Since the share of material input costs are higher in most of the unregistered industry groups, it is likely that these industries are better characterized by a commercial orientation than are larger units. The profit structure of these smaller units probably is more responsive to the businessman's abilities as a trader and less responsive to the businessman's abilities as an industrialist.

It is easy to suppose that commercially oriented manufacturers are particularly prevalent in industries which require substantial inputs from agriculture. Trading acumen is particularly well rewarded when fluctuations in prices of relatively well-standardized products vary as widely as is the case in Indian agriculture.

However, as noted above, the fluctuations which still characterize Indian agriculture also characterized Indian industry, although for different reasons and in different forms. Although general industrial policy in India has been well articulated and reasonably consistent through two decades of planning, specific policy directives and particular policy makers do change, and change with considerable frequency. The impact of political or bureaucratic decision making on the urban unregistered industrial unit in India cannot be overestimated. Implicit in the very notion of government directed, rapid industrialization is a tangled web of sudden, acute shortages, peculiar production and distribution bottlenecks, controlled and freely fluctuating prices, and considerable administrative influence in business activities down to the level of the firm. The resources of government cannot be stretched sufficiently to cover fully all relevant economic decisions. Thus, despite the best intentions, the prospects of sudden, windfall gains loom large in Indian industry.

TABLE 6. Percentage of Total Inputs Attributed to Material Input Costs

Industry Group Description	Unregistered Units	Registered Units
1. Milk food & malted food	79.67	92.84
2. Grain & oil milling	90.54	92.17
3. Other foods & agro based	76.18	80.12
4. Art silk & manmade fibers	78.90	64.87
5. Textiles	85.66	62.05
6. Wood, paper, leather, rubber	61.38	54.91
7. Chemicals & chemical products	75.58	56.96
8. Nonmetallic mineral products	58.40	57.77
9. Basic metals & metal products	75.74	68.20
10. Machinery	61.91	50.46
11. Transport equipment	-*	53.66
12. Miscellaneous manufactures	71.78	43.51

* -- Deleted as unreliable. See footnote 4, page 10, above.

Source: For unregistered units, Table 4, above; for registered units, Table 7, below.

Case Studies of Two Industries

Two industries of some importance in Gujarat's urban unregistered subsector are briefly examined below. The first is the plastic buttons industry. The second is the foundry industry. In both cases, the role of the government is considerable.

The Plastic Buttons Industry

An estimated 300 plastic button manufacturing units are clustered in the city of Jamnagar, on the western coast of Saurashtra, in Gujarat. These units supply a very large fraction of all the plastic buttons demanded throughout India. About 115 of these units are in the unregistered subsector.

The industry requires relatively little fixed capital equipment.[6] A typical firm might have a compliment of 8 to 10 inexpensive machines of entirely domestic manufacture at a total cost of 2,000 to 2,500 rupees. In this section we will examine some of the problems faced by such a "typical" firm.

Raw materials account for roughly 75 percent of total "costs," including rent, interest on capital, and profits, of the typical firm. Virtually all the raw material costs are accounted for by the material known as PAP sheets: pearlized acrylic plastic sheets. The owners of button manufacturing firms understandably spend considerable time and effort in an attempt to locate inexpensive sources of this crucial raw material. Their efforts are complicated by the import substitution policies of the government, for this input is, or was, heavily imported into India.

The typical firm consumes roughly 3,000 kilograms of PAP sheets per year, given a working year of three hundred days. In the year 1964-65, the import "entitlement" was one-third of total raw materials consumption, or about one hundred days worth on a base of 1964-65 production levels. In 1968-69, this "entitlement" was effectively reduced by permitting actual deliveries, or "actuals," of one half the earlier "entitlement." So official raw material imports were cut to fifty days worth of the 1964-65 production levels.[7]

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[6]The machinery in use provides an excellent example of the product of the technical ability and design ingenuity evident in much of the small industrial sector of Gujarat. This machinery, with minor adaptations, is useful in the brass parts manufacturing industry, which accounts for the fact that these two industries are both important to the overall industrial structure of Jamnagar.

[7]Some details might be worth noting. In 1967-68, as in preceeding years, the full "entitlement" was granted in free foreign exchange, up to a maximum of Rs. 10,000. For the hypothetical "typical" firm here being discussed, Rs. 10,000 purchased about sixty-seven days worth of raw materials. The remaining Rs. 5,000 of the "entitlement" was in foreign exchange valid

But this fifty days worth figure very much overstates the case, for the foreign exchange allowed for the purchase of PAP sheets was trifurcated. Of the "actuals" permitted by the government, one-third was granted in free foreign exchange, one-third was granted in USAID funds. Only the free foreign exchange grants were found to be useful to the manufacturers. Thus, the imports allowed were reduced to sixteen and two-thirds days worth, plus twenty five percent of the balance, if the additional costs and delays were judged worth the effort of converting the "actuals" to free foreign exchange. In most cases, for average and smaller-sized units, they were judged not worth the effort. At most, the actual imports permitted came to twenty-five days worth of raw material requirements.

In 1970-71, the basic "entitlement" upon which this elaborate super-structure was erected was cut to one-quarter of total raw material consumption, or about seventy-five days worth, on a base of their current production capacity. Thus the button manufacturers were allowed imports covering less than nineteen days worth of production, that is, roughly three weeks of the year. These import restrictions, part of the government of India's overall import substitution policy, were designed to encourage domestic production of, in this instance, PAP sheets. But these import restrictions also caused some hardships to the plastic button manufacturers of Jamnagar. To neglect to relate their responses to the government's import restrictions would be to tell but half of the import substitution story.

Industrial units manufacturing plastic acrylic sheets have been started as a direct result of the import restrictions and more will be started, partly in anticipation of a complete ban on all imports of PAP sheets. However, as recently as 1969, there were only six producers in all of India who were equipped to produce PAP sheets as used in the buttons industry. Of these six, three were expecting installation of machinery which was "on the way" to India. Only two were producing PAP sheets. One of these two was producing a variety which was inappropriate to the specific needs of Jamnagar button producers. The other was producing PAP sheets which

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for rupee payment areas only. As it was not then possible to obtain the appropriate raw materials from rupee payment areas, the Rs. 5,000 either had to be foregone or had to be converted at twenty-five percent of face value and with considerable delays and additional expenses. Thus, the "entitlement" in our "average" firm was Rs 10,000 plus twenty-five percent of Rs. 5,000 or Rs. 11,250 -- seventy-five days worth. Then, after successfully petitioning the government to roll back a drastic cut in "entitlement" to ten percent of the value initially granted in 1964-65, the buttons industry had to absorb the fity percent cut mentioned in the text.

were of the appropriate variety but annual production was only about 10 metric tons per year. Requirements in Jamnagar alone exceed 1200 metric tons per year.

The landed cost of imports from Japan was roughly six rupees per kilogram. The imported goods were subject to a one hundred percent duty and an additional thirty-six percent excise tax. This is equivalent to a tax of one hundred and seventy-two percent, driving the price of the imported PAP sheets to roughly sixteen rupees per kilogram. Domestic prices for similar goods, including those considered "substandard" by the buttons manufacturers, were about twenty-one to twenty-two rupees per kilogram. Since domestic goods were in such short supply, the actual tariff rate exceeded to 350 percent.

This is the inducement to entrepreneurs to establish domestic PAP manufacturing enterprises. Several button manufacturers in Jamnagar are actively pursuing plans to initiate production of PAP sheets. By international standards, these industries promise to be very high cost, as well as rather profitable, industrial enterprises.[8]

At the same time, the severe restricitons on imports and the inability of domestic producers to meet the requirements of the Jamnagar button manufacturers has brought about many changes.

First, a striking illegal market has opened in PAP sheets. Our hypothetical "typical" firm probably would purchase between twelve and one-half to eighteen and three-fourths days worth of raw materials through formal, official, channels. As much as 150 days worth of raw materials would be purchased in the "open market, with bills."[9] All other transactions would be made in the illegal market. It is estimated that these illegal transactions account for nearly half the PAP inputs currently used in Jamnagar's button industry.

Second, owners inflate the stated capacity of their units and stress the underutilization of that capacity. Import licenses are granted on the basis of productive capacity and the windfall gain amounting to five to six rupees per kilogram for imported PAP sheets provides a strong incentive to overstate capacity. Quotas for imported materials are thus set significantly

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[8] An interesting study on the Indian automobile industry discusses in detail many of the questions raised here relating to the effect of an import substitution policy on smaller manufactures (Kreuger, A.D., 1970).

[9] There are essentially three markets: (1) controlled price, (2) open market with bills, and (3) open market without bills. The open market without bills is an illegal market; no records are kept. Tax evasion is the guiding principle in this third market.

higher than otherwise warranted. It is estimated that government figures are one and one-half times greater than actual production capacity.

Third, owners are forced to rely increasingly on contract work given by traders who have managed to obtain the crucial import licenses for PAP sheets or who have been able to obtain illegally imported sheets at cost. For example, an exporter of ready-made textiles is entitled to import a certain percentage of the value of his exports. The commodities he imports are restricted to goods useful in the manufacture of his exported goods. PAP sheets fall into this category. Button manufacturers are very apprehensive about the increasing activities of the traders. The traders have a clear advantage in obtaining import licenses and they are using this advantage to cut into the profits of the manufacturers.

Fourth, the profit squeeze and the growing antagonism to the economic policies of the government are leading to broad scale tax evasion. The phenomenon of "black money," once largely confined to the rich and the powerful is much in evidence. Frequently, a very small producer who possesses an import entitlement judges that the costs of actually obtaining the imported goods are greater than the benefits which follow. Such a small producer then "sells" his imports, prior to delivery, to another manufacturer, on the open market, without bills. If these sales were made openly, that is with bills, the small producer would lose even the meagre imports alloted to him. Clearly his tax records will not reveal such a transaction. On occasion, "bogus" producers obtain foreign exchange licenses. These individuals may gain favorable treatment by giving bribes or by calling on personal contacts. They then obtain PAP sheets and, instead of using them in production, sell them in the open market, without bills. It is not argued that this practice is widespread; however, it does occur. More significantly, the economic inducements to this kind of behavior are substantial.

These and related practices are characterized by great ingenuity and always involve the purchase of PAP sheets. There is little doubt that such practices have become quite common. However, the small industrialists in Jamnagar feel that they are singularly ill equipped to cope with the political corruption that, they feel, necessarily accompanies administrative influence. They contend that industrial skills are not well rewarded. The skills that are well rewarded include the ability to deal with governmental officials, the ability to deliver appropriate and appropriately timed bribes, the ability to travel to government centers like Ahmedabad and Delhi, and the ability to conduct business on a level of "sophistication" that is characterized by tax evasion, falsification of records, and recourse to illegal markets.

In short, the import substitution program has greatly heightened the small industrialists' interest in obtaining raw material inputs. This primary concern with material inputs has so dominated the industry in recent years that little attention has been paid to any other aspect of

industrial enterprise. The reason is clear: significant "windfall" profits accrue to those businessmen who are able to obtain access to low-priced raw materials through skillful manipulation of people and policy.

The import substitution program has fostered attempts to manufacture an otherwise imported commodity. It also has enhanced greatly the rewards to commercially oriented patterns of behavior, and it has done so at the expense of production oriented patterns of behavior.

The Foundry Industy

The iron casting industry is very materials intensive. The materials which are used intensively are frequently in short supply. It is not surprising, then, that several respondents suggested that the only plausible path to success is that path marked by a series of windfall gains.

While such a value judgement is generally considered appropriate to a trader rather than to an industrial entrepreneur, it is clear that the owners of these foundries are responding to powerful economic incentives. The role that the government has chosen to play in rationing the nation's scarce resources contributes to these incentives.

The raw materials most used in the foundry industry are pig iron, scrap steel, and coking coal. These goods are bulky and, unless purchases are made in large lots, the per unit costs are high. Clearly, small units cannot make bulk purchases. They generally rely on the open market, with bills, for their supplies of metals and coking coal. The Government of India is well aware of the purchasing problems involved. The problems apply to a broad range of firms, by size, in this industry group, including most sample units and some census units as well as all unregistered units. The government has reponded by attempting to channel raw materials through government controlled trading organizations.

This response reflects an accurate assessment of the problem: imperfect markets are the rule, not the exception. The increased competition offered by the government trade channels is designed to promote efficiency in trade and lower the purchasing costs of the small foundry.

This, however, has not occurred. Rather than competing with private traders in a single market, the government has bifucated the market. The government procures specific amounts of raw materials and distributes them to select industrialists, earning a "reasonable" profit in the process. The chief result of governmental attempts to distribute more equitably the supply of these scarce raw materials resources has been to reward the well-connected and to induce most small firm owners to work toward establishing these connections. The profits which can be made if raw materials are obtained at official government prices are great. It is little wonder that most repondents express a strong desire to be granted the required raw materials at official prices, and indeed exert considerable effort to achieve this goal.

The role of government is often crucial, especially when dealing with small firms with their particularly intensive need for material inputs. In Gujarat the organization charged with selling raw materials to small units is the Gujarat Small Industries Corporation (GSIC). At present, the GSIC distributes mainly pig iron, a noncontrolled item, and steel sheets, a controlled item.[10] The success of the GSIC is a direct result of the economies of scale it gains in procurement and distribution. It is, of course, true that the high costs of raw materials are only symptomatic of the real problem. The high open market costs reflect the severe scarcity value of these inputs. This scarcity cannot be removed merely by channelling the goods through government organizations.

It is more important to realize that high open market costs, combined with lower official prices, characterize an imperfect market. The commercial orientation of industrial entrepreneurs, especially in the unregistered subsector, is in part a rational response to a highly imperfect raw materials market.

Conclusions

This chapter examines only a few factors influencing the behavior of industrial entrepreneurs who operate urban unregistered industrial units in Gujarat State.[11] Other factors are of considerable importance. However, quite often these other factors are closely related to the commercial orientation of the entrepreneurs and the materials intensive nature of their industrial operations.

For example, many analysts focus attention on the critical nature of access to short term capital for units of the unregistered industrial subsector.[12] There is no denying the critical nature of short term capital for small industrial units, especially those characterized by a strikingly high degree of materials intensity. Characterizing entrepreneurial ability, Lakdawala and Sandesara write: "The varying degrees of success the proprietors have attained seem more due to the exercise of this entrepreneurial ability in their dealing with customers, subcontracting firms or intermediaries

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[10] Controlled items are distributed to "actual users" on a quota basis as determined by the Department of Industries. The GSIC then acts as a distributing and purchasing agent for the Department of Industries.

[11] E. Wayne Nafziger has written a comprehensive survey of the recent literature on entrepreneurship in India (Nafziger, E.W., 1971).

[12] The arguments of J.T. McCrory are particularly forceful (McCrory, J.T., 1956).

or ultimate customers, which help them in securing large orders for workshops and in bridging working capital requirements" (Lakdawala, D.T. and J.C. Sandesara, 1960, p. 257, emphasis added).

Businessmen operating small industrial units must look beyond their own enterprises for the short term capital they need to finance purchases of inputs. They turn to traders or to the larger manufacturers to whom they sell their products.[13] The traders or larger manufacturers are in a stronger financial position. They appropriate the bulk of the profits which otherwise might accrue to the industrialist.

Small units must stress sales connections in order to obtain the short-term finance which is required to reap potential windfall profits. Without an occasional windfall, prospects for growth are slim. A high degree of raw materials intensity and government policies both contribute to a set of incentives which encourage small manufacturers to adopt commercially oriented, rather than production oriented, patterns of behavior.

This commercially oriented pattern of behavior has contributed to the notable lack of success of the program designed to promote ancillary relations between large factories and industrial units in the unregistered subsector. It is generally considered that problems relating to quality control and the inability to meet delivery dates are the chief causes of the lack of success of these promotion programs. This does not reflect the point of view of the owners of unregistered industrial units.

Admitting that ancillary relationships with large factories would result in ready access to appropriate raw materials and would guarantee assured markets for the products of their small firms, virtually all owners of unregistered units expressed serious misgivings about the viability of ancillary relationships.

By entering into an ancillary relationship with a large factory, the owner of the small unit gives up his ability to maneuver in the imperfect markets where windfall gains are made. His raw materials are purchased

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[13] This function traditionally is performed by large merchants. For example, Hirsch, commenting on the weak short-term financial position of producers in the sugar industry, writes "often, had it not been for the funds that they (the clients) were able to borrow from agents, the producer.. would have been unable to engage in business...Several selling agents in the market said that, with the growth of market information, they felt their main function is now financial rather than marketing, and that this is the principal economic justification for their existence today" (Hirsch, L.Y., 1961, pp. 167-168).

with the aid of, and at a cost known to, the buyer of his products. His products are sold at prices determined by bargaining with an economic unit which knows all his costs. The potential for windfall gains are nil. In his terms, the owner of an unregistered unit finds himself at the mercy of the large factory.

This attitude toward ancillary relationships will prevail as long as the commercial orientation discussed in this chapter provides a substantial share of the profits to the owners of urban unregistered industrial units.

CHAPTER VI

GUGARAT'S INDUSTRIAL ECONOMY: THE ECONOMIC INTERDEPENDENCE OF UNREGISTERED INDUSTRIAL UNITS

Introduction

In the future, the planning process in India will be more decentralized than at present. Greater decision making authority will be held by state and regional planning bodies. Unfortunately, very little of the basic data required for informed state or regional decision making is available to planners at this time. In an effort to close this gap, input-output tables at the state level are being constructed throughout India.[1]

An input-output table for Gujarat State has been constructed by the analysts of the Sardar Patel Institute in Ahmedabad.[2] Appropriately modified and augmented, this input-output table provides a suitable framework for an analysis of the economic interdependence of Gujarat's urban unregistered industrial units.

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[1]B.M. Mahajan has written a paper on the future role of regional input-output tables in India's planning process (Mahajan, B.M., 1970). In addition to the Gujarat table, an input-output table for Rajasthan is being constructed by S.S. Mehta and G.S. Bohra of the University of Jodhpur. An older (1957) Punjab table by G.B. Rangnekar probably will be revised. These three tables conceivably could be combined to form an input-output model for India's northwestern region.

The most cursory review of recent input-output literature in India would have to mention the work of Mathur and his associates (Mathur, P.N., 1969) and the work of Saluja and his associates (Saluja, M.R., 1969). An interesting application of input-output techniques has been published by Katano (Katano, H., 1969). A comprehensive attempt to determine appropriate coefficents for the unregistered industrial subsector has been completed by Kamath (Kamath, J.K., 1971). A review of the input-output literature which pertains especially to the unregistered industrial subsector can be found in the author's doctoral dissertaion (van der Veen, J.H., 1972b, Appendix IV).

[2]The author is particularly grateful to Y.K. Alagh and S.P. Kashyap of the Sardar Patel Institute of Economic and Social Research. The Institute is engaged in a continuing project on the economy of Gujarat State, the core of which is this as yet unpublished table.

Section 2 of this chapter describes briefly the original input-output table for Gujarat State and discusses how that table was modified and augmented. The modified and augmented table is presented and examined in Section 3. Section 4 provides some information on the employment creation potential of the urban unregistered industrial subsector in Gujarat State. Section 5 concludes this chapter.

The Gujarat State Input-Output Table

The Gujarat State input-output model contains a 24x24 transactions matrix.[3] There are ten additional rows, specifiying noncompetitive imports, nonmaterial inputs, margins, value added, depreciation and emoluments.[4]

The availability of data plays a key role in determining the composition of the twenty-four groups.[5] The chief sources of data used in constructing the Gujarat State model are: for the census registered subsector, the Annual Survey of Industries, 1964; for the sample registered subsector, the National Sample Survey Report Number 132; for the unregistered subsector, t the Survey of Small-Scale Industries: Gujarat State.[6] Additional sources

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[3]This table can be found in the author's doctoral dissertation (van der Veen, J.H., 1972, p.72). It was furnished from unpublished documents by Y.K. Alagh and S.P. Kashyap. Earlier versions have been published (Alagh, Y.K., and S.P. Kashyap, 1971; Alagh, Y.K., K.K. Subrahmanian and S.P. Kashyap, 1971).

Trade between Gujarat and the rest of India and trade between Gujarat and the rest of the world are important elements in the model. Complete trade data are not available. Trade estimates are being made as part of the ongoing project at the Sardar Patel Institute (see Thakkar, J.D., 1971). Insofar as possible, these estimates have been incorporated into the model. Noncompetitive imports are considered exogenous to the structural matrix. Due to insufficient data, estimates of noncompetitive imports are based largely on a priori knowledge of the Gujarat State economy.

For details on these and other matters covered in this chapter, refer to Chapter VI and Appendices V-IX of the author's doctoral dissertation (van der Veen, J.H., 1972b).

[4]Noncompetitive imports are disaggregated into petroleum, coal and coke, and other noncompeting imports. Nonmaterial inputs are disaggregated into repair and maintenance charges, work done by others, and other charges.

[5]Standard input-output terminology identifies each row (and column) of the matrix as a "sector." In other chapters of this paper, the word "sector" refers to a broader aggregation of activities, such as the "industrial sector", the "agricultural sector," and the "construction sector." To avoid confusion, in this paper each row (and column) of the matrix is referred to as a "group."

Four of the twenty-four original groups are not in the industrial sector. These four are agriculture and allied activities, mining, electric power and light, and construction.

[6]Government of India, Central Statistical Organization, Annual Survey of Industries, 1964, Delhi (1969); Government of India, Directorate of National

of data were generated as unpublished studies drawn from the records of the Gujarat Directorate of Industries and the Gujarat State Bureau of Economics and Statistics (e.g.: Dave, J.B. (mimeograph, no date)).

In many cases, the groups of the input-output table were formed around the leading industries of Gujarat State. The usual criteria for aggregation were applied wherever feasible: industries requiring roughly the same set of inputs in roughly the same proportions were aggregated as were industries in which the structure of output was roughly proportional (Dorfman, R., P.A. Samuelson and R.M. Solow, 1958, pp. 240-243).

The original model is expressed in terms of 1964 producers' prices. Where possible, margins were estimated following the procedures suggested by Venkatramiah (Venkatramiah, P., 1969). Where limitations in the data did not permit use of these procedures, the less precise procedures outlined by Bawa and Gupta were followed (Bawa, V.S. and T.R. Gupta, 1967).

The Gujarat State input-output model provides a good overview of the state economy. It organizes a great deal of data into an analytical tool of considerable usefulness. However, the differences between the registered industrial subsector and the unregistered industrial subsector are assumed to be minimal.[7] These differences are precisely the differences to be explored in this chapter.

The state table must be modified in several ways. The 24x24 matrix first is reduced to a 16x16 matrix by aggregating some of the groups.[8] Four

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Sample Survey, National Sample Survey Report Number 132, Tables with Notes on the Annual Survey of Industries -- 1964, Sample Sector: Summary Results, Delhi (1969); Government of Gujarat, Directorate of Industries, Survey of Small-Scale Industries, Gujarat State, Ahmedabad (1969).

[7]The general approach adopted by the research analysts of the Sardar Patel Institute is an improvement over the traditional method of intergrating into an input-output table those industrial units which fall outside the census registered industrial subsector. However, this improved approach is based on the assumption that "scale substitution is between labor, capital and materials consumed and not between each type of material" (Alagh, Y.K. and S.P. Kashyap, 1971, p. 29). It should be noted that this approach in most cases is based on the assumption that there is virtually no difference between sample registered industrial units and the firms comprising the unregistered industrial subsector.

[8]Ten of the original groups remain unchanged. Six new groups are formed by aggregating two or more of the original groups. These changes are made primarily to simplify the process of intergrating the units of the urban unregistered industrial subsector into an augmented input-output table for Gujarat State. Other minor changes also are required.

columns displaying the input structures of the nonindustrial groups are dropped. Then all inputs which flow into the unregistered components of the twelve remaining industry groups are suppressed, column by column. Finally, all inputs which flow from the unregistered components of the twelve industry groups are suppressed, row by row.[9] Each column of the modified 12x12 matrix specifies those inputs which originate in the registered industrial subsector and which are purchased by units in the registered industrial subsector.

This modified matrix is augmented to take into account the interindustrial relationships which involve units of the urban unregistered industrial subsector. Appropriate data were generated in the author's field survey. These data yield estimates of input and output flows which are expressed in terms of 1969/70 (Diwali year) purchasers' prices. Consequently, these estimates first are deflated to 1964 prices and second are reduced to take into account the "margins" paid by purchasers. The result is a 24x24 matrix which provides information on the interindustrial relations of each of twelve industry groups, separately by size. This table is described in the following section.

The Modified, Augmented Gujarat State Input-Output Table

The modified, augmented input-output table for Gujarat State includes the 24x24 partitioned matrix just described. This matrix is bordered below and on the right by four nonindustrial groups. Thirteen additional rows are included. The table is presented as Table 7, below.

The similarities between Table 7 and the kind of table resulting from a two-region input-output analysis are obvious. For example, the input structure of the urban unregistered chemicals and chemical products industry group can be compared directly to the input structure of the registered chemicals and chemical products industry group. The input structure of the urban unregistered textiles industry group can be compared directly to the input structure of the registered textiles industry group. It is clear that this current account interindustry flows table can be analyzed in the traditional manner.

A note of caution may be in order at this point. The field survey data used in constructing estimates for the urban unregistered industry groups refer to the year 1969/70. The data underlying the original table

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[9] Inputs flowing into the unregistered units are suppressed by reversing the procedures followed in constructing the original table. Inputs flowing from the unregistered units are suppressed by deducting where appropriate estimates of the industrial output produced by urban unregistered industrial units. These estimates were generated in the author's field survey.

Table 7. Industrial Structure of Gujarat, 1964: Interindustrial Flows of the Registered and Urban Unregistered Industrial Subsectors in 1964 Producers' Prices

(Rupees '00)

PRODUCING GROUPS / MATERIAL INPUTS	PURCHASING GROUPS 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Unregistered Industrial Subsector																												
1 Milk food & malted food	60	-	5,675	-	-	-	-	-	-	-	-	-	2,281	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Grain & oil milling	52	-	815	-	-	-	908	-	-	-	-	-	-	59,258	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Other food & agro based	-	-	72,222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Art silk & manmade fibers	-	-	-	752,525	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 Textiles	-	-	911	-	490,527	1,532	-	-	-	593	-	-	-	-	-	-	113,822	-	-	-	-	-	-	-	-	-	-	27,175
6 Wood, paper, leather, rubber	157	-	5,814	1,138	990	46,480	3,984	701	339	2,542	55	2,535	-	-	-	-	-	-	-	-	-	-	-	21,396	-	-	-	-
7 Chemicals & chemical products	5	-	858	-	786	8,868	2,058	2,657	1,643	445	-	92,803	-	-	-	-	28,310	-	21,774	-	-	-	-	-	-	-	-	142,009
8 Nonmetallic mineral products	-	-	-	-	-	-	-	14,857	21,788	728	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	128,768
9 Basic metals & metal products	-	-	-	-	17,983	496	-	-	14,119	121,820	-	32,246	-	-	-	-	-	-	-	-	12,823	33,746	-	-	-	-	-	-
10 Machinery	-	-	-	-	-	-	-	-	-	11,031	-	-	-	-	-	-	2,576	-	-	-	-	73,059	-	-	-	-	-	-
11 Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12 Miscellaneous manufactures	37	-	-	-	820	-	699	-	-	47	-	533	-	-	-	-	-	-	860	-	-	-	-	-	-	-	-	-
Registered Industrial Subsector																												
13 Milk food & malted food	1,293	-	1,098	-	-	-	-	-	-	-	-	-	55,394	-	-	-	-	-	1,340	-	-	-	-	-	-	-	-	-
14 Grain and oil milling	55	-	30,819	-	2,723	-	36,223	1,093	-	-	-	-	-	4,947,476	-	-	267,960	-	3,770	-	-	-	-	-	-	-	-	-
15 Other food & agro based	233	-	5,484	-	-	-	41	-	1,234	924	-	-	50	-	-	-	-	-	14,280	-	-	-	-	-	-	-	-	-
16 Art silk & manmade fibers	-	-	-	682,209	42,574	-	-	-	-	-	-	-	-	-	-	840,210	236,230	-	-	-	2,830	-	-	-	-	-	-	-
17 Textiles	1	-	304	-	1,189,923	-	14	459	84,846	-	-	-	-	-	-	-	1,368,081	39,460	3,700	-	-	43,590	-	-	-	-	-	-
18 Wood, paper, leather, rubber	-	-	24,619	505	409	107,427	6,322	-	-	110	42	-	10,960	1,910	1,240	11,100	216,710	75,170	130,830	36,130	6,540	92,200	4,610	3,550	-	-	277,484	-
19 Chemicals & chemical products	21	-	2,825	-	66,909	1,561	116,456	-	1,360	267	181	35,812	370	115,390	12,800	34,430	1,361,712	84,160	962,241	95,080	24,050	54,520	11,330	16,290	659,854	12,550	840	132,840
20 Nonmetallic mineral products	-	95	-	-	-	-	-	39,906	1,574	-	-	-	550	7,350	-	-	-	390	116,450	84,020	610	250	-	-	-	-	-	1,328,364
21 Basic metals & metal products	104	-	-	-	-	266	-	-	2,883	14,364	-	19,369	24,960	112,360	3,700	-	44,520	1,870	54,840	7,180	23,688	139,275	22,250	1,400	-	-	-	1,860,530
22 Machinery	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	730	-	-	18,120	47,509	-	-	-	-	-	-
23 Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	164,620	-	-	-	-	-
24 Miscellaneous manufactures	-	-	-	-	178	-	1,778	-	-	-	-	-	-	-	-	-	-	-	12,629	-	-	-	-	9,990	-	-	-	-
Nonindustrial sectors																												
25 Agricultural activities	26,578	303,632	356,584	-	-	31,899	39,450	21	-	-	-	-	393,340	6,238,580	785,740	-	6,635,370	123,900	64,290	10,640	-	5,370	-	38,280	12,109,000	-	-	730,800
26 Mining & salt	-	-	-	-	-	-	1,007	6,506	686	-	-	-	-	-	-	140	2,070	-	94,540	164,330	1,830	-	-	730	-	-	-	-
27 Electric power & light	205	3,999	1,016	48,648	12,323	5,165	7,402	1,228	3,625	7,358	292	42,372	5,340	57,500	3,740	32,500	904,370	30,740	139,820	120,070	34,210	36,910	16,480	2,000	145,000	21,470	467,070	-
28 Construction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,250	-	-	-	-	-	-	-	-	-	-	-
Noncompetitive Imports (India)																												
29 Petroleum, fuel & lubricants	3	94	284	1,117	1,341	703	41	1,083	77	511	177	9,863	2,570	27,270	5,330	11,060	131,350	5,730	93,650	185,150	13,710	13,150	12,720	340	673,000	4,590	83,980	37,040
30 Agricultural activities[a]	-	-	22,127	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31 Mining (primarily coal)	49	-	303	-	304	-	1,487	-	10,844	7,114	-	-	2,140	59,140	2,070	45,370	477,470	15,680	165,120	191,470	14,310	13,300	14,150	380	-	30	916,100	-
32 Manufactures[a]	-	2,192	14,328	-	18,729	27,681	111,867	677	152,499	79,040	1,248	4,296	1,350	240,540	405,940	214,360	1,748,820	98,630	497,090	135,180	629,660	226,250	103,160	14,530	-	3,730	-	-
Noncompetitive Imports (Foreign)																												
33 Foreign[a]	-	-	-	-	4,339	-	85,934	3,190	2,776	44,471	-	549,478	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NONMATERIAL INPUTS																												
34 Repair & maintenance	38	1,080	800	14,260	2,020	2,120	1,264	2,205	4,182	3,940	51	5,608	2,660	51,180	12,240	13,730	387,650	13,580	102,490	53,850	15,690	20,720	20,570	2,860	886,000	11,940	50,320	-
35 Work done by others	8	-	14,810	-	18,143	2,297	5,583	-	9,406	31,196	176	2,345	2,070	4,000	2,560	55,370	491,390	24,270	44,710	17,910	25,220	41,870	450	12,570	-	4,540	12,870	-
36 Other charges[b]	1,535	8,518	25,414	17,112	22,093	20,624	39,488	11,761	23,179	29,194	753	14,902	18,770	262,650	104,590	128,540	1,165,770	65,960	455,280	160,960	95,450	200,400	53,100	21,040	56,000	30,710	152,940	-
37 Margins	1,373	37,344	93,474	246,897	316,172	112,665	102,994	52,177	303,696	188,761	1,571	492,344	137,275	914,716	223,210	205,700	1,028,134	151,720	756,616	306,530	560,449	495,661	219,490	37,020	366,750	18,120	29,550	1,841,050
VALUE ADDED																												
38 Value added (gross)	6,155	26,756	160,635	416,707	311,821	184,956	117,126	69,029	151,155	227,434	11,851	479,529	38,380	850,100	277,100	652,070	8,020,890	444,090	2,269,590	878,750	552,110	1,024,030	454,640	132,430	51,919,000	365,850	957,910	3,783,740
39 Depreciation	820	4,726	11,831	53,426	40,335	19,525	9,442	10,231	9,584	27,491	1,582	17,191	13,350	81,580	37,270	86,030	1,006,230	40,650	515,820	138,350	66,050	85,180	33,040	7,520	1,632,000	46,830	219,390	-
40 Emoluments	3,148	16,831	84,556	260,168	212,786	108,222	45,269	42,143	98,199	148,195	9,377	340,672	4,201	260,520	106,010	238,061	5,223,988	251,091	513,996	446,568	290,820	525,508	431,156	121,229	7,238,340	161,830	289,490	3,576,800
TOTAL OUTPUT																												
41 Total output	37,962	383,710	841,219	2,181,118	2,521,107	554,740	682,126	207,550	791,911	771,904	16,397	1,784,035	698,060	13,949,420	1,840,260	2,244,580	24,629,255	1,176,080	6,005,910	2,447,250	2,031,300	2,561,810	1,097,570	293,410	66,836,000	473,530	2,671,700	10,290,000

[a] For columns 13-28 inclusive, entries for rows 30, 32 and 33 are not disaggregated. The aggregated figures are entered in row 32.

[b] Nonindustrial services, inward transport charges, consumable stores, etc.

Source: Contracted from data in Tables 8 and 10, van der Veen, J. H., 1972b.

refer to the year 1964. Although relative price changes have been taken into account, these price changes were applied to unchanging physical inputs. In other words, the physical input structure of each group is assumed to be technically insensitive to relative changes in input prices. This assumption appears reasonable. Subjective observations suggests that production technology does not change rapidly in the urban unregistered industrial subsector, even in a context of rapid economic development. Far greater problems are caused by the implicit assumptions that no new industries appeared in the five years between 1964 and 1969/70 and that the specific industries which were combined to form each industry group all grew at the same rate. The stability of input-output coefficients normally is predicted upon assumptions similar to these.

Table 8, below, is a 41x28 coefficients matrix derived from Table 7. Each column of Table 8 specifies the value of the direct inputs, from the groups identified in each row, required to produce one rupee's worth of output.

Table 9, below is a 28x28 inverted Leontief matrix. Only the elements of the bordered, augmented matrix are considered. Each column of Table 9 gives the value of direct and indirect inputs required from each of the twenty-four industry groups and from each of the four non-industrial sectors for one rupee's worth of "autonomous" final demand for the output produced by the units subsumed under the column heading. Thus, if the final demand for the goods of the urban unregistered textiles group increases by one lakh rupees, then direct plus indirect requirements from the registered textiles industrial group would be Rs. 62,347. The total input requirements would be Rs. 129,039. A comparable one lakh rupees increase in the final demand for the goods of the registered textiles group would require direct plus indirect inputs from other registered textiles units of Rs. 6,202. The total input requirements would be Rs. 61,290. Other comparisons between registered and urban unregistered industry groups drawn from otherwise identical ASI industrial classification categories reveal equally striking differences in the requirements of combined direct and indirect inputs.

The principal finding of a review of the inverted Leontief matrix of Table 9 is that the urban unregistered industrial subsector is far better integrated, through backward and forward linkages, with the rest of the state economy than expected. Indeed, it is better integrated through backward linkages than is the registered industrial subsector. The smaller units of the urban unregistered industrial subsector are characterized by stronger backward linkages in eight of the twelve industry groups. The larger units of the registered industrial subsector are characterized by stronger backward linkages in only four.[10]

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10 These four groups are grain and oil milling, machinery, transport equipment, and miscellaneous manufactures. Only in these four cases are the totals given in Table 9 greater for the registered industry groups than for

Table 8. Industrial Structure of Gujarat, 1964: Interindustrial Coefficients for the Registered and Urban Unregistered Industrial Subsectors

PRODUCING GROUPS / MATERIAL INPUTS	PURCHASING GROUPS 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Unregistered Industrial Subsector																												
1 Milk food & malted food	.00158	-	.00675	-	-	-	-	-	-	-	-	-	.00327	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Grain & oil milling	.00137	-	.00097	-	-	-	.00133	-	-	-	-	-	-	.00425	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Other food & agro based	-	-	.08585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Art silk & manmade fibers	-	-	-	.34502	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 Textiles	-	-	.00108	-	.19457	.00276	-	-	-	.00077	-	-	-	-	-	-	.00462	-	-	-	-	-	-	-	-	-	-	-
6 Wood, paper, leather, rubber	.00414	-	.00691	.00052	.00039	.08379	.00584	.00338	.00043	.00329	.00335	.00142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00264
7 Chemicals & chemical products	.00013	-	.00102	-	.00031	.01599	.00302	.01280	.00207	.00058	-	.05202	-	-	-	-	.00115	-	.00363	-	-	-	-	-	.00032	-	-	-
8 Nonmetallic mineral products	-	-	-	-	-	-	-	.07158	.02751	.00094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.01380
9 Basic metals & metal products	-	-	-	-	.00713	.00089	-	-	.01783	.15782	-	.01807	-	-	-	-	-	-	-	-	.00631	.01317	-	-	-	-	-	.01251
10 Machinery	-	-	-	-	-	-	-	-	-	.01429	-	-	-	-	-	-	.00010	-	-	-	-	.02852	-	-	-	-	-	-
11 Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12 Miscellaneous manufactures	.00097	-	-	-	.00033	-	.00102	-	-	.00006	-	.00030	-	-	-	-	-	-	.00014	-	-	-	-	-	-	-	-	-
Registered Industrial Subsector																												
13 Milk food & malted food	.03406	-	.00131	-	-	-	-	-	-	-	-	-	.07935	-	-	-	-	-	.00022	-	-	-	-	-	-	-	-	-
14 Grain & oil milling	.00145	-	.03664	-	.00108	-	.05310	.00527	-	-	-	-	-	.35467	-	-	.01088	-	.00063	-	-	-	-	-	-	-	-	-
15 Other food & agro based	.00614	-	.00652	-	-	-	.00006	-	.00156	.00120	-	-	.00007	-	-	-	-	-	.00238	-	-	-	-	-	-	-	-	-
16 Art silk & manmade fibers	-	-	-	.31278	.01689	-	-	-	-	-	-	-	-	-	-	.37433	.00959	-	-	-	.00139	-	-	-	-	-	-	-
17 Textiles	.00003	-	.00036	-	.47198	-	.00002	.00221	.10714	-	-	-	-	-	-	-	.05530	.03355	.00062	-	-	.01702	-	-	-	-	-	-
18 Wood, paper, leather, rubber	-	-	.02927	.00023	.00016	.19365	.00927	-	-	.00014	.00256	-	.01513	.00014	.00067	.00495	.00880	.06392	.02178	.01476	.00322	.03599	.00420	.01210	-	-	.00004	.02697
19 Chemicals & chemical products	.00055	-	.00336	-	.02654	.00281	.17073	-	.00172	.00035	.01104	.02007	.00053	.00827	.00696	.01534	.05529	.07156	.16022	.03885	.01184	.02128	.01032	.05552	.00987	.02650	.00031	.01291
20 Nonmetallic mineral products	-	.00025	-	-	-	-	-	.19227	.00199	-	-	-	.00079	.00053	-	-	-	.00033	.01939	.03433	.00030	.00010	-	-	-	-	-	.12911
21 Basic metals & metal products	.00274	-	-	-	-	.00048	-	-	.00364	.01861	-	.01086	.03576	.00805	.00201	-	.00181	.00159	.00913	.00293	.01166	.05437	.02027	.00477	-	-	-	.18081
22 Machinery	-	-	-	-	-	-	-	-	-	.00002	-	-	-	-	-	-	-	.00062	-	-	.00892	.01855	-	-	-	-	-	-
23 Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.14999	-	-	-	-	-
24 Miscellaneous manufactures	-	-	-	-	.00007	-	.00261	-	-	-	-	-	-	-	-	-	-	-	.00210	-	-	-	-	.03405	-	-	-	-
Nonindustrial Sectors																												
25 Agricultural activities	.70012	.79131	.42389	-	-	.05750	.05783	.00010	-	-	-	-	.56348	.44723	.42697	-	.26941	.10535	.01070	.00435	-	.00210	-	.13047	.18117	-	-	.07102
26 Mining & salt	-	-	-	-	-	-	.00148	.03135	.00087	-	-	-	-	-	-	.00006	.00008	-	.01574	.06715	.00090	-	-	.00249	-	-	-	-
27 Electric power & light	.00540	.01042	.00121	.02230	.00489	.00931	.01085	.00592	.00458	.00953	.01781	.02375	.00765	.00412	.00203	.01448	.03672	.02614	.02328	.04906	.01684	.01441	.01501	.00682	.00217	.04534	.17482	-
28 Construction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00009	-	-	-	-	-	-	-	-	-	-	-
Noncompetitive Imports (India)																												
29 Petroleum, fuel & lubricants	.00008	.00024	.00034	.00051	.00053	.00127	.00006	.00522	.00010	.00066	.01080	.00553	.00368	.00195	.00290	.00493	.00533	.00487	.01559	.07566	.00675	.00513	.01159	.00116	.01007	.00969	.03143	.00360
30 Agricultural activities[a]	-	-	.02630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31 Mining (primarily coal)	.00129	-	.00036	-	.00012	-	.00218	-	.01369	.00922	-	-	.00307	.00424	.00112	.02021	.01939	.01333	.02749	.07824	.00704	.00519	.01289	.00130	-	.00006	.34289	-
32 Manufactures[a]	-	.00571	.01703	-	.00743	.04990	.16400	.00326	.19257	.10240	.07611	.00241	.00193	.01724	.22059	.09550	.07100	.08386	.08277	.05524	.30998	.08832	.09399	.04952	-	.00788	-	-
Noncompetitive Imports (Foreign)																												
33 Foreign[a]	-	-	-	-	.00172	-	.12598	.01537	.00351	.05761	-	.30800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NONMATERIAL INPUTS																												
34 Repair & maintenance	.00100	.00281	.00095	.00654	.00080	.00382	.00185	.01062	.00528	.00510	.00311	.00314	.00381	.00367	.00665	.00612	.01574	.01155	.01706	.02200	.00772	.00809	.01874	.00975	.01326	.02521	.01883	-
35 Work done by others	.00021	-	.01761	-	.00720	.00414	.00818	-	.01188	.04041	.01073	.00131	.00297	.00029	.00139	.02467	.01995	.02064	.00744	.00732	.01242	.01634	.00041	.04284	-	.00959	.00482	-
36 Other charges[b]	.04044	.02220	.03021	.00785	.00876	.03718	.05789	.05667	.02927	.03782	.04512	.00835	.02689	.01883	.05683	.05727	.04733	.05608	.07581	.06577	.04699	.07823	.04838	.07171	.00084	.06485	.05724	-
37 Margins	.03617	.09732	.11112	.11320	.12541	.20310	.15099	.25139	.38350	.24454	.09581	.27597	.19665	.06557	.12129	.09164	.04174	.12900	.12598	.12525	.27591	.19348	.19998	.12617	.00549	.03827	.01106	.17892
VALUE ADDED																												
38 Value added (gross)	.16214	.06973	.19096	.19105	.12368	.33341	.17171	.33259	.19087	.29464	.72275	.26879	.05498	.06094	.15058	.29051	.32567	.37760	.37789	.35908	.27180	.39973	.41422	.45135	.77681	.77260	.35854	.36771
39 Depreciation	.02160	.01232	.01406	.02449	.01600	.03520	.01384	.04929	.01210	.03562	.09648	.00980	.01912	.00585	.02025	.03833	.04086	.03456	.08588	.05653	.03252	.03325	.03010	.02562	.02442	.09890	.08212	-
40 Emoluments	.08293	.04386	.10052	.11928	.08440	.19509	.06636	.20305	.12400	.19199	.57187	.19096	.00602	.01868	.05761	.10606	.21210	.21350	.08558	.18248	.14317	.20513	.39283	.41317	.10830	.34175	.10835	.34760
TOTAL OUTPUT																												
41 Total output	1.00001	.99999	1.00002	1.00000	.99999	1.00000	1.00000	1.00000	1.00001	1.00000	.99999	.99999	1.00001	.99999	.99999	1.00001	.99999	.99999	.99999	.99999	.99999	1.00002	.99999	1.00002	1.00000	.99999	.99998	1.00000

[a] For columns 13-28 inclusive, entries for rows 30, 32 and 33 are not disaggregated. The aggregated figures are entered in row 32.

[b] nonindustrial services, inward transport charges, consumable stores, etc.

Source: Constructed from data in Table 11, van der Veen, J. H., 1972b.

Table 9. Inverted Leontief Matrix (28 x 28): Registered and Urban Unregistered Industrial Subsectors, Gujarat, 1964

PRODUCING GROUPS	PURCHASING GROUPS																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Unregistered Industrial Subsector																												
1 Milk food & malted food	1.00170	-	.00740	-	-	-	-	-	-	-	-	-	.00356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Grain & oil milling	.00138	1.00000	.00134	-	.00006	.00003	.00169	.00006	.00001	-	-	.00009	.00001	.00659	-	-	.00008	-	.00001	-	-	-	-	-	-	-	-	-
3 Other food & agro based	-	-	1.09391	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Art silk & manmade fibers	-	-	-	1.52676	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 Textiles	.00002	-	.00151	-	1.24515	.00380	.00003	.00003	.00067	.00109	.00001	.00002	-	-	-	-	.00609	.00022	.00001	-	.00001	.00015	-	-	-	-	-	.00003
6 Wood, paper, leather, rubber	.00453	-	.00829	.00087	.00055	1.09157	.00640	.00465	.00062	.00375	.00366	.00190	.00002	-	-	-	.00001	-	.00003	-	.00001	.00012	-	-	-	-	-	.00296
7 Chemicals & chemical products	.00058	.00035	.00151	.00007	.00154	.01766	1.00399	.01397	.00270	.00110	.00011	.05241	.00029	.00037	.00022	.00011	.00162	.00044	.00438	.00019	.00007	.00021	.00006	.00032	.00045	.00012	-	.00041
8 Nonmetallic mineral products	-	-	-	-	.00027	.00003	-	1.07710	.03017	.00586	-	.00055	.00001	-	-	-	-	-	-	-	.00020	.00059	-	-	-	-	-	.01528
9 Basic metals & metal products	.00005	-	.00002	-	.00907	.00103	.00004	.00001	1.01819	.16316	-	.01848	.00026	.00008	.00001	-	.00008	.00003	.00008	.00002	.00667	.01878	.00016	.00004	-	-	-	.01395
10 Machinery	-	-	-	-	.00006	.00001	-	-	.00001	1.01450	-	-	.00001	-	-	-	.00011	.00002	-	-	.00027	.02950	.00001	-	-	-	-	.00005
11 Transport equipment	-	-	-	-	-	-	-	-	-	-	1.00000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12 Miscellaneous manufactures	.00097	-	.00001	-	.00042	.00002	.00105	.00002	-	.00006	-	1.00036	.00001	-	-	-	.00001	.00001	.00017	.00001	-	.00001	-	.00001	-	-	-	-
Registered Industrial Subsector																												
13 Milk food & malted food	.03706	-	.00183	-	.00002	.00001	.00005	-	-	-	-	.00001	1.08632	.00001	-	.00001	.00002	.00002	.00029	.00001	-	.00001	-	.00002	-	.00001	-	.00001
14 Grain & oil milling	.00231	.00004	.06231	.00002	.01281	.00166	.08283	.01001	.00244	.00047	.00002	.00439	.00005	1.54965	.00003	.00004	.01812	.00077	.00156	.00008	.00004	.00043	.00002	.00011	.00005	.00004	-	.00023
15 Other food & agro based	.00618	.00003	.00623	.00003	.00022	.00007	.00056	.00004	.00162	.00148	.00003	.00012	.00013	.00006	1.00003	.00007	.00018	.00023	.00285	.00012	.00005	.00014	.00004	.00017	.00003	.00008	-	.00009
16 Art silk & manmade fibers	.00001	-	.00008	.76325	.04317	.00026	.00002	.00004	.00180	.00037	-	.00006	.00010	.00003	.00001	1.59829	.01645	.00060	.00005	.00002	.00227	.00047	.00006	.00002	-	-	-	.00045
17 Textiles	.00012	.00002	.00248	.00019	.62347	.01009	.00075	.00272	.11595	.01911	.00015	.00220	.00069	.00006	.00005	.00035	1.06206	.03822	.00181	.00066	.00109	.02203	.00024	.00059	.00002	.00005	-	.00285
18 Wood, paper, leather, rubber	.00184	.00028	.03639	.00494	.00846	.22678	.01626	.00487	.00167	.00129	.00382	.00182	.01802	.00091	.00107	.00917	.01191	1.07096	.02837	.01758	.00422	.04039	.00574	.01512	.00035	.00075	.00006	.03300
19 Chemicals & chemical products	.01161	.01150	.01601	.01445	.08510	.02877	.20849	.01516	.01152	.00289	.01356	.03530	.01182	.02572	.01462	.03011	.07639	.09593	1.19664	.05195	.01510	.03191	.01537	.07210	.01451	.03173	.00045	.02893
20 Nonmetallic mineral products	.00027	.00049	.00037	.00029	.00180	.00066	.00424	.21477	.00834	.00157	.00027	.00086	.00115	.00137	.00029	.00061	.00156	.00229	.02404	1.03660	.00067	.00093	.00032	.00146	.00029	.00064	.00001	.13742
21 Basic metals & metal products	.00428	.00011	.00083	.00014	.00210	.00121	.00268	.00087	.00412	.01979	.00014	.01144	.03948	.01287	.00217	.00030	.00285	.00273	.01122	.00359	1.01248	.05711	.02429	.00570	.00014	.00030	-	.18383
22 Machinery	.00004	-	.00003	-	.00002	.00015	.00003	.00001	.00004	.00020	-	.00011	.00037	.00012	.00002	.00001	.00003	.00070	.00012	.00004	.00920	1.01945	.00022	.00006	-	-	-	.00169
23 Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.17646	-	-	-	-	-
24 Miscellaneous manufactures	.00003	.00003	.00004	.00003	.00028	.00011	.00317	.00007	.00003	.00001	.00003	.00022	.00003	.00006	.00003	.00007	.00017	.00021	.00261	.00011	.00003	.00007	.00003	1.03541	.00003	.00007	-	.00006
Nonindustrial Sectors																												
25 Agricultural activities	.88860	.96665	.61886	.00099	.21472	.11177	.12414	.00986	.04099	.00787	.00102	.00784	.75343	.85331	.52185	.00178	.36221	.15226	.02328	.00881	.00119	.01583	.00106	.16825	1.22158	.00062	.00002	.09346
26 Mining & salt	.00021	.00021	.00028	.00029	.00153	.00053	.00506	.04845	.00259	.00050	.00023	.00074	.00030	.00051	.00025	.00061	.00140	.00167	.02047	.07043	.00121	.00065	.00029	.00382	.00025	1.00054	.00001	.01034
27 Electric power & light	.00987	.01555	.00553	.05528	.03951	.02143	.02111	.02419	.01233	.01426	.02217	.03113	.01392	.01120	.00436	.02929	.05142	.03905	.03769	.06765	.02162	.02273	.02257	.01196	.00367	.05595	1.21187	.01499
28 Construction	-	-	-	-	.00006	-	-	-	.00001	-	-	-	-	-	-	-	.00010	-	-	-	-	-	-	-	-	-	-	1.00000
Total[a]	1.97166	1.99527	1.86429	2.36763	2.29039	1.51765	1.48258	1.42691	1.25584	1.25936	1.04524	1.17002	1.92995	2.46293	1.54504	1.67082	1.61290	1.40641	1.35570	1.25790	1.07641	1.26150	1.24694	1.31515	1.24139	1.09090	1.21243	1.54004

[a] Columns may not sum due to rounding.

Source: Constructed from data in Table 12, van der Veen, J. H., 1972b.

A closer examination of Table 9 reveals that unregistered industry groups numbered three through nine inclusive are more dependent on the output of the registered industrial subsector than are their registered counterparts, the industry groups numbered fifteen through twenty-one.[11]

The two textile industry groups provide a case in point. Direct and indirect requirements from the registered industrial subsector sum to Rs. 77,745 for every rupees one lakh of final demand for the products of the urban unregistered textiles industry group. Direct and indirect requirements from the registered industrial subsector sum to only Rs. 18,974 for every rupees one lakh of final demand for the products of the registered textiles industry group. A somewhat less dramatic case is provided by the chemicals and chemical products groups. For the urban unregistered units the direct and indirect requirements sum to Rs. 31,908; for the registered units the direct and indirect requirements sum to Rs. 26,956. The unexpected strength of the dependence of the urban unregistered subsector on the products of the registered subsector cannot be ignored. Policy measures designed to promote the growth of the urban unregistered industrial subsector may be frustrated by severe bottlenecks in the registered industrial subsector. Conversely, well designed policies which successfully promote the growth of the urban unregistered industrial subsector will increase the demand for the products of the registered subsector. Thus these policies would foster, indirectly, the growth of the registered industrial subsector as well.

It should be noted that Table 9 also suggests that forward linkages from urban unregistered industry groups to registered industry groups are rather weak.[12] The program to promote ancillary connections between small and large industrial firms apparently has had little impact on the units of

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the urban unregistered industry groups. As has been noted, estimates for the urban unregistered transport equipment group are not considered reliable. The urban unregistered miscellaneous manufactures group is dominated by the diamond cutting industry, an export oriented industry with limited connections to the rest of the industrial economy in Gujarat State. The totals in the machinery industry groups are almost identical: 1.26150 to 1.25936. The urban unregistered grain and oil milling industry group has strong backward linkages which are confined almost exclusively to agricultural activities, a group which itself has very weak backward linkages.

[11] The exceptions are the four industry groups noted in footnote nine (grain and oil milling, machinery, transport equipment, and miscellaneous manufactures) and the milk food and malted food industry group.

[12] Refer to pp. 49-50, above.

the urban unregistered industrial subsector in Gujarat State.

The Potential for Employment

In this section, some comparative estimates of the employment creation capacity of Gujarat State's industrial sector are developed. It is first necessary to estimate an employment/output vector which would apply to the twenty-four industry groups of the industrial sector. Estimates for employment and for output, by industry group, are drawn from the Annual Survey of Industries, the appropriate National Sample Survey Report, and from the data generated by the author. These estimates are presented in Table 10, below.

These employment/output ratios clearly support the widespread notion that expansion of the small industrial subsector would tend to create substantial employment opportunities. Unregistered groups generally are characterized by relatively high employment/output ratios. There are two exceptions to this generalization. One is the milk food and malted food industry group. The other is the textiles industry group. The textiles industry group is very large. Registered textiles units, on average, employ more than half again as many persons per unit of output as do urban unregistered textiles units. The size of the textiles group makes it imperative that the reason for this unexpected finding be understood.

The largest share of employment in the registered textiles group originates in spinning and composite mills. A sizeable fraction originates in the industry called "cotton ginning, cleaning and pressing." The industrial units involved in this industry often are cooperatives and usually are quite large in terms of the number of employees involved. Wages in this very labor intensive industry are very low. These characteristics are not frequently found in the registered textiles group. The inclusion of the cotton ginning, cleaning and pressing industry in the registered textiles industry group sharply biases the average for the group toward the high employment/output estimate presented in Table 10.

On the other hand, there are only two industry groups in the urban unregistered industrial subsector that provide fewer job opportunities per unit of gross output than the textiles group. This is due to the prevailing techniques of production in the textiles group which permit very few employees to process very considerable amounts of raw materials.

Granting the exceptions in milk food and malted food, and in textiles, Table 10 suggests that urban unregistered industrial units are characterized by relatively high employment/output ratios. If the elements of Table 10 are rearranged to form a single column, and if each element is multiplied across the elements of the appropriate row of the matrix presented in Table 9, then the result will be a 24x24 employment matrix. This employment matrix is presented below as Table 11.

Each element of the employment matrix gives the number of direct and indirect employment opportunities created by an additional demand of rupees

TABLE 10. Employment/Output Ratios, by Industry Group, for Urban Unregistered and Registered Industrial Subsectors, Gujarat State, 1964

	Industry Group	Employment/Output (one lakh) Urban Unregistered Subsector	Registered Subsector
1.	Milk food & malted food	7.5075	9.9811
2.	Grain & oil milling	4.1073	1.2047
3.	Other food & agro based	12.8171	5.8962
4.	Art silk & manmade fibers	7.7602	5.0426
5.	Textiles	5.7165	8.8275
6.	Wood, paper, leather, rubber	13.0818	12.5510
7.	Chemicals & chemical products	4.7718	2.8912
8.	Nonmetallic mineral products	18.4727	11.4441
9.	Basic metals & metal products	8.7371	6.4181
10.	Machinery	13.4434	10.8253
11.	Transport equipment	-*	15.9816
12.	Miscellaneous manufactures	16.0344	9.8341

* --Deleted as unreliable. See footnote 4, page 10, above.

Source: van der Veen, Jan H., 1972b, Appendix IX.

Table 11. Employment Matrix (24 x 24): Registered and Urban Unregistered Industrial Subsectors, Gujarat, 1964

PRODUCING GROUPS	PURCHASING GROUPS																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Unregistered Industrial Subsector																								
1 Milk food & malted food	7.52026	-	.05556	-	-	-	-	-	-	-	-	-	.02673	-	-	-	-	-	-	-	-	-	-	-
2 Grain & oil milling	.00567	4.10730	.00550	-	.00025	.00012	.00694	.00025	.00004	-	-	.00037	.00004	.02707	-	-	.00033	-	.00004	-	-	-	-	-
3 Other food & agro based	-	-	14.02075	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Art silk & manmade fibers	-	-	-	11.84796	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 Textiles	.00011	-	.00863	-	7.11790	.02172	.00017	.00017	.00383	.00623	.00006	.00011	-	-	-	-	.03481	.00126	.00006	-	.00006	.00086	-	-
6 Wood, paper, leather, rubber	.05926	-	.10845	.01138	.00720	14.27970	.08372	.06083	.00811	.04906	.04788	.02486	.00026	-	-	-	.00013	-	.00039	-	.00013	.00157	-	-
7 Chemicals & chemical products	.00277	.00167	.00721	.00033	.00735	.08427	4.79084	.06666	.01288	.00525	.00052	.25009	.00138	.00177	.00105	.00052	.00773	.00210	.02090	.00091	.00033	.00100	.00029	.00153
8 Nonmetallic mineral products	-	-	-	-	.00499	.00055	-	19.89695	.55732	.10825	-	.01016	.00018	-	-	-	-	-	-	-	.00369	.01090	-	-
9 Basic metals & metal products	.00044	-	.00017	-	.07925	.00900	.00035	.00009	8.89603	1.42555	-	.16146	.00227	.00070	.00009	-	.00070	.00026	.00070	.00017	.05828	.16408	.00140	.00035
10 Machinery	-	-	-	-	.00081	.00013	-	-	.00013	13.63833	-	-	.00013	-	-	-	.00148	.00027	-	-	.00363	.39658	.00013	-
11 Transport equipment	-	-	-	-	-	-	-	-	-	-	65.43880	-	-	-	-	-	-	-	-	-	-	-	-	-
12 Miscellaneous manufactures	.01555	-	.00016	-	.00673	.00032	.01684	.00032	-	.00096	-	16.04017	.00016	-	-	-	.00016	.00016	.00272	.00016	-	.00016	-	.00016
Registered Industrial Subsector																								
13 Milk food & malted food	.36990	-	.01827	-	.00020	.00010	.00050	-	-	-	-	.00010	10.84267	.00010	-	.00010	.00020	.00020	.00289	.00010	-	.00010	-	.00020
14 Grain & oil milling	.00278	.00005	.07506	.00002	.01543	.00200	.09979	.01206	.00294	.00057	.00002	.00529	.00006	1.86686	.00004	.00005	.02183	.00093	.00188	.00010	.00005	.00052	.00002	.00013
15 Other food & agro based	.03644	.00018	.03673	.00018	.00130	.00041	.00330	.00024	.00955	.00873	.00018	.00071	.00077	.00035	5.89638	.00041	.00106	.00136	.01680	.00071	.00029	.00083	.00024	.00100
16 Art silk & manmade fibers	.00005	-	.00040	3.84876	.21769	.00131	.00010	.00020	.00908	.00187	-	.00030	.00050	.00015	.00005	8.05954	.08295	.00303	.00025	.00010	.01145	.00237	.00030	.00010
17 Textiles	.00106	.00018	.02189	.00168	5.50368	.08907	.00662	.02401	1.02355	.16869	.00132	.01942	.00609	.00053	.00044	.00309	9.37533	.33739	.01598	.00583	.00962	.19447	.00212	.00521
18 Wood, paper, leather, rubber	.02309	.00351	.45673	.06200	.10618	2.84632	.20408	.06112	.02096	.01619	.04794	.02284	.22617	.01142	.01343	.11509	.14948	13.44162	.35607	.22065	.05297	.50693	.07204	.18977
19 Chemicals & chemical products	.03357	.03325	.04629	.04178	.24604	.08318	.60279	.04383	.03331	.00836	.03920	.10206	.03417	.07436	.04227	.08705	.22086	.27735	3.45973	.15020	.04366	.09226	.04444	.20846
20 Nonmetallic mineral products	.00309	.00561	.00423	.00332	.02060	.00755	.04852	2.45785	.09544	.01797	.00309	.00984	.01316	.01568	.00332	.00698	.01785	.02621	.27512	11.86295	.00767	.01064	.00366	.01671
21 Basic metals & metal products	.02747	.00071	.00533	.00090	.01348	.00777	.01720	.00558	.02644	.12701	.00090	.07342	.25339	.08260	.01393	.00193	.01829	.01752	.07201	.02304	6.49820	.36654	.15590	.03658
22 Machinery	.00043	-	.00032	-	.00022	.00162	.00032	.00011	.00043	.00217	-	.00119	.00401	.00130	.00022	.00011	.00032	.00758	.00130	.00043	.09959	11.03585	.00238	.00065
23 Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.80171	-
24 Miscellaneous manufactures	.00030	.00030	.00039	.00030	.00275	.00108	.03117	.00069	.00030	.00010	.00030	.00216	.00030	.00059	.00030	.00069	.00069	.00207	.02567	.00108	.00030	.00069	.00030	10.18233
Total[a]	8.10224	4.15276	14.87207	15.81861	13.35205	17.43622	5.91325	22.63096	10.70034	15.58529	65.58021	16.72455	11.41244	2.08348	5.97152	8.27556	9.93420	14.11931	4.25251	12.26643	6.78992	12.78635	19.08493	10.64318

[a] Columns may not sum due to rounding.

Source: Constructed from data in Tables 13 and 14, van der Veen, J. H., 1972b.

one lakh for the goods produced by the industry group identified at the head of the column. It should be stressed that the employment potential of only the industrial sector, disaggregated by industry group, is being considered.

A review of the column sums shows that, in every case but one, the urban unregistered industry groups create more direct plus indirect industrial employment opportunities than do the corresponding registered industry groups.[13] Thus, for example, an increase in autonomous demand of rupees one lakh for the products of the urban unregistered textiles industry group creates, directly and indirectly, more than thirteen industrial jobs. A similar increase in demand for the products of the registered textiles industry group creates, directly and indirectly, less than ten industrial jobs.

In most cases, there are two major factors at work. First, inter-industrial linkages are stronger for the units of the urban unregistered industrial subsector, particularly linkages between units in the same industrial subsector. Second, the number of direct employment opportunities created in the urban unregistered industrial subsector is greater than is the case in the registered industrial subsector.

Conclusions

It is not surprizing to conclude that goods manufactured in the urban unregistered industrial subsector are produced in a manner which yields greater employment opportunities than goods manufactured in the registered industrial subsector. Since the wage rates are lower in the unregistered subsector, the greater number of employment opportunities per unit of output need not imply higher total emoluments per unit of output. This must be duly noted by policy makers in India.

Policy makers also must recognize that goods manufactured in the urban unregistered subsector and those manufactured in the registered subsector are not usually ready substitutes for one another. It is not correct to argue that, in order to enhance employment opportunities, all that is required is a shift in production, industry group by industry group, from the registered to the urban unregistered subsector. It is more reasonable to argue that a shift in the pattern of aggregate demand is required first. If such a shift in the pattern of demand should occur, and should that shift contribute to a spurt in the demand for goods produced by urban unregistered units, then employment opportunities will not be confined to the unregistered industrial subsector. As has been shown in this chapter, the urban unregistered subsector is a significant component of the interdependent industrial structure of Gujarat State.

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[13] The exception involves the two milk food and malted food industry groups. While the income elasticity of demand for the products of these groups is high, the absolute level of demand is small. It should be noted that the urban unregistered units of these groups are very much involved in trading rather than manufacturing activities. This is reflected in the extremely high share of goods sold as received in the total value of purchased inputs.

CHAPTER VII

SUMMARY AND POLICY IMPLICATIONS

Summary

In general, the manufacturing units which comprise the urban unregistered industrial subsector analyzed in this study are characterized by relatively low capital/emoluments ratios and by relatively high employment/capital ratios. Returns on invested capital are good. Examination of the particular industries involved strongly suggests that high profits can induce rapid expansion.

The proprietors of these urban unregistered industrial units possess a strong commercial orientation. They operate small units, for which flexibility is a highly prized asset. They operate in imperfect markets. As a result, they profitably expend considerable energy on purchasing raw materials and on marketing their products. The marginal gains to be made from improvements in the technique of production or the marginal gains to be made from deep concerns with technology are not sufficiently attractive. Any policy which aims at promoting either the size of this subsector or the size of the individual units which comprise this subsector must take into account the pronounced commercial orientation of these very small industrial units.

These units are tightly linked to the rest of the industrial economy of Gujarat State. They exhibit strong forward linkages to other urban unregistered industrial units and strong backward linkages to the entire industrial sector. The assumption that the units of the unregistered subsector display only weak linkages to the rest of the industrial economy is not supported.[1] Any policy which is designed to promote the expansion of the unregistered industrial subsector and which fails to take into account the economic interdependence of the urban unregistered units of this subsector probably will meet unexpected constraints before useful results have been achieved.

Policy Implications

There is little doubt that the commercial orientation of the owners of the urban unregistered industrial units examined in this study reduces their capacity to deal effectively with problems of production. From the point of

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[1] This assumption is implicit in early formulations of India's input-output models. In general, this assumption probably results from conceptually lumping together the urban unregistered industrial units, as defined in this study, with the far more numerous rural unregistered industrial units and with the very small urban units, such as one or two man shoe repair shops, bicycle repair shops and tailoring shops, which tend to supply consumer services rather than to manufacture physical goods.

view of the policy maker, that commercial orientation results in foregone production of industrial goods. At the same time, that commercial orientation is a clear response to economic incentives.

The obvious solution to this dilemma is to reduce the general shortage of material inputs. Force paced industrialization precludes this solution in the near term. But the windfall profits which lie beneath the commercial orientation of these industrialists can be reduced in the near term. Fully effective price controls or completely free markets would, presumably, minimize these windfalls. However, it is unlikely that the Government of India would wish to exercise control over the prices of a wide variety of goods with the precision and the comprehensiveness that full effective price controls would demand. Recourse to completely free markets and the unrestrained exercise of economic power is equally unlikely.

A more plausible method of reducing windfall profits might involve public investments in certain kinds of infrastructure facilities.[2] These investments could be aimed at reducing market imperfections. Such investments would have three effects. First, they would induce small industrialists to seek efficiencies in production rather than to seek windfalls in purchasing or in sales. Second, they would reduce the average cost of material inputs purchased by urban unregistered industrial units and provide an opportunity for at least temporarily increased profits. Third, they would induce merchants and traders, as well as commercially oriented industrialists, to seek other lines of activity, including activities involving additional investments in industrial capital. Of course, since public funds to be invested in infrastructure facilities are themselves scarce resources, many problems remain.

There is one relatively inexpensive method of reducing windfall profits which are caused by market imperfections. Insofar as administrative interference contributes to these market imperfections, it is reasonable to suggest that administrative interference be reduced. This is not to suggest that government intervention should be eliminated. But a proper evaluation of the role of government in various markets should include the cost to society of the corresponding strength of the commercial orientation of small industrialists. Government intervention frequently does contribute to market imperfections, and deliberately so. But it is unlikely that this particular social cost has been included in the political calculus that justifies substantial governmental involvement in those markets in which small industrialists purchase their inputs and, to a lesser degree, sell their output.

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[2] Large scale infrastructure investments frequently turn out to benefit the wealthy and the powerful. While there are exceptions, such as some electrification schemes, these infrastructure investments infrequently generate benefits for those they are initially designed to help.

Public infrastructure investments aimed at reducing market imperfections might facilitate the transmission of the information between traders and facilitate the transmission of goods between industrialists. The general attitude which downgrades the role of traders does not warrant official refusals to help traders act efficiently. Since traders contribute a great deal to dampening fluctuations caused by market imperfections, aid grated to traders will release capital for alternative uses, will result in lower materials costs to small industrialists, and will reduce the pronounced commercial orientation of small industrialists.

In addition to traditional public infrastructure investment projects, such as electrification schemes and road construction projects, public investment in storage facilities, information networks and communication systems probably would provide excellent returns. Public projects designed to reduce uncertainty and insufficient knowledge will contribute to reducing the windfall gains caused by market imperfections.

A second set of policies which also emphasize public infrastructure investments might be designed to take advantage of the considerable nonproduction economies of scale of small industrial enterprises. Scale economies often are found in purchasing, packaging, distribution, and sales. Unregistered industrial units which cluster in a single location are able to take advantage of these kinds of economies of scale.[3] Public policies designed to foster the growth of clusters of unregistered industrial units probably would yield substantial benefits.

Clustering offers direct advantages to small manufacturers by encouraging bulk purchasing of certain raw materials such as coking coal, copper wire, pig iron, scrap steel and grey cloth. Clustering offers indirect advantages to small manufacturers by forcing the traders with whom they deal to use more centralized markets, therby reducing the traders' windfall profits. Finally, clustering suggests that the imperfections caused by uncertainty of timing and delivery of material inputs will be reduced as small units, acting together, gain in bargaining power.

A third set of policies relates to the difficulty faced by small industrialists in obtaining easy access to credit. Improved access to short term credit remains critical to the growth of small industrial units.[4]

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[3]A brief discussion on the phenomenon of clustering, and on the relationship between that phenomenon and the commercial orientation of urban unregistered industrial units in Gujarat State, can be found in the author's doctoral dissertation (van der Veen, J.H., 1972, Appendix III).

[4]State and central governments in India are particularly sensitive to the credit problems of small industrialists. The recent nationalization of banks was an action which was addressed, at least in part, to these problems. These governments also are aware of some of the other problems facing small industrialists. Industrial estate programs have encouraged clustering. Materials purchasing programs are examples of public infrastructure investments.

The source of the greatest amount of short term credit to unregistered industrial units is the trader who supplies raw material inputs. While ready access to other sources of short term credit is unlikely to be translated directly into increased productive capacity, it is very likely to be a factor which enhances the bargaining power of the small industrialist vis-a-vis the trader. This improved bargaining position will result in lower profits in trade, higher profits in manufacturing, and an incentive for traders to enter the industrial sector as industrial entrepreneurs.

A brief word of caution is in order. Policies designed to promote the growth and expansion of the unregistered industrial subsector must be formulated with the high degree of industrial interdependence of these units kept firmly in mind. It would be wholly inappropriate to expect the unregistered subsector to expand rapidly without either a corresponding expansion of the registered subsector, or a shift in the structure of production of the registered subsector towards goods demanded by unregistered industrial units. It is likely that both expansion and a structural shift would occur.

Conslusions

This study examines urban unregistered industrial units in Gujarat State. The underlying premise of this study is that the application of new technologies in agriculture has resulted in a pattern of expenditure which is somewhat different from the pattern which prevailed prior to the "green revolution". These second round effects of the "green revolution" contribute to a shift in production patterns favoring the urban unregistered industrial subsector.[5]

Quite apart from these "natural" second round expenditure effects, the Government of India actively is promoting the growth of the small industries subsector. The application of new technologies in agriculture has released the food constraint on employment in the near term. It is therefore more important than ever that the government seek to conserve the constraining scarce resource of capital. Facilitating the growth of unregistered industrial units and facilitating the expansion of the individual units of that industrial subsector offer a means of doing so.

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[5]There are two reasons for suggesting that this new production pattern favors small industrial units. First, the primary beneficiaries of the "green revolution" are rural landholders. Their consumption patterns differ from those of the urban dwellers who have been the primary source of final demand for industrial consumer goods in the past. Their investment patterns differ from those of the large urban manufacturers who have been the primary source of final demand for industrial producer goods in the past. Subjective observation suggests that this new expenditure pattern is less import intensive and more small industry intensive than the old pattern. Second, small industrial units are more flexible. Accordingly, they can develop the capacity to meet new demands more readily than can large industrial units.

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