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STRUCTURE AND DYNAMICS OF URBAN ECONOMY
Study of Linkages between Formal and Informal Sectors in Ahmedabad and Visakhapatnam

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CONTENTS

PREFACE

This study on the **Structure and Dynamics of Urban Economy** was designed (i) to arrive at an understanding of employment and income generated in various sectors of the city economy, (ii) to examine how the city income changes over time, and (iii) to analyze the pattern of industrial linkages, with a view to assessing the city's capacity to generate employment and income. The study also focused on developing an appropriate methodological framework for examining both the economic structure as well as industrial linkages at the city level, and to explore the availability of data on city economy in published and unpublished secondary sources in India.

Two cities, Ahmedabad and Visakhapatnam were selected as case study cities. These cities being at different stages of industrialization were expected to reveal different patterns of structure and dynamics of urban economy. Ahmedabad is a city where there is a perceptible decline in the traditional manufacturing activities while Visakhapatnam is a newly industrializing city. It is hoped that conclusions drawn from this study of two different types of cities would provide useful insights into the structure and dynamics of urban economy. Based on the analyses of the two cities the study has made several recommendations to support the development of urban economies in the country.

I am grateful to the Planning Commission, Government of India, for sponsoring this study, and also for giving very valuable and substantive inputs during the course of study. The Advisory Committee of the project provided valuable guidance in refining the study objectives and methodology.

I would like to express my gratitude for the Advisory Committee members: late Shri D. N. Basu, Advisor, Planning Commission, New Delhi, Prof. S. P. Kashyap, Sardar Patel Institute of Economic and Social Research, Ahmedabad, Prof. Amitabh Kundu, Jawaharlal Nehru University, New Delhi, and Dr. Dinesh Mehta, then Director of the National Institute of Urban Affairs, New Delhi, who provided valuable guidance for the study. I would also like to acknowledge the contribution made by Prof. Bishwapriya Sanyal of the Massachusetts Institute of Technology, Cambridge, U.S.A., who advised the research team while he was a Visiting Fellow at the Institute in 1995.

This study was conducted with the help of local resource persons in the two cities and their team of researchers. I would like to thank the two local resource persons, namely Prof. H. M. Shivanand Swamy of Center for Environmental Planning and Technology, Ahmedabad and Prof. N. Bhaskara Reddy of Andhra University, Visakhapatnam.

The study was coordinated by Dr. Pushpa Pathak, who was Associate Professor at the Institute during the course of this research project. Dr. Pathak played the lead role in designing and conducting the study. She was ably supported by a team of researchers, in particular by Mr. M. Ahmed and Ms. Basudha Chattopadhyaya. I would like to place my appreciation of the efforts made by the study team at NIUA.

Finally, I would like to mention that at the time of the revision and finalization of the draft report, Dr. Pathak had moved as an Urban Specialist to the Water and Sanitation Program, World Bank, New Delhi. I appreciate the cooperation of the Water and Sanitation Program for sparing Dr. Pathak's time to facilitate finalisation of the study report.

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Chapter 1

INTRODUCTION

Cities play a key role in the development process. Mounting empirical evidence, both from developed and developing countries, confirms that cities are in general productive places that make more than a proportionate contribution to the national economic growth. The role and contribution of cities, in particular large metropolitan cities, in the development of the national economy is essentially due to the concentration of industrial and various economic activities within them. The higher productivity of urban centres is due to the scale economies, agglomeration economies and access to markets. Higher productivity in a competitive market also implies higher wages. In a simple equilibrium model, the size of cities is related to the economic efficiency. Cities with large productivity advantage expand rapidly and also command high wages as well as cost of living. The city-size distribution is thus reflective of the relative economic efficiency of cities and smooth functioning of the market (Kelly and Williamson, 1994).

The twin processes of economic development and urbanisation are associated with locational and sectoral shifts of labour. The income elasticity of demand for manufactured goods being greater than that for food and agricultural products, this sector has higher potential for economic expansion and labour absorption (Mills and Becker, 1986; and Oberai, 1993). Therefore, urbanisation generally entails shift of labour from lower income predominantly agricultural activities to higher income industrial and service sectors. Such locational and sectoral shifts of labour generally imply higher average income level which helps in attaining faster pace of over all economic growth at the national and regional levels.

Attention has been drawn to the basic differences in the process of urbanisation in the developed and developing countries. There is a positive relationship between urbanisation and growth of technologically advanced manufacturing activities in the modern cities in both types of countries, particularly in the early stages of industrialisation and development. But, uprooted and changing population and reserve army of unemployed for the non-existent industry has also been found to be the foundation of urban growth in developing countries (Castells, 1977). High levels of tertiary employment in cities in advance stages of urbanisation in the developed countries is viewed as a positive sign of economic growth where as the same is seen as an indicator of `urban involution' in the developing counties, where urbanisation proceeds at a more rapid pace than expansion in manufacturing sector employment (McGee, 1971). Some scholars concerned with the understanding of the structure of developing economies have tried to explain the process of urbanisation without commensurate degree of industrialisation as the time-lag between capitalist penetration and transformation of backward societies. They have

also perceived the existence of the subsistence or informal sector of urban employment in the interim period as a transient phase. Another set of studies have attempted to prove that that the so called reserve army of employed and underemployed in the informal sector, particularly those self-employed in the petty commodity production as well as in the tertiary activities, are a productive and durable component of city economy in the developing countries. Since the publication of the report of the International Labour Organisation in 1972, the term informal sector has also gained respectability in the development policy dialogue (Peattie, 1987).

Despite the empirical evidence supporting that urbanisation is a distinctive feature of the national development process and that cities have played a dominant role in the economic, cultural and political spheres, their role as the "anvils of civilisation" and "engines of growth" is not included in the national policy dialogue. The role of cities in economic growth and development is also not reflected in the macro-economic policies. Even the recent structural adjustment and liberlisation programmes of most developing countries, including India, have ignored the important urban dimension while aiming for liberalisation and greater economic efficiency and growth. The policy makers and the popular media are overwhelmed by the demographic aspect and problems associated with city growth. Large cities are perceived to be "parasitical" and their growth is viewed as a threat to social betterment (Peterson et. al, 1991). The contribution of cities in the national and regional economic growth is relegated to the background. The urban policy prescriptions which emerge from such a restrictive view of the urbanisation process often propose containment of the growth of large cities, reducing migration to cities, and encouraging a dispersed and balanced urban spread. The fact that cities have continued to grow at fast pace despite these policies suggest that market forces have shaped the pattern and level of urbanisation more than public policies. Indian policies have at best caused distortions in the market and led to misallocation of resources. Dispersal of industries to backward areas and efforts to encourage the growth of small and medium towns have huge economic costs and result in low returns on investment of scare public resources (Pathak and Mehta, 1995).

Fast pace of urban growth and prosperity in the developing countries is occurring along with high levels of urban unemployment, persistence of poverty, proliferation of slums and squatter settlements and differential access to basic services and amenities. Indian urbanisation is not without its negative consequences. Rapid expansion of cities is often found to be unhealthy and inefficient, functioning more like brakes on development rather than engines of growth. Several studies on the level of municipal services in Indian cities indicate a mismatch between the resources available for urban development and rapid growth of urban population leading to marked atrophy in city development. There is a great deal of secondary and primary evidence to draw attention of the policy makers toward these problems. This study is based on the premise that without increasing the over-all productivity and income levels in the cities it will be impossible to find sustainable solutions to these problems, and therefore, focuses on the economic structure and growth dynamics of urban economy in India.

MACRO-URBAN PERSPECTIVE IN INDIA

The past two decades have witnessed a universal trend towards major macro-economic policy changes in favour of more market-based economic growth strategies. Latin American countries have taken a head start in following structural adjustment programme in the 70's, East Asian countries have followed suit in the 80's and other Asian and African countries have embarked on the structural adjustment path to development and integration in the world economy in the 90's. The macro-economic policy adopted by the Indian Government in 1991 follows the same trend. It is aimed at: (i) restoring macro-economic stability; (ii) integration with the global economy; and (iii) increasing economic efficiency. The policy measures include deregulation of industries, disinvestments in public sector enterprises, encouraging greater participation of the private sector, liberalisation of trade and foreign investment, and changes in the fiscal policy.

It is perhaps too early to assess the impact of these policies on the urban sector in India. But broad patterns of likely impact can be visualised on the basis of the expected consequences of certain macro-economic policy measures and experiences of other countries where similar economic policies have been adopted. Accordingly, the new industrial and trade liberalisation policies are expected to accelerate the pace of industrial and economic growth in general. This will also mean higher rate of urban population growth in the 90s as against the slower urban growth experienced in the 80s. Large cities with better infrastructure will attract most of the industrial investment causing more imbalance in the short-term. Similarly, foreign capital is also likely to be invested in metropolitan cities and in a few better-placed large cities. States will compete with each other for attracting both domestic and foreign investment and will become selective in providing the necessary infrastructure at best locations. This will induce further concentration of economic activities and population, in addition to concentration that is likely to be brought about by market forces. It is also expected that fast pace of urban growth and prosperity will take place along with an increase in urban unemployment, a decline in real wages, persistence of poverty, proliferation of slums and squatter settlements, and a general deterioration in living standard in the short-term (Mehta and Pathak, 1994). Strengthening the city economy can certainly mitigate the adverse effect of macro-economic changes to some extent. The existing pressures on the available resources and infrastructure in most large cities in India makes it all the more necessary to look for new initiatives which will augment the capacity of these cities for sustaining further economic growth.

The magnitude of urban growth in India has been spectacular; it quadrupled from 50 million in 1947 to 218 million in 1991. India's urban population in 1991 accounted for about 26 per cent of the country's total population. India's decadal urban population growth rate declined sharply from 46.14 per cent in 1971-81 to 36.47 per cent in 1981-91. Some scholars attribute the slowing down of urban population growth rate to under-enumeration of urban population while others consider a decline in the volume of rural-urban migration, identification of

relatively fewer new towns and increasing concentration of population in rural vicinities of large urban centres to be more important factors. However, if the likely impact of macro-economic reforms initiated in 1991 is taken into consideration, India's urban population is expected to grow at the rate of 40-45 per cent in 1991-2001 and at a further accelerated rate of 45-50 per cent in 2001-2011. This means that India's urban population will be approximately 365 million in 2001 and 530 million in 2011 (Pathak and Mehta, 1995). However, some scholars feel that the envisaged growth processes leading to rapid urbanisation in the post-liberalisation period seems unrealistic owing to highly capital intensive technology likely to be used by the multi-national companies, decline in manufacturing employment, increase in casual and self-employed workers mostly in the tertiary sector employment and limits to labour absorption capacity in the urban informal sector (Kundu, 1997).

In spite of the slowing down of urban population growth rate on an average in the country in the 1980s and in the 1990s, there has been significant increase in the number of metropolitan cities in India during this period. There were 9 metropolises with population of one million and above in 1971, 12 in 1981, in 1991 and 35 in 2001. Total population of the 23 metropolises in 1991 was about 71 million, which was nearly one-third of the country's urban population. The share of the 35 metropolises in India's urban population (285 million) increased to about 38 per cent in 2001. The population growth rate of the four largest metropolises, namely Bombay, Calcutta, Delhi and Madras, has started slowing down in comparison to the growth of some of the new metropolises, such as Bangalore, Surat, Jaipur and Kochi. Rapid addition of new metropolises and changing population growth patterns of these cities is an indication of some dispersal of urban population concentration taking place in India. The four largest metropolises, however, are still recording substantial increase in their absolute population and continue to occupy an important position in the national economy.

India has already embarked on the path of gradual transformation from a predominantly rural society to more urbane society. There are significant structural shifts in the economy in terms of decline in the share of primary sector output and employment. Over time a smaller work force will depend on agricultural employment in the rural areas. The liberalised market based economic policies being pursued since the past seven years are likely to further accelerate the process of urbanisation and sustain the dominant role of cities in the national economy.

The employment trends between 1971 and 1991 reveal that in general there has been some decline in the manufacturing employment and increase in service sector employment in urban India. But, city level analysis of the 23 metropolises reveals a mixed pattern. In 16 of these cities, the manufacturing employment has increased between 1971-81 and decreased between 1981-91, 4 cities show continuous decline, while in 2 cities high manufacturing employment has persisted with an increasing trend and 1 city has registered an increase in manufacturing employment in 1981-91 after the decline between 1971-81 (Mehta and Pathak, 1994). The industrial location policy of shifting industries away from the metropolises adopted

in the 1980s and the decline of selected industries such as cotton textiles in Bombay, Ahmedabd and Kanpur and jute industry in Calcutta have been the major cause of decline in industrial employment in large cities in India. However, manufacturing will continue to be an important sector of employment in Indian cities in the near future. With a more positive attitude towards the city in the post-liberalisation period, the industrial location policies of the state governments may be reversed and cities may even regain and expand its productive base to some extent. The service sector, with concentration of highly skilled labour and distinct agglomeration advantage in the metropolises and large cities is likely to grow further in the long run.

The response to emerging challenges posed by rapid urban growth in India has largely been of an unplanned and ad hoc character. This is because the process of urban growth is rarely perceived in terms of its productive contribution and inter-relationships with the macro-economic processes in their totality.

In a policy context wherein, one of the critical aims of urban strategy is to facilitate the structural adjustment of the economy, there is a pressing need to consider and examine, the contribution of urban development to the national economy, in comprehensive macro-economic terms, rather than in an isolationist rural - urban dichotomous framework. Such focus is necessary because the productivity of the urban economy is affected by factors and policies that originate at both the national and city levels; and the linkages between the two levels go in both directions, that is while macro-economic policies affect the urban economy urban economic activities have macro-economic consequences.

OBJECTIVES OF THE RESEARCH STUDY

The ultimate goal of this study is to arrive at a comprehensive understanding of employment and income generated in various sectors of the city economy and how it is changing over time. The second most important objective of the study is to analyse the technological, sectoral and spatial linkages of the industries located in the selected cities for assessing their sectoral and regional inter-dependence and its impact on the city's capacity to generate employment and income.

There is a lack of an appropriate methodological framework to examine both the economic structure as well as inter-regional and inter-sectoral linkages of urban economy at the city level. A principal aim of this research study is to develop such a methodology and apply it to specific situations. In this development of the methodological framework, the following key objectives have been kept in view:

- To assess the economic base and interaction of various sectors of urban economy.

- To analyse the pattern of urban economic growth and sectoral shifts in urban economy.

- To identify the spatial linkages of the urban economy.

- To examine the nature of interdependence between the formal and the informal manufacturing activities and services.

- To assess the impact of recently initiated liberalisation policies on cities in general, and on the industrial structure, organisation of production, quality and quantity of output, product diversification and technology upgradation.

- To identify specific activities and programmes in support of the urban economy.

A significant issue in urban and regional economic analysis is the absence of ready data base, available in published secondary sources. Most of the relevant statistics are compiled at the state and district levels. Furthermore, information on the unregistered sector of industries and trade and commercial enterprises is totally absent. Hence, a related objective of the present study is to explore the availability of data on city economy in published and unpublished secondary sources and to make a case for developing systematic information on urban structure in cities of varying size and types in India.

ANALYTICAL FRAMEWORK

Structure of City Economy

There have been a few studies of city level economy, based largely on secondary data and simple trend-based models of projects. However, detailed exercises of the city level economy in India are non-existent. Two notable exceptions are a Study on Facets of Urban Economy - A case of Ahmedabad by Kashyap, Tiwari and Veena; and the ORG/EPd's Study on Regional Economic Analysis for Visakhapatnam Metropolitan Region (Kashyap, Tiwari and Veena 1984; and ORG & EPD, 1988). The Ahmedabad study has made a pioneering attempt to understand the structure of city economy in terms of employment as well as estimated incomes generated in various sectors of the city economy. The study of Visakhapatnam has also estimated the income of each sectors of the regional economy separately, which includes large segments of rural areas falling within the metropolitan region. However, the income estimates have not been presented in a comprehensive city economy-wide framework to reveal the relative importance of various sectors. For analysing the structure of the city economy of the two case study cities, in terms of employment and income, the method adopted in the Ahmedabad has been followed. As per this method, estimation of income includes value added for the manufacturing sector and income approach (wages and salaries) for the service sector.

The census data on nine-fold industrial classification of workers has been used as the sectoral base for the purpose of estimating employment and incomes at the city level.

Industrial Linkages

In addition to the above stated two studies, very few attempts have been made in India to examine the inter-sectoral linkages within a city economy using an input-output framework. The ORG/EPD study which focused on projecting economic activities, income and employment states that, "ideally projections (of economic activity, income and employment) can be made entirely within the framework of the inter-regional input-output model, but this would obviously become highly complex and perhaps not much rewarding in the context of the availability of reliable data, particularly of non-manufacturing sector and unorganised sector and also the range of assumptions involved (ORG & EPD, 1988 p. 13.1). The study on Ahmedabad tried to examine the inter-industry and inter-sectoral linkages from the purpose of developing a city level social accounting matrix. The study adopted a lead and linked sector approach to project the regional income (Kashyap, Tiwari and Veena 1984). Another noteworthy study of linkages between formal and informal manufacturing activities conducted in an input-output framework is the study on Kanpur by Tiwari (Tiwari, 1990). A study by Pathak (1984) has analysed the industrial linkages of Dhampur in Uttar Pradesh, both backward and forward linkages, from the purpose of assessing the `degree of openness' of small town economy in a regional framework. On the other hand, Basu (1974) has focused his attention on the business linkages and communication linkages as indicators of inter-sectoral commodity flows prevailing in a metropolitan economy, namely Bombay. Although not entirely based a conventional input-output framework of analysis, the study of Tiruchengodu in Tamil Nadu by Kundu (not dated) attempts to explain the integration of a medium sized city with the national economy in terms of the high degree of decentralisation of the production process of the key industries located in the town and patterns of raw material purchase and output disposal.

The analytical framework for understanding the structure and dynamics of an urban economy, requires identification and measurement of direct relationships as well as indirect (through inter-activity effect) and induced (through income changes) repercussions effects of exogenously determined influences. Several questions arise when considering the income and demand effects of urban investment. First, the relative extent to which the direct income effects are transmitted within the urban area, on the one hand, and immediately siphoned off outside the area, on the other hand. Secondly, the areas to which the newly generated direct demand (urban development expenditures) and indirect demand (consumption and inter-industry demand) will be directed. Thirdly, the extent to which the newly generated demand is likely to be met by increases in production within the urban area, the extent to which it is likely to be met by production elsewhere and the extent to which it will spill over into demand for imports and into inflationary pressure on prices.

In the conventional Leontief input-output (I-O) analysis, the level of the activities is defined as a linear function of the final demand vector. The major goal of the conventional I-O model is to trace the total effect of changes in the final demand vector. However, in regional analysis, it is often necessary to estimate the total effect of changes in the overall activity of a sector (measured by total output of a sector) rather than the final demand vector alone.

At a regional level (unlike the national I-O analysis), the final demands for each sector are difficult to estimate, as such information is scarce and often unreliable. Questions of changes in a particular sector and its impact on the regional economy are more useful in urban economies, but the Leontief I-O provides only a partial answer to this question. In the modified approach, the coefficient matrix represents the demand for ith sector output generated by one unit of gross output of jth sector. It represents the total influence of j upon i.

Szyrmer (1992), provides the logic of the total flow model. According to this, suppose a sector j consumers commodity i, both directly (coal to produce steel) and indirectly (coal to produce power used by steel). If industry j shifts its purchase of commodity i from within the region to outside the region, the domestic output of commodity i would decline, but the output of j will not be affected. Such occurrence is quite common at regional level where industries constantly seek to reduce the costs of inputs and change the suppliers. To handle such phenomenon through a conventional I-O approach will be impossible (as it is based only on the final demands), and a two regional trade flow based input-output framework is extremely difficult to construct. The total flow analysis is based on the standard I-O algebra, but reformulates the conventional analysis to suit the more important regional economy related questions.

Since the main aim of this study is not preparation of input output tables for the selected cities, but analysis of linkages or interdependencies of various types, it was decided to apply a modified input output framework. This includes understanding of linkages established through the production process as well as spatial linkages of lead industries located in the two case study cities. Both backward and forward linkages have been included in the analytical framework. While analysing the spatial linkages, the spread of industrial activities in the peripheries of the cities concerned has been taken into consideration. An attempt has also been made to develop a suitable `index of intensity' of transactions taking place between sectors/industries located in these cities. While designing modified input-output framework to study the urban economy special emphasis has been placed on the following aspects:

i. The urban economy being an essentially `open' economy, a suitable method need to be designed to trace its linkages with the rest of the economy. Unlike the national input-output models, for the urban economy it is extremely important to distinguish between the locally produced and the imported inputs;

ii. Distinguish between formal and informal manufacturing and services and estimate their inter-dependencies;

iii. Lead and linked sector analysis within the input-output logic using primarily the backward linkage effect. This analysis utilises the production linkages in terms of inter-sectoral interdependence and also the import coefficients to assess the impact of growth in the lead sector on the local economy.

iv. With a view to understanding the final use pattern of goods and services produced by formal and informal sectors of the urban economy, the linkages from the demand side would also be considered.

The basic structure of the modified model is similar to that of Leontief Input-Output model and the data requirements are thus identical. The key requirement for such an analysis is that of a transaction table containing basic information on total flow of goods and services across the sectors. The data for the transaction table has been generated by conducting a detailed primary survey. The number of sectors in the transaction table depends on the nature and type of formal and informal activities in the selected cities. Thus, given the data limitations and the absence of literature on Indian urban economic studies, the study of inter-sectoral linkages presents a challenging task for the researchers.

Impact of Liberalisation on City Economy

Although there is a growing concern about the role of cities in national and global economy, such concern is generally not reflected in the national economic development policies. Macro-economic policies are by and large non-spatial in character and are not accompanied by distinct urban policy specifications. These policies, however, have implicit locational implications which affect the size and economy of cities.

The impact of macro-economic policies on the urban system in general, and on the cities in particular, is not understood and analysed systematically. The existing research on macro-economic changes and city development is also not adequate for arriving at generalisations as well as for drawing useful lessons of experience. However, an examination of the nature and strength of the relationship between national economic development and the city has been a matter of interest for a number of scholars. Attempts have been made to arrive at generalisations regarding correlation between economic development and urbanisation (Hariss, 1988; and Mills and Becker, 1986). Specific attention has also been given to the determinants of city growth within the broader framework of national economic development (Kelly and Williamson, 1984; and Oberai, 1993). Of late, an examination of the role of city in the context

of the changing world economic order has also gained momentum (Knight and Gappert, 1989). Detailed studies have been conducted which focus on global cities, such as New York, London and Tokyo (King, 1990; and Sassen, 1990).

In comparison, there are fewer studies which examine a wide spectrum of cases and present a broader understanding of the relationship between macro-economic policy changes and city growth. Some attempts have been made to assess the urban implications of structural adjustment progamme (e.g. Peterson et.al, 1991). Attempt has also been made to analyse the impact of macro-economic changes on cities over the past three decades (Cohen, 1990). It is interesting to note that considerable amount of recent work pertaining to macro-economic restructuring and the city focuses on cities in the developed world. For instance, Booth (1994) and Robson (1993) describe British initiatives for regenerating city economy. Fainstein (1994) deals with economic restructuring and redevelopment with special reference to London and New York, and Fowler (1992) focuses on Toronto. Although some of the cities in the developing countries have also started making a conscious attempt to rejuvenate the city economy through local initiative and judiciously planned investments for dealing with the negative impact of macro-economic changes on cities, studies of such initiatives are very few.

The studies of the impact of liberlisation policies on Indian cities' economy are almost non-existent. It is primarily because it is too early for the impact of liberalisation policies and consequent macro-economic changes to begin showing in the secondary data sets. The primary data based studies of such impact analysis are very complex, time consuming and expensive, and therefore, not very commonly undertaken. This study makes a limited attempt to assess the impact of macro-economic policies initiated in 1991 on the city economy in general and on the industrial structure in particular.

Dynamics of Urban Economy

The analysis of major changes in the economy of the selected cities in relation to specific urban growth patterns has been undertaken to understand the dynamics of urban economy in India. Time series data on employment, city income and industrial structure has been used for this purpose. As far as possible, the results of the earlier studies of the selected cities have been compared with the findings of the present study in order to ascertain whether the economic structure and nature of industrial inter-dependence has changed over time. Special features, which may have some bearing on the economic and demographic growth pattern of the case study cities, have also been noted.

METHODOLOGY AND DATA BASE

Identification of Case Study Cities

Ahmedabad and Visakhapatnam have been identified as the case study cities for two reasons.[1] First, these two cities are at different stages of industrialisation and are expected to reveal different structure and dynamics of urban economy at the city level. Ahmedabad is a city where there is a perceptible decline in the traditional manufacturing activities while Visakhapatnam is a newly industriliasing city. Second, as already noted, some work on the economic base and industrial linkages of these two cities has already been done, which provides a relatively developed data and information base necessary for undertaking a study of urban growth dynamics at the city level. The findings of these studies will be compared with results of this study in order to ascertain whether the economic structure and nature of industrial inter-dependence has changed significantly over time.

Urban Agglomeration as defined in 1991 Census has been taken as the unit of analysis. However, most of the secondary data collected from sources other than the Census does not conform to urban agglomeration boundaries. In such cases, district level data has been used as a proxy for information on urban agglomeration.

Secondary Data Base

The data regarding population, economic activities and employment has been obtained from the Census of India, Economic Census Tables and the National Sample Survey Organisation publications. The data on industries has been collected and complied from the published and unpublished records of the Annual Survey of Industries, Chief Inspector of factories and District Industries Centre.

Primary Data Collection

The following two surveys were conducted for primary data collection in the selected cities. As these surveys were quite crucial for the whole study, a pretest was done prior to finalisation of the questionnaire. Both the surveys were conducted between May 1995 and January 1996.

Quick Survey for assessing income generated in various economic activities both in the formal and informal sectors. The survey provided annual income data for the year 1995. The sample

[1] In the proposal, of Kanpur and Visakhapatnam were identified as the case study cities. After initial research, it was found that a suitable previous study was not available to allow analysis of changes in urban economy over time in Kanpur. Therefore, Kanpur was replaced by Ahmedabad. Both these cities have experienced significant decline in mill based industrial production, and therefore, Ahmedabad was considered to be equally acceptable for this study.

size of this survey was 596 units employing 3,342 persons in Ahmedabad and 300 units employing 1,143 persons in Visakhapatnam. The definition adopted for classifying these units as informal enterprises was based on employment size. Informal enterprises were identified as those with less than 10 workers (hired+family) in manufacturing sector and less than 5 workers in the non-manufacturing sector, irrespective of whether these were registered or not. The sectoral distribution of the sampled units is presented in Tables 1.1 and 1.2.

Industrial Survey to canvas detailed information related to capital structure, employment, land area, major inputs including power and water and their values and quantities, major outputs and its total value, the flow of inputs (source, quantities) and the flow of outputs (destinations, quantities). Questions were also included to trace the linkages between the formal and informal sectors in urban economy. This survey yielded data for the year 1994-95. A total of 301 industrial units employing 9,334 persons in Ahmedabad and 115 units, including the steel plant, employing 33,264 persons in Visakhapatnam were covered by this survey. The category-wise distribution of sampled industrial units is given in Tables 1.3 and 1.4.

Sample Frame and Sampling Procedure

The sampling procedure adopted was first to assess the likely number of units through the available sample universe at two-digit levels of National Industrial Classification (NIC). For the Quick Survey of formal and informal sector, the Economic Census 1990 data was taken as the universe, which provides some basis for ascertaining the extent of self employed and wage employed in tiny enterprises . A combination of data provided by the Chief Inspector of Factories on registered units and District Industrial Centre on small scale units was taken as the base for sample selection for the industrial survey.

A two-staged stratified random sample from each of the two digit category was drawn. First, a representative distribution of the sample at the NIC two digit level was arrived at. Second, sample industries were then classified into large scale, small scale and informal sector units.

ORGANISATION OF THE REPORT

The report is organised in six chapters. The Second chapter, following the introduction, focuses on the economic structure as well as sectoral shifts taking place in city economy in terms of employment and economic activities in relation to urban population growth trends. The third chapter examines the structure of the city economy in terms of city income, both total income at the city in terms of city income, both total income at the city level as well as income generation in various sectors of the city economy. The Fourth Chapter analyses the industrial inter-dependence within the selected cities, regional linkages of industries located in the case

study cities and linkages between formal and informal sectors. This chapter also identifies key locational factors in order to assess whether agglomeration economies was a consideration in determining the location of industries in the two cities. A listing of operational constraints faced by the industries has also been attempted in this chapter. Fifth chapter makes as attempt to assess the impact liberalisation on the city economy in general and on the industrial structure and performance in particular. Final chapter summarises the major conclusions drawn from the study of two cities in a comparative framework.

Table 1.1

Coverage of Quick Survey in Ahmedabad, 1995

Sectors	Informal Sector		Formal Sector		Total	
	Unit	Employee	Unit	Employee	Unit	Employee
Manufacturing of Food Prodcut	13.00	69.00	1.00	15.00	14.00	84.00
%	92.86	82.14	7.14	17.86	100.00	100.00
Manufacturing of other than Food Product	55.00	203.00	12.00	194.00	67.00	397.00
%	82.09	51.13	17.91	48.87	100.00	100.00
Electricity, Gas and Water	0.00	0.00	3.00	49.00	3.00	49.00
%	0.00	0.00	100.00	100.00	100.00	100.00
Construction	1.00	4.00	2.00	34.00	3.00	38.00
%	33.33	10.53	66.67	89.47	100.00	100.00
Trade, Commerce, Hotels and Restaurants	190.00	521.00	178.00	1555.00	368.00	2076.00
%	51.63	25.10	48.37	74.90	100.00	100.00
Transport, Storage and	13.00	27.00	14.00	114.00	27.00	141.00
%	48.15	19.15	51.85	80.85	100.00	100.00
Financing, Insurance, Real Estate & Business Services	4.00	8.00	15.00	151.00	19.00	159.00
%	21.05	5.03	78.95	94.97	100.00	100.00
Community, Social & Personal	63.00	160.00	32.00	238.00	95.00	398.00
%	66.32	40.20	33.68	59.80	100.00	100.00
Total	339.00	992.00	257.00	2350.00	596.00	3342.00
%	56.88	29.68	43.12	70.32	100.00	100.00

Source: NIUA's quick survey.

Table 1.2

Coverage of Quick Survey in Visakhapatnam, 1995

Sectors	Informal Sector		Formal Sector		Total	
	Unit	Employee	Unit	Employee	Unit	Employee
Manufacturing of Food Product	8.00	22.00	0.00	0.00	8.00	22.00
%	100.10	100.00	100.00	100.00	100.00	100.00
Manufacturing other than Food Product	11.00	29.00	0.00	0.00	11.00	29.00
%	100.00	100.00	0.00	0.00	100.00	100.00
Wholesale and Retail Trade and Restaurants and Hotels	123.00	331.00	50.00	551.00	173.00	882.00
%	71.10	37.53	28.90	62.47	100.00	100.00
Transport, Storage and Communications	37.00	40.00	2.00	20.00	39.00	60.00
%	94.87	66.67	5.13	33.33	100.00	100.00
Financing, Insurance, Real Estate and Business Services	2.00	6.00	2.00	29.00	4.00	35.00
%	50.00	17.14	50.00	82.86	100.00	100.00
Community, Social and Personal Services	62.00	94.00	3.00	21.00	65.00	115.00
%	95.38	81.74	4.62	18.26	100.00	100.00
Total	243.00	522.00	57.00	621.00	300.00	1143.00
%	81.00	45.67	19.00	54.33	100.00	100.00

Source: NIUA's quick survey.

Table 1.3
Sample Size and Distribution, Industrial Survey in Ahmedabad, 1994-95

Sector	Informal Sector		Formal Sector		Total	
	Unit	Employee	Unit	Employee	Unit	Employee
Manufacture of Food Products	1.00	8.00	9.00	364.00	10.00	372.00
%	10.00	2.15	90.00	97.85	100.00	100.00
Manufacture of Oil and Starch	1.00	8.00	14.00	496.00	15.00	504.00
%	6.67	1.59	93.33	98.41	100.00	100.00
Manufacture of Beverages, Tobacco and Tobacco Products	0.00	0.00	1.00	28.00	1.00	28.00
%	0.00	0.00	100.00	100.00	100.00	100.00
Manufacture of Cotton Textiles	3.00	20.00	10.00	573.00	13.00	593.00
%	23.08	3.37	76.92	96.63	100.00	100.00
Manufacture of Textile Products	1.00	7.00	16.00	777.00	17.00	784.00
%	5.88	0.89	94.12	99.11	100.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	6.00	38.00	5.00	121.00	11.00	159.00
%	54.55	23.90	45.45	76.10	100.00	100.00
Manufacture of Paper and Paper Products, and Printing, Publishing and Allied Industries	2.00	16.00	8.00	212.00	10.00	228.00
%	20.00	7.02	80.00	92.98	100.00	100.00
Manufacture of Leather and Leather anf Fur Products	4.00	28.00	5.00	102.00	9.00	130.00
%	44.44	21.54	55.56	78.46	100.00	100.00
Manufacture of Rubber, Plastic, Petroleum and Coal Products	4.00	23.00	21.00	842.00	25.00	865.00
%	16.00	2.66	84.00	97.34	100.00	100.00
Manufacture of Chemicals and Chemical Products	6.00	35.00	27.00	1124.00	33.00	1159.00
%	18.18	3.02	81.82	96.98	100.00	100.00
Manufacture of Non-Metallic Mineral Products	0.00	0.00	10.00	227.00	10.00	227.00
%	0.00	0.00	100.00	100.00	100.00	100.00
Basic Metal and Alloys Industries	1.00	8.00	5.00	548.00	6.00	556.00
%	16.67	1.44	83.33	98.56	100.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	10.00	65.00	32.00	1236.00	42.00	1301.00
%	23.81	5.00	76.19	95.00	100.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	5.00	37.00	39.00	1049.00	44.00	1086.00
%	11.36	3.41	88.64	96.59	100.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and Supplies and Parts	14.00	85.00	39.00	1246.00	53.00	1331.00
%	26.42	6.39	73.58	93.61	100.00	100.00
Other Manufacturing Industries	2.00	11.00	0.00	0.00	2.00	11.00
%	100.00	100.00	0.00	0.00	100.00	100.00
Total	60.00	389.00	241.00	8945.00	301.00	9334.00
%	19.93	4.17	80.07	95.83	100.00	100.00

Source: NIUA's Industrial Survey.

Table 1.4
Sample Size and Destribution, Industrial Survey in Visakhapatnam, 1994-95

Sector	Informal Sector		Formal Sector		Total	
	Unit	Employee	Unit	Employee	Unit	Employee
Manufacturing of Food Products	0.00	0.00	7.00	303.00	7.00	303.00
%	0.00	0.00	100.00	100.00	100.00	100.00
Manufacture of Oil and Starch	3.00	17.00	1.00	12.00	4.00	29.00
%	75.00	58.62	25.00	41.38	100.00	100.00
Manufacture of Beverages, Tobacco and Tobacco Products	0.00	0.00	2.00	124.00	2.00	124.00
%	0.00	0.00	100.00	100.00	100.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	1.00	8.00	14.00	384.00	15.00	392.00
%	6.67	2.04	93.33	97.96	100.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	1.00	8.00	3.00	61.00	4.00	69.00
%	25.00	11.59	75.00	88.41	100.00	100.00
Manufacture of Rubber, Plastic, Petroleum and Coal Products	1.00	5.00	9.00	170.00	10.00	175.00
%	10.00	2.86	90.00	97.14	100.00	100.00
Manufacture of Chemicals and Chemical Products	1.00	8.00	9.00	1313.00	10.00	1321.00
%	10.00	0.61	90.00	99.39	100.00	100.00
Manufacture of Non-Metallic Mineral Products	3.00	23.00	13.00	365.00	16.00	388.00
%	18.75	5.93	81.25	94.07	100.00	100.00
Basic Metal and Alloys Industries	0.00	0.00	3.00	19347.00	3.00	19347.00
%	0.00	0.00	100.00	100.00	100.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	8.00	55.00	14.00	4516.00	22.00	4571.00
%	36.36	1.20	63.64	98.80	100.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	2.00	16.00	7.00	131.00	9.00	147.00
%	22.22	10.88	77.78	89.12	100.00	100.00
Manufacture of Electrical Machinery, Appartus, Appliances and Supplies and Parts	0.00	0.00	3.00	136.00	3.00	136.00
%	0.00	0.00	100.00	100.00	100.00	100.00
Manufacture of Transport Equipment and Parts	1.00	5.00	1.00	6002.00	2.00	6007.00
%	50.00	0.08	50.00	99.92	100.00	100.00
Repair	2.00	14.00	6.00	241.00	8.00	255.00
%	25.00	5.49	75.00	94.51	100.00	100.00
Total	23.00	159.00	92.00	33105.00	115.00	33264.00
%	20.00	0.48	80.00	99.52	100.00	100.00

Source: NIUA's industrial survey.

Chapter 2

URBAN GROWTH AND CHANGING STRUCTURE OF CITY ECONOMY

One of the major objectives of this study is to arrive at a comprehensive understanding of employment and income generation at the city level and how it is changing over time along with specific urban growth trends. This is essential for getting an insight into the city's capacity to generate employment, output and income. This chapter focus as on the economic structure as well as sectoral shifts taking place in city economy in terms of employment and economic activities in relation to urban population growth trends.

An attempt has also been made to assess the structure of city economy in terms of formal and informal sector components of the city economy. Special features pertaining to the selected cities have also been presented here, such as closure of major industries and setting up of a new industrial township in the vicinity, which may have some bearing on the economic and demographic growth patterns of the cities concerned.

The analysis of structure of city economy has been undertaken using published and unpublished time-series secondary data on population, employment and industries. It is important to note here that other than census data on population and employment there is hardly any data available on employment in various economic activities and industries in the published secondary sources. Therefore, the district level aggregates have been used as a proxy wherever the data for urban agglomeration was not available. Taking district as the unit of analysis, at least for understanding the industrial structure of metropolitan cities is justifiable for two reasons. First, the city as defined by the administrative limit is much smaller than the metropolitan area. Second, many of the industries are located outside the urban boundaries owing to the industrial location policy restrictions.

AHMEDABAD

Ahmedabad is an industrial city, that is, popularly known as the `Manchester of India'. Since 1861, when the first modern textile mill was located in the city, the economy has been on the upswing. Barring the negative impact of global depression during in 1930s and major commercial riots in 1940s, Ahmedabad's economy continued to be flourishing along with the buoyant textile industry. Since 1975, the city economy started stagnating, a number of textile mills closed down, frequent commercial riots, deterred additional investment in the city, which created a sense of despair. The downturn in the economy was so widely felt that even the local residents started referring to Ahmedabad as a "dying city". The 1990s is seen as the decade of revival of the city economy. The macro-economic reforms initiated by the national government in 1991 provided a major boost to the local entrepreneurs and restructuring of the local economy started with increased investment in industry, trade and construction. The local government also started making conscious efforts to revive the local economy through provision of better infrastructure and improved municipal governance (Mehta, 1998; and Pathak 1997).

Ahmedabad is located in one of the highly industrialised urbanised Gujarat state. About 75 per cent of Ahmedabad districts population was identified as urban in 1991. Ahmedabad Urban Agglomeration (UA) with a population of 3.31 million accounted for 92.20 per cent of the districts urban population in 1991. The provisional population of Ahmedabad in the year 2001 was 4.52 million.

Ahmedabad is the largest city in Gujarat and the sixth largest city in India. From a meagre 185,889 in 1901 the population of Ahmedabad UA has grown to 3312,216 in 1991. The rate of growth of population between 1931 to 1941 has been the highest (90.73%). This was the period when as an industrial centre, Ahmedabad's economy was buoyant and flourishing. Population growth in the urban agglomeration area, which includes the eastern and western peripheries, had been insignificant till 1951. However, ever since 1951, the growth rate of UA is consistently higher than that of the city, indicating that as city area started stabilizing, the peripheral areas have been absorbing most of the growth, in recent years. The large scale construction of residential housing in the city's outskirts is a visible sign of increasing urban spread in Ahmedabad Urban Agglomeration, particularly since the late 1980s.

The population growth trends of Ahmedabad between 1971 and 1991 show a moderate decadal growth of about 45 per cent in 1961-71 and 1971-81 while a sharp decline to 29.99 per cent between 1981-91 (Table 2.1). This is largely a reflection of the national trend in the showing down of urban population growth rate in the decade. However, the population growth rate improved to 36.55 per cent between 1999 and 2001, which could be due to an acceleration in the economic growth momentum of the city. Although the area of UA increased from 108.24 sq.km. in 1971 to 190.85 sq.km. in 1991, the population density per sq.km increased from

16,190 to 17,355 suggesting that the city is able to attract both economic activities and population despite down-turn in its overall population growth in the past two decades. This is further supported by the increasing number of gross migrants, which was 0.77 million in 1961-71, 0.96 million in 1971-81, and 1.16 million in 1981-91.

Table 2.1

Area and Population, Ahmedabad U.A.
1971-95

Item	1971	1981	1991	1995 (Projected)	2001
Population (million)	1.75	2.55	3.31	3.78	5.22
Population growth rate (%)	45.31	45.40	29.99	14.20	36.55
Area (sq.km.)	108.24	N.A.	190.85	N.A	N.A
Density (per sq.km.)	16,190	N.A	17,355	N.A	N.A
No. of gross migrants (million)	0.77	0.96	1.16	N.A	N.A

Source : Census of India, Gujarat, Part II-A General Population Tables; 1971, 1981 and 1991 and Migration Tables.
Census of India, 2001, Provisional Population Tables.

Note : The 1991 area data is for the Ahmedabad Municipal Corporation, which is a little less than the area of urban agglomeration.

EMPLOYMENT AND SECTORAL SHIFTS

The National Sample Survey Organisation (NSSO) has for the first time published city level employment-unemployment and employment status data for the twelve largest cities using the 50th round survey results (1993-94), with comparable estimates for the 43 round (1987-88). As per these results, the proportion of usually employed male workers was 76.4 per cent and for female workers it was 19.6 per cent in 1993-94 (Table 2.2). The usual status unemployment rate for male and female workers, in the same year was 4.4 per cent and 13.7 per cent. It is interesting to note that while work participation rate has improved for both males and females the unemployment rate for males has came down and for females it has gone up significantly

from 1.4 per cent in 1987-88 to 13.7 per cent in 1993-94. This is an indication of increasing numbers of women entering the labour market in Ahmedabad, who are unable to find stable usual status employment in the era of post liberalization as well as industrial slide in the city economy. The employment status for male and female workers in the same years shows that regular wage employment has increased for male workers and self employment is becoming more predominant amongst female workers. The casual wage employment has declined for both male and female workers which does not conform with the generally prevailing trend of increasing casualisation in the urban labour market in India.

Table 2.2

Employment-Unemployment and Employment Status of Usually Employed Persons (Principal and Subsidiary Status) aged 15 years and above by sex in Ahmedabad City

Status	Male		Female	
	1993-94	1987-88	1993-94	1987-88
% of usually employed persons	76.4	75.5	19.6	14.1
% of usually unemployed persons (adjusted to exclude subsidiary workers)	4.4	7.1	13.7	1.4
% distribution of usually employed persons:				
Self-employed	35.6	34.6	43.9	36.6
Regular employees	51.3	45.4	27.0	30.3
Casual labour	13.1	20.0	29.1	33.1
Total	100.0	100.0	100.0	100.0

Source : National Sample Survey Organisation (1997) : Employment and Unemployment Situation in Cities and Towns, 1993-94, Report No.411, September.

The concept of workers has changed from one census to another census in India. In the 1971 census, a person was treated as a worker only if he had spent his time mainly in work and if he had worked at least for a day in regular work during the proceeding week. In contrast to the dichatonomy of worker and non worker used in 1961 and 1971, a trichotonomy of main workers, marginal workers and non workers has been adopted since the 1981 census.

In Ahmedabad UA, the total number of main plus marginal workers has risen from 739,972 in 1981 to 969,934 in 1991 (Table 2.3). The work participation rate of the total workers has marginally increased in 1981 (29.04%) and 1991 (29.28%) when compared to that of 1971 (28.53%).

The distribution of main worker's ninefold classification data for Ahmedabad presented in Table 2.3 reveals that about 60 per cent of the main workers were concentrated in two categories, which is non-household manufacturing (35.68%) and trade and commerce (25.19%) in 1991. The share of other services was also considerably large at 22.27 per cent in the same year. The distribution of main workers between 1971 and 1991 shows the pattern of sectoral shifts in employment. There is a discernable decline in the non-household manufacturing employment as against the increasing share of employment in construction as well as in the - tertiary sector, including trade and commerce; transport, storage and communication; and other services in Ahmedabad during the past two decades.

ECONOMIC BASE

Economic census enumerates the number of units and persons employed in different economic activities. As per the 1990 economic census, there were210113agriculture and non-agricultural enterprises in the district of Ahmedabad. Out of which57859 (27.54) were in the rural areas and152254 (72.46) were in the urban areas. The percentage of enterprises in the rural areas has slightly increased from26.82 in 1980 to27.54in 1990 while the percentage of enterprises in the urban areas has decreased from73.18 in 1980 to72.46 in 1990 (Table 2.4). During 1980-90 the rural enterprises has grown at the rate of49.38 per cent while the enterprises in the urban areas has increased at the rate of44.02 per cent. The growth of rural enterprises has higher than that of urban enterprises.

According to 1990 census, there were 96,193 (68.07%) own account enterprises and 56,061 (81.48%) establishment in the urban areas of the district. It is observed that non-agricultural own account enterprises (98.71%) and establishment (99.11%) were predominant in the urban areas of the district. Amongst the own account enterprises the growth rate was 45.68 per cent in the rural areas and it was 51.20 per cent in the urban areas during 1980.90. The growth rate of establishments was 63.93 per cent in the rural areas and 33.16 per cent in the urban areas during 1980-90.

Table 2.3

Distribution of Main Workers by Nine Fold Industrial Classification, Ahmedabad U.A, 1971-91

Category		1971	1981	1991
Main workers		496938	731791	959073
Marginal workers		-	8181	10861
% of main plus marginal workers to total population		28.53	29.04	29.28
% Distribution of main workers :				
I	Cultivator	0.29	0.34	0.52
II	Agricultural labourers	0.29	0.51	0.47
III	Livestock, forestry, fishing etc.	0.65	0.75	0.75
IV	Mining and quarring	0.56	0.24	0.37
V	Manufacturing Processing :			
	a. Household industry	1.55	2.08	0.80
	b. Other than household industry	44.66	43.87	35.68
VI	Construction	3.18	3.07	4.71
VII	Trade and commerce	19.77	20.25	25.14
VIII	Transport Storage and communication	7.45	8.83	9.18
IX	Other Services	21.59	20.07	22.37

Source :Census of India Economic Table Part II B., 1971,1981, 1991

Table 2.4

Number and Growth of Agricultural and Non-agricultural Enterprises in Ahmedabad District 1980-90

Enterprises	RURAL			URBAN			TOTAL		
	1980	1990	Growth Rate 1980-90	1980	1990	Growth Rate 1980-90	1980	1990	Growth Rate 1980-90
Total enterprises		57859 (27.54)	49.34	105717 (73.18)	152254 (72.46)	44.02	144459 (100.00)	210113 (100.00)	45.45
OAE	30973 (32.74)	45121 (31.93)	45.68	63619 (67.26)	96193 (68.07)	51.20	94591 (100.00)	141314 (100.00)	49.39
Establishment	7770 (15.58)	12738 (18.52)	63.93	42098 (84.42)	56061 (81.48)	33.16	49868 (100.00)	68799 (100.00)	37.96

Source : TRF 1980, Economic Census 1990.

The number of persons usually working in all the enterprises of Ahmedabad district in 1990 was 1195,016, out of which 1036,910 (86.77%) were in the urban areas (Table 2.5)[2]. Number of total workers have grown from 901,133 in 1980 to 1195,016 in 1990, the growth rate of total workers was 32.61 per cent during this decade. The growth of rural workers was 42.31 per cent whereas the workers in urban areas have grown at the rate of 31.25 per cent (Table 2.5). The share of hired workers in establishment of urban areas were 89.06 per cent in 1990. The growth rate of hired workers were -2.45 per cent during 1980-90 (Table 2.5).

Distribution of agricultural and non-agricultural enterprises by size class in 1990 shows that the share of single worker enterprises was more than 38 per cent (38.62%) of urban agricultural and around 73 per cent (73.88%) of the urban non-agricultural own account enterprises (Table 2.6)[3]. Another 57.12 per cent of the agricultural and 25.61 per cent of non-agricultural enterprises had two workers. The proportion of enterprises with more than two workers was very small both in agricultural and non-agricultural enterprises in urban areas of Ahmedabad district.

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[2] As per economic census 1990, an enterprise was defined as an undertaking engaged in production and/or distribution of goods and/or services not far the sole purpose of own consumption. Workers in an enterprise may consist of members of the household or hired workers or both.

[3] i. An own-account enterprise is normally run by household members and does not engage any hired worker on regular basis.

ii. An establishment is an enterprise having atleast one hired worker on a family regular basis.

Table 2.5

Total Number of Persons Working in Agricultural and Non-Agricultural Enterprises in Ahmedabad District 1980-90

	RURAL			URBAN			TOTAL		
	1980	1990	Growth Rate 1980-90	1980	1990	Growth Rate 1980-90	1980	1990	Growth Rate 1980-90
Total persons	111098 (12.33)	158106 (13.23)	42.31	790035 (87.67)	1036910 (86.77)	31.25	901133 (100.00)	1195016 (100.00)	32.61
Hired persons	36544 (9.27)	42817 (10.94)	17.17	357561 (90.73)	348798 (89.06)	-2.45	394105	391615	-0.63

Source: TRF 1980 and Economic Census 1990.
Note: 1) Total persons in both OAE and Establishment.
2) Hired persons engaged in establishments only. There is no hired workers in OAE.

Table 2.6

Distribution of Agricultural and Non-Agricultural Own Account Enterprises by Employment Sizeclass in Ahmedabad District 1990

Employment/ Size class	Number of Own Account Enterprises					
	Agricultural			Non-Agricultural		
	Rural	Urban	Total	Rural	Urban	Total
1	10122 (35.59)	480 (38.62)	10602 (35.71)	12039 (72.19)	70148 (73.88)	82187 (73.63)
2	18001 (63.29)	710 (57.12)	18711 (63.03)	4359 (26.14)	24321 (25.61)	28680 (25.69)
3	151 (0.53)	31 (2.49)	182 (0.61)	152 (0.91)	286 (0.30)	438 (0.39)
4	68 (0.24)	12 (0.97)	80 (0.27)	75 (0.45)	110 (0.12)	185 (0.17)
5	38 (0.13)	4 (0.32)	42 (0.14)	33 (0.20)	45 (0.05)	78 (0.07)
6-9	54 (0.19)	3 (0.24)	57 (0.19)	17 (0.10)	31 (0.03)	48 (0.04)
10 & above	10 (0.04)	3 (0.24)	13 (0.04)	2 (0.01)	9 (0.01)	11 (0.01)
Total	28444	1243	29687	16677	94950	111627

Source: Economic Census 1990.

Table 2.7

Distribution of Agricultural and Non-Agricultural Establishment
by Employment Size class 1990 in Ahmedabad District

Employ--ment Size-class	Establishment					
	Agricultural			Non-Agricultural		
	Rural	Urban	Total	Rural	Urban	Total
1-2	409 (8.10)	10 (2.02)	419 (7.55)	3387 (44.07)	12430 (22.37)	15817 (25.01)
3	2683 (53.11)	223 (45.14)	2906 (52.40)	1524 (19.83)	14506 (26.11)	16030 (25.34)
4	1184 (23.44)	125 (25.30)	1309 (23.60)	694 (9.03)	8302 (14.94)	8996 (14.22)
5	369 (7.30)	59 (11.94)	428 (7.72)	391 (5.09)	4851 (8.73)	5242 (8.29)
Sub-Total	4645	417	5062	5996	40089	46085
6-9	355 (7.03)	64 (12.96)	419 (7.55)	861 (11.20)	7727 (13.91)	8586 (13.57)
10-14	46 (0.91)	8 (1.62)	54 (0.97)	447 (5.82)	3112 (5.60)	3559 (5.63)
15-19	3 (0.06)	1 (0.20)	4 (0.07)	157 (2.04)	1415 (2.55)	1572 (2.49)
20-24	1 (0.02)	1 (0.20)	2 (0.04)	87 (1.13)	774 (1.39)	861 (1.36)
25-49	1 (0.02)	3 (0.61)	4 (0.07)	92 (1.20)	1434 (2.58)	1526 (2.41)
50-99	1 (0.02)	-	1 (0.02)	28 (0.36)	556 (1.00)	586 (0.93)
100-199	-	-	-	10 (0.13)	252 (0.45)	262 (0.41)
200-499	-	-	-	7 (0.09)	138 (0.25)	145 (0.23)
500 and above	-	-	-	1 (0.01)	70 (0.13)	71 (0.11)
All	5052	494	5546	7986	55567	63253

Source: Economic Census 1990.
Note : Figures within brackets shows the percentage to total.

Table 2.7 shows the size class of establishments. Around 86.05 per cent of the urban non-agricultural establishments had less than ten workers, 72 per cent had upto five workers and around 22.37 per cent of them had one or two workers in 1990.

The distribution of own account enterprises by activities and location in 1990 shows that the number of units of own account enterprises in the urban areas was highest for the category wholesale and retail trade and restaurants and hotels (53.93%) followed by community social and personal and other services (19.45%). The share of manufacturing and repair was (12.58%) followed by transport storage and communication (8.08%). The distribution of workers engaged in the different activities in the own account enterprises followed the same pattern (Table 2.8).

In case of establishments in the urban areas, it is seen that the share of wholesale and retail trade and restaurants and hotels was (39.07%) followed by manufacturing and repair (28.15%). The share of community, social and personal and other services was (20.38%). In regard to workers in the urban establishment (41.80%) workers were engaged in manufacturing and repair (23.12%) of them were community social and personal and other services, (21.43%) were engaged in the wholesale and retail trade and restaurant and hotel.

INDUSTRIAL STRUCTURE

Ahmedabad is predominantly an industrial centre with large scale cotton textile industry providing the economic base of the city. Ahmedabad did not become the Manchester of India overnight. One important factor which countered all the negative impulses and led to the founding of modern textile industry in the city that is entrepreneurial environment created by the local financial elite. "Ahmedabad had experienced and prestigious financiers and merchants and a skilled work force in her weavers and artisans. She has long specialized in textiles and was able to carry over much of her technique and acquired skill into the machine age." (Gillion, 1968 The Times Research Foundation, 1988).

There were many favourable factors to the textile mills for flourishing in the city. Thus the number of mills grew from 1 in 1886 to 72 in 1930. During 1925 to 1938 the city survived closure of several textile mills. It also survived two major communal riots, in 1941-46. However, despite these, the textile industry of the city was stabilized and became increasingly competitive in the national and international markets. By 1950 nearly 1.25 lakh workers were employed in the textile mills (The Times Research, 1988).

Table 2.8

Distribution of Own Account Enterprises by Activity, Location and Workers in Ahmedabad District – 1990

Major Activity Group	Own Accounts Enterprises					
	No. Of Units			Workers		
	Rural	Urban	Total	Rural	Urban	Total
Agriculture, Hunting, Forestry, Fishing(01-06)	28444 (63.04)	1243 (1.29)	29687 (21.01)	47517 (68.53)	2113 (1.72)	49630 (25.83)
Mining and Quarring (10-19)	56 (0.12)	239 (0.25)	295 (0.21)	73 (0.11)	293 (0.24)	366 (0.19)
Manufacturing & Repair (20-39)	3817 (8.46)	12103 (12.58)	15920 (11.27)	5961 (8.60)	16848 (13.72)	22809 (11.87)
Electricity Gas & Water (40-42)	246 (0.55)	114 (0.12)	360 (0.25)	249 (0.36)	127 (0.10)	376 (0.20)
Construction (50-51)	228 (0.51)	1506 (1.57)	1734 (1.23)	251 (0.36)	1759 (1.43)	2010 (1.05)
Wholesale and Retail Trade & Restaurant and Hotel (60-69)	7726 (17.12)	51880 (53.93)	59606 (42.18)	9717 (14.01)	65885 (53.64)	75602 (39.34)
Transport Storage & Communication (70-75)	1264 (2.80)	7776 (8.08)	9040 (6.40)	1468 (2.12)	8797 (7.16)	10265 (5.34)
Financing, Insurance, Real Estate and Business Services (80-83)	79 (0.18)	2620 (2.72)	2699 (1.91)	102 (0.15)	3314 (2.70)	3416 (1.78)
Community Social and Personal and Other Services (90-99)	3261 (7.23)	18712 (19.45)	21973 (15.55)	3999 (5.77)	23701 (19.29)	27700 (14.41)
Grand Total (02-99)	45121 (100.00)	96193 (100.00)	141314 (100.00)	69337 (100.00)	122837 (100.00)	192174 (100.00)

Source: Economic Census 1990. Note: Figures within brackets show percentage to grand total.

Table 2.9

Distribution of Establishments by Activity, Location and Workers in Ahmedabad District, 1990

Sector	Establishments						Hired Workers		
	No. of Units			Workers					
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Agriculture, Hunting, Forestry, Fishing (01-06)	5052 (39.66)	494 (0.88)	5546 (8.06)	18532 (31.66)	2146 (0.42)	20678 (3.59)	17031 (32.61)	1983 (0.44)	19014 (3.74)
Mining and Quarring (10-19)	13 (0.10)	117 (0.21)	130 (0.19)	138 (0.24)	763 (0.15)	901 (0.16)	134 (0.26)	641 (0.14)	775 (0.15)
Manufacturing & Repair (20-39)	1802 (14.15)	15780 (28.15)	17582 (25.56)	17122 (29.25)	216130 (41.80)	233252 (40.53)	15164 (29.04)	200921 (44.08)	216085 (42.53)
Electiricity, Gas & Water (40-42)	13 (0.10	29 (0.05)	42 (0.06)	48 (0.08)	339 (0.07)	387 (0.07)	30 (0.06)	325 (0.07)	355 (0.07)
Construction (50-51)	33 (0.26)	362 (0.65)	395 (0.57)	232 (0.40)	2405 (0.47)	2637 (0.46)	199 (0.38)	2132 (0.47)	2331 (0.46)
Wholesale and Retail Trade & Restaurant and Hotel (60-69)	1955 (15.35)	21902 (39.07)	23857 (34.68)	6660 (11.38)	110808 (21.43)	117468 (20.41)	4974 (9.52)	78642 (17.25)	83616 (16.46)
Transport Storage & Communication (70-75)	601 (15.35)	2874 (5.13)	3475 (5.05)	3115 (5.32)	25467 (4.93)	28582 (4.97)	2899 (5.55)	23649 (5.19)	26548 (5.23)
Financing, Insurance, Real Estate and Business Services (80-83)	180 (1.41)	3078 (5.49)	3258 (4.74)	668 (1.14)	39443 (7.63)	40111 (6.97)	604 (1.16)	37176 (8.16)	37780 (7.44)
Community Social and Personal and Other Services (90-99)	3089 (24.25)	11425 (20.38)	14514 (21.10)	12015 (20.53)	119525 (23.12)	131540 (22.85)	11189 (21.43)	110390 (24.22)	121579 (23.93)
Grand Total 02-99)	12738 (100.00)	56061 (100.00)	68799 (100.00)	58530 (100.00)	517026 (100.00)	575556 (100.00)	52224 (100.00)	455859 (100.00)	508083 (100.00

Source : Economic Census 1990

Note : Figures within brackets show percentage to grand total.

Prior to 1985 there were 85 textile mills in Ahmedabad city. In 1985-86 12 textile mills which had been chronically running at losses were nationalised and placed under the Gujarat State textile Corporation. Of these six were put on production and six were scrapped. Thus in 1986 there were 58 textile units in Ahmedabad city. By 1994, 18 mills were under liquidation, i.e. they had been officially closed and their property had been placed under a government appointed liquidator to be dispensed with the proceeds of which would supposedly be used to pay off creditors and workers dues. By the end of 1994 a few more mills closed down and there were in fact 23 mills left in the city. The actual number of workers who have lost their jobs as a result of closure of mills in the city is somewhere around 50,000. (Chawdhury, 1996).

Ahmedabad continued to be dominated by its textile industries but the state created infrastructure for industrial development in Naroda and subsequently, in Odhav and Vatva which led to a significant diversification in the small and medium industries, related to engineering goods and chemical.

The time series data on registered factories in Ahmedabad between 1977 and 1995 suggests that inspite of the common belief regarding the industrial decline the number of factories and employees has consistently increased (Table 2.10). Besides, industrial dynamism of the city, the increasing tendency of small units to register in order to get support from various government agencies as well as financial institutions is also responsible for increase in the industrial activities in urban areas in India in general. Also, although, some large textile mills have closed down in the 1980s, the textile industrial units have in fact increased and it continues to dominate the industrial scene of the city with 16.56 per cent of the registered factories and 39.30 per cent of the industrial employment in these factories. This can be explained by closing of a few large composite production textile mills and emergence of a much larger number of smaller units with decentralization and specialisation of the production process. The new industries which have gained more importance significantly during this period are manufacturing of rubber, plastic, petroleum and coal productions; machinery, machine tool and parts; and basic metals and alloys. These group of industries, including cotton textiles account for more than half of the industrial activities in the city, that is 56.40 per cent in terms of industrial units and 60.08 per cent in terms of employment in registered factories in the year 1995.

Table 2.10

Working Factories and Emloyees/Workers in Ahmedabad

NIC Code	Description of Industry	1977		1987-88		1995	
		Units	Employed	Units	Employed	Units	Workers
20	Manufacuture of food products	31	1636	89	5169	224	9123
21	Manufacture of Oil and starch	15	1143	75	1310	47	5620
22	Manufacture of Beverage, Tobacco and Tobacco Products	8	150	14	361	20	709
23	Manufacture of Cotton Textiles	372	136841	459	87255	822	78365
24	Manufacture of Wool, Silk and Synthetic Fibre Textiles	15	1772	76	12720	108	6287
25	Manufacture of Jute, Hemp and Mesta Textiles	-	-	-	-	3	257
26	Manufacture of Textile Products (including Wearing Apparel other than Footwear)	70	1559	91	1972	131	4242
27	Manufacture of Wood and Wood Products, Furniture and Fixtures	39	1148	77	836	360	3733
28	Manufacture of Paper and Paper Products, and Printing, Publishing and Allied Industries	122	2260	168	5022	256	6297
29	Manufacture of Leather and Leather and Fur Products (exdept repair)	13	182	8	123	25	250
30	Manufacture of Rubber, Plastic, Petroleum and Coal Products	54	629	283	12769	927	19627
31	Manufacture of Chemicals and Chemical Products (excep Products of Petroleum and Coal)	118	1147	104	2385	306	9629
32	Maufacture of Non-Metallic Mineral Products	35	697	212	9460	385	12708
33	Basic Metal and Alloys Industries	137	2108	333	15124	595	16991
34	Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	172	1834	191	4520	462	10217

35	Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	336	7152	478	17424	748	20155
36	Manufacture of Electrical Machinery, Apparatus, Appliances and Supplies and Parts	25	698	87	2843	157	4993
37	Manufacture of Transport Equipment and Parts	14	210	53	3318	63	2727
38	Other Manufacturing Industries	35	408	22	676	70	1274
39	Repair	-	-	-	-	24	538
40	Electricity	-	-	3	1974	5	632
41	Gas and Steam	-	-	3	159	4	38
42	Water Works and Supply	1	90	-	-	1	321
91	Sanitary Services	4	213	4	101	7	344
92	Education, scientific and Research Services	3	14	-	-	11	467
96	Personal Services	4	28	14	293	9	184
97	Repair Services	38	1228	53	2472	86	8661
99	Services not elsewhere classified	1	36	-	-	11	522
		1762	163883	2907	188286	5482	224911

Source : 1977 CIF from Kashyap, Tiwari and Veena (1984).

Note : The 1995 data on employment excludes employees other than others, and therefore a little less than the number of total employees in the previous years.

Principal Characteristics

According to ASI data, in 1987-88, 2907 industries in Ahmedabad district had a total fixed capital of Rs.93,125.23 lakhs and employed 188,286 workers. These industries' total output was Rs.355703.44 lakhs, total input of Rs.292,165.04 lakhs and a net value added of Rs.52,960.77 lakhs (Table 2.11).

Table 2.11

Principal Characteristics of Industries in Ahmedabad 1987-88

Code No.	Description of Industry	No. of units	Total Fixed Capital	Total Employees	Total Output (Rs. lakh)	Total inputs (Rs. lakh)	Net value added (Rs. lakhs)
20	Manufacuture of food products	89	3023.87	5169	18762.80	16774.78	1622.12
21	Manufacture of Oil and starch	75	430.00	1310	10153.61	9703.37	322. 26
22	Manufacture of Beverage, Tobacco and Tobacco Products	14	290.15	361	4181.42	2536.62	1002.91
23	Manufacture of Cotton Textiles	459	35042.76	87255	112320.13	89270.48	933.80
24	Manufacture of Wool, Silk and Synthetic Fibre Textiles	76	4073.78	12720	28057.38	24691.72	19107.24
25	Manufacture of Jute, Hemp and Mesta Textiles	-	-	-	-	-	-
26	Manufacture of Textile Products (including Wearing Apparel other than Footwear)	91	90.94	1972	2232.56	1892.97	311.00
27	Manufacture of Wood and Wood Products, Furniture and Fixtures	77	62.79	836	861.29	583.91	266.00
28	Manufacture of Paper and Paper Products, and Printing, Publishing and Allied Industries	168	2123.62	5022	8937.81	7063.74	2671.16
29	Manufacture of Leather and Leather and Fur Products (exdept repair)	8	7.58	123	69.34	54.57	13.35
30	Manufacture of Rubber, Plastic, Petroleum and Coal Products	293	5450.54	12769	49182.08	42073.37	3139.21
31	Manufacture of Chemicals and Chemical Products (excep Products of Petroleum and Coal)	104	829.91	2385	5587.45	4613.49	792.07

32	maufacture of Non-Metallic Mineral Products	212	1008.04	9460	6276.57	5452.32	3981.46
33	Basic Metal and Alloys Industries	333	6044.95	15124	42330.16	36736.47	2005.46
34	Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	191	1256.29	4520	4840.24	4185.75	3600.93
35	Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	478	4654.66	17424	24182.86	1719.62	2781.21
36	Manufacture of Electrical Machinery, Apparatus, Appliances and Supplies and Parts	87	842.11	2843	11712.55	9945.36	4319.00
37	Manufacture of Transport Equipment and Parts	53	542.99	3318	3499.81	2590.30	913.84
38	Other Manufacturing Industries	22	221.31	676	1157.05	807.69	351.64
39	Repair	-	-	-	-	-	-
40	Electricity	3	26591.05	1974	19398.40	14960.34	574.22
41	Gas and Steam	3	67.10	159	207.94	149.05	53.12
42	Water Works and Supply	-	-	-	-	-	-
91	Sanitary Services	4	11.80	101	63.92	249.70	18.75
92	Education, scientific and Research Services	-	-	-	-	-	-
96	Personal Services	14	78.19	293	389.10	589.09	128.62
97	Repair Services	53	380.80	2472	1248.97	44.33	4051.40
99	Services not elsewhere classified	-	-	-	-	-	-
		2907	93125.23	188286	355703.44	292165.04	52960.77

Source : Annual Survey of Industries 1987-88.

In terms of fixed capital, manufacture of cotton textiles (code 23) had the largest share of investment of Rs.35,042.76 lakhs, or 37.63 per cent followed by the manufacturing of electricity (code 40) which had a share of 28.55 per cent of the total fixed capital. Other industries had much smaller share of fixed capital.

Textile industry is the single largest employer of the formal sector manufacturing in Ahmedabad. About 46 per cent of the total industrial employees were engaged in the textile industry, other industries which employed sizeable proportion of workers were manufacture of machinery, basic metals and alloys industries, manufacturer of rubber, plastic and petroleum products; and manufacturer of wool, silk and synthetic fiber textiles. The total value of output was again the highest in the industries producing cotton textiles, (31.58%), followed by the industries producing rubber, plastic, petroleum and coal products; basic metal and alloy; manufacture of food products; and machinery machine tools and parts.

The percentage of inputs for the industry producing cotton textiles, was the highest which was 30.55 per cent of the total input purchase. This was followed by rubber plastic; petroleum and coal; basic metal and alloy; and manufacture of wool silk and synthetic fiber textile, that is 14.40 per cent, 12.57 per cent and 8.45 per cent respectively.

The industry producing wool silk and synthetic fibre textiles accounted for the maximum net value added in the city. It added a net value of Rs.19,107.24 lakhs i.e. 36.08 per cent of the total value added in 1987-88. The second ranking industry was manufacture of electrical machinery apparants, appliances and supplies and parts which had added net values of Rs. 4,319.00 lakhs (8.16%) followed by manufacture of non-metallic mineral products and manufacture of metal products and parts except machinery and transport equipment which had added net value of 3981.46 (7.52%) and 3600.93 (6.80%) respectively.

Structural Ratio :

The per factory fixed capital in Ahmedabad is Rs.32.03 lakhs. The factory producing electricity had the highest fixed capital per factory with Rs. 8863.68 lakhs and manufacture of wood and wood products, furniture and fixture had the least fixed capital of Rs.0.81 lakhs.

There were 64.77 workers per factory in Ahmedabad. The highest per factory workers was 658.00 in manufacturing electricity and the least number of workers per factory was 10.86 in manufacture of wood and wood products, furniture and fixture.

The per factory output in Ahmedabad was Rs.122.36 lakhs in 1987-88. Industry producing electricity had the maximum output of Rs.6,466.13 lakhs per factory where as the industry producing wood and wood products, furniture and fixture had the minimum per factory output of Rs. 11.18 lakhs (Table 2.12).

Table 2.12

Structural Ratios for Industries in Ahmedabd - 1987-88

Code No.	Description of Industry	Per Factory				Per Employees		
		Fixed capital	Employee	Gross Output	Net value added	Fixed capital	gross output	Net Value added
20	Manufacuture of food products	33.98	58.08	210.82	18.23	0.59	3.63	0.31
21	Manufacture of Oil and starch	5.73	17.47	129.38	4.30	0.33	7.75	0.25
22	Manufacture of Beverage, Tobacco and Tobacco Products	20.72	25.79	298.67	71.64	0.80	11.58	2.78
23	Manufacture of Cotton Textiles	76.35	190.10	244.71	2.03	0.40	1.29	0.01
24	Manufacture of Wool, Silk and Synthetic Fibre Textiles	53.60	167.37	369.18	251.41	0.32	2.21	1.50
25	Manufacture of Jute, Hemp and Mesta Textiles	-	-	-	-	-	-	-
26	Manufacture of Textile Products (including Wearing Apparel other than Footwear)	0.99	21.67	262.38	3.42	0.05	1.13	0.16
27	Manufacture of Wood and Wood Products, Furniture and Fixtures	0.81	10.86	11.18	3.45	0.08	1,03	0.32
28	Manufacture of Paper and Paper Products, and Printing, Publishing and Allied Industries	12.64	29.89	53.50	15.90	0.42	1.79	0.53
29	Manufacture of Leather and Leather and Fur Products (exdept repair)	0.95	15.38	8.67	1.67	0.06	0.56	0.11
30	Manufacture of Rubber, Plastic, Petroleum and Coal Products	18.60	43.58	167.86	10.71	0.43	3.85	0.25

31	Manufacture of Chemicals and Chemical Products (except Products of Petroleum and Coal)	7.98	22.93	53.73	7.62	0.35	2.34	0.33
32	Manufacture of Non-Metallic Mineral Products	4.75	44.62	29.60	18.78	0.11	0.66	0.42
33	Basic Metal and Alloys Industries	18.15	45.42	127.11	6.02	0.40	2.80	0.13
34	Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	6.57	23.66	25.34	18.85	0.28	1.07	0.80
35	Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	9.73	36.45	50.59	5.81	0.27	1.39	0.16
36	Manufacture of Electrical Machinery, Apparatus, Appliances and Supplies and Parts	9.67	32.68	134.62	49.64	0.30	4.12	1.52
37	Manufacture of Transport Equipment and Parts	10.25	62.60	66.03	17.24	0.16	1.05	0.28
38	Other Manufacturing Industries	10.06	30.73	52.59	15.98	0.33	1.71	0.52
39	Repair	-	-	-	-	-	-	-
40	Electricity	8863.68	658.00	6466.13	191.40	13.47	9.83	0.29
41	Gas and Steam	22.36	53.00	69.31	17.70	0.42	1.31	0.33
42	Water Works and Supply	-	-	-	-	-	-	-
91	Sanitary Services	2.95	25.25	15.98	4.68	0,12	0.63	0.19
92	Education, scientific and Research Services	-	-	-	-	-	-	-
96	Personal Services	5.58	20.93	27.79	9.18	0.27	1.33	0.44
97	Repair Services	7.18	46.64	23,56	76.44	0.15	0.51	1.64
99	Services not elsewhere classified							
		32.03	64.77	122.36	18.22	0.49	1.89	0.28

Source : Calculated from ASI data 1987.88

Net value added per factory in Ahmedabad was Rs. 18.22 lakhs per factory. Electricity industry had the highest net value added per factory at Rs. 191.40 lakhs and the industries

producing leather and leather and fur products (except repair) had least net value added of Rs. 1.67 lakhs per factory.

Per worker fixed capital in Ahmedabad was Rs. 0.49 lakh. The industry producing electricity had the largest fixed capital per worker at Rs. 13.47 lakhs whereas manufacture of textile products (including wearing apparel other than foot wear) had lowest with Rs.0.05 lakhs.

The per worker gross output in Ahmedabad's industries was Rs.1.89 lakhs. Industry producing electricity had the highest gross output per worker with Rs. 9.83 lakhs and repair services needed the least with Rs. 0.51 lakhs.

The per worker net value added in Ahmedabad was Rs.0.28 lakhs. Industry producing manufacture of beverages tobacco and tobacco had the highest per worker net value added with Rs. 2.78 lakhs.

SHARE OF INFORMAL SECTOR

It is now widely accepted that the informal sector plays an important role in the cities' economy of developing countries for income and employment generation. However, the secondary data based analysis of the size and structure of the urban informal sector is limited owing to non-availability of disaggregated data on many indicators of urban economy.

A single criteria or employment size based definition of informal sector has been adopted for this study, that is, those enterprises employing less than 10 workers (hired and family) in the manufacturing sector and less than 5 workers in the non-manufacturing sector, are included in the informal sector.

According to a study by Papola in 1981, 46 per cent of the workers in Ahmedabad city were engaged in economic activities in the informal sector. The stagnation in organised sector employment and closure of the textile mills in the city resulted in a larger share of the labour force being accommodated in informal sector. We have defined that, all the workers in the enterprises in the nun manufacturing sector below size class 5 in urban area are in the informal sector. On the basis of the Economic Census data for 1990 it is estimated that nearly half of the cities labour force is employed in the informal sector. The proportion of informal establishments as well as employment is much higher in the service sector than in the manufacturing sector.

VISAKHAPATNAM

Visakhapatnam is generally perceived as a newly industrialising city with a comparative advantage of a port with a natural harbour situated in the coastal region of Andhra Pradesh. Over the last fifty years, Visakhapatnam city has experienced a process of economic growth which is evident in its profoundly high rate of population growth and its large industrial investment. Significant amount of investment has been made in the port and in basic and large industries in the past. The population of Visakhapatnam (U.A.) in 1991 was 1.06 million which was 81 per cent of the urban population of the district. The provisional population of the city in 2001 was 1.33 million. The rate of growth of population started increasing from the decade 1941-51 when the seeds of industrial development were sown. The city registered a growth of 53.81 per cent during the decade 1941-51 which spurted to 95.47 per cent in the decade 1951-61. Though the growth rate slowed down to 72.10 per cent and 66.07 per cent in the two subsequent decades, it was not low by an standard. It has picked up again in the last decade when the city registered a growth rate of 75.13 per cent (Table 2.13). However, Visakhapatnam registered a sharp decline in its population growth rate that came down to 25.47 per cent between 1991 and 2001, which is an indication of slowing down of the pace of industrial expansion. Also, the rate of growth of population in the municipality area has slowed down significantly in 1981-91 to 33.03 per cent from 60.37 per cent during 1971-81. This growth pattern is an indicator of dispersal of urban growth within the urban agglomeration.

As per 1991 census, Visakhapatnam U.A. had an area of 318.6 sq. k.m. which was over three times more than the area in the previous census enumeration. The increase in urban area has brought down the population density to nearly half between 1981 and 1991, that is from 6,253 to 3,323 persons per sq. km. This is despite the increased number of gross migrants between 1981-91.

During the decade 1981-91, which is marked by decline in growth of urban population in the country in general, this city has grown at a rate which is the highest among the 23 million plus cities of India.

EMPLOYMENT AND SECTORAL SHIFTS

The total number of workers in Visakhapatnam U.A. has risen from 160560 in 1981 to 307,260 in 1991 (Table 2.14). The work participation rate of the total workers fell marginally in 1981 (26.60) when compared to that of 1971 (27.59), but increased considerably in 1991 (29.07).

Table 2.13

Area and Population, Visakhapatnam U.A., 1971-95

Item	1971	1981	1991	1995 (Projected)	2001
Population (million)	0.36	0.60	1.06	1.31	1.33
Population growth rate (%)	72.10	66.07	75.13	23.58	24.47
Area (sq. km.)	94.53	96.54	318.16	N.A.	N.A.
Density (per sq. km.)	3845	6253	3323	N.A.	N.A.
Gross number of immigrants (million)	0.17	N.A.	0.45	N.A.	N.A.

Source: Census of India, Andhra Pradesh, Part II A, General Population Tables, 1971, 1981, 1991.

According to 1991 census, Visakhapatnam is a bi-functional town. Service and industry put together engaged more than 60 per cent of the workers in 1991. The town was found to be multi-functional in both 1971 and 1981 census. Service, industry and transport, storage and communication engaged more than 80 per cent workers in 1971 and 1981.

Such a shift in the functional characteristics of Visakhapatnam is clearly visible in the nine-fold classification of main workers between 1971 and 1991 (Table 2.14). The proportion of non-household manufacturing has increased between 1971-81 and decreased marginally between 1981-91. Transport storage and communication shows a consistent decline in the percentage of workers, where as the employment in other service category has claimed a much larger share in 1981-91 after a dip in 1971-81.

It can be mentioned here that census data at all India level also shows a decline in the share of manufacturing workers both for males and females in rural and urban areas during 1981-91. Kundu (1997) explained this as a result of subcontracting of jobs by bigger units which are often carried out at the household level. He further argued that most of these households identify themselves as providing service and get classified in tertiary sector. The logic may be true in the case of Visakhapatnam also.

Table 2.14

Distribution of Main Workers by Nine-fold Industrial Classification, Visakhapatnam, U.A. 1971-91

Category	1971	1981	1991
Main workers	100,282	159,622	304,899
Marginal workers	-	938	2361
% of main plus marginal workers to total population	27.59	26.60	29.07
% Distribution of main workers:			
Cultivators	0.80	0.21	0.79
Agricultural labourers	1.56	0.71	3.25
Livestock, forestry, fishing etc.	2.39	2.25	2.52
Mining and quarrying	0.19	0.26	0.61
Manufacturing processing in a. Household Industry b. Other than household industry	 1.27 15.71	 2.93 19.32	 0.82 19.29
Construction	7.46	6.30	7.94
Trade and commerce	13.33	14.77	14.96
Transport, storage and communications	26.09	24.93	15.20
Other services	31.20	28.92	34.62

Source: Census of India, Andhra Pradesh, Economic Tables Part II-B, 1971, 1981, 1991.

ECONOMIC BASE

As per Economic Census 1990, there were 115,202 agricultural and non-agricultural enterprises in the district of Visakhapatnam, out of which 75,538 (65.6%) were in the rural areas and 39,664 (34.4%) were in the urban areas. The percentage of enterprises in the rural areas has decreased from 69.89 in 1980 to 65.57 in 1990 while the percentage of enterprises in the urban areas has increased from 30.1 in 1980 to 34.43 in 1990 (Table 2.15). Over the decade 1980-90, the rural enterprises have grown at a rate of 74.55 per cent while the enterprises in the urban areas have increased at a rate of 112.72 per cent.

Table 2.15

Number and Growth of Agricultural and Non-agricultural Enterprises in Visakhapatnam District, 1980,1990

	Rural			Urban			Total		
	1980	1990	Growth Rate 1980-90	1980	1990	Growth Rate 1980-90	1980	1990	Growth rate 1980-90
Total Enterp-rises	43276 (69.89)	75538 (65.57)	74.55	18646 (30.11)	39664 (34.43)	112.72	61922 (100.00)	115202 (100.00)	86.04
O A E	36549 (74.79)	65088 (71.33)	78.08	12323 (25.21)	26164 (28.67)	112.32	48872 (100.00)	91252 (100.00)	86.72
Establi-shments	6727 (51.55)	10450 (43.63)	55.34	6323 (48.45)	13500 (56.37)	113.51	13050 (100.00)	23950 (100.00)	83.52

Source : Economic Census, 1980, 1990

According to Economic Census 1990, there were 26,164 (28.67%) own account enterprises and 135,00 (56.37%) establishments in the urban areas of the district. Understandably, non-agricultural own account enterprises (91.4%) and establishments (99.1%) were predominant in the urban areas of the district. Own account enterprises have grown at the rate of 78.08 per cent in the rural areas and at the rate of 112.32 per cent in the urban areas during the decade 1980-90. The growth rates of establishments have been 55.34 per cent 113.51 per cent in the rural and urban areas respectively during 1980-90.

There were 294,633 persons working in all the enterprises of Visakhapatnam district in 1990 out of which 173,772 (59%) were in the urban areas (Table 2.16). Total workers have grown from 159,509 in 1980 to 294,633 in 1990 which shows a growth of 84.71 per cent. The growth of the rural workers has been only 47.16 per cent whereas the workers in the urban areas have grown at a rate of 124.57 per cent. Hired persons in the urban areas have also registered a very high growth of 133.21 per cent which is more than that of non-hired males (123.13%). 88.85 per cent of the workers in establishments of urban areas were found to be hired in 1990 economic census.

Table 2.16

Total Number of Persons Working in Agricultural and Non-Agricultural Enterprises in Visakhapatnam District, 1980,1990

	Rural		Growth Rate 1980-90	Urban		Growth Rate 1980-90	Total		Growth Rate 1980-90
	1980	1990		1980	1990		1980	1990	
Total Persons	82128 (51.49)	120861 (41.02)	47.16	77381 (48.51)	173772 (58.98)	124.57	159509	294633	84.71
Male Persons	59694 (46.79)	85022 (35.95)	42.43	67891 (53.21)	151485 (64.05)	123.13	127585	236507	85.37
Hired Persons	26090 (32.37)	37433 (22.75)	43.48	54508 (67.63)	127121 (77.25)	133.21	80598	164554	104.17

Source : Economic Census 1980, 1990

Note : Figures in parentheses show the percentage to total.

Table 2.17 gives the distribution of agricultural and non-agricultural enterprises by size class in 1990. More than 70 per cent (72.3%) of urban agricultural and around 68 per cent (68.06%) of the urban non-agricultural own account enterprises were single worker enterprises. 23.2 per cent of the urban non-agricultural own account enterprises had two workers and 4.97 per cent of them had three workers.

Coming to the size-class of establishments, it is found that around 85 per cent of the urban non-agricultural establishments had less than ten workers whereas 75 per cent had less than five workers and around 40 per cent of them had one or two workers in 1990. A total of 796 (6%) non-agricultural establishments in the urban areas had more than twenty workers, whereas 262 (2%) had more than fifty workers (Table 2.18).

Table 2.17

Distribution of Agricultural and Non-agricultural OAE by employment Size – Class in Visakhapatnam District, 1990

Empt.Size Class	O A E					
	Agriculture			Non - agriculture		
	R	U	T	R	U	T
1	8926 (50.74)	1620 (72.26)	10546 (53.18)	25607 (53.91)	16284 (68.06)	41891 (58.65)
2	6442 (36.62)	440 (19.63)	6882 (34.70)	15712 (33.08)	5549 (23.20)	21261 (29.78)
3	1435 (8.16)	97 (4.33)	1532 (7.72)	3478 (7.32)	1189 (4.97)	4667 (6.53)
4	514 (2.93)	34 (1.52)	548 (2.76)	1667 (3.51)	506 (2.12)	2173 (3.05)
5	175 (0.99)	15 (0.67)	190 (0.96)	580 (1.22)	198 (0.83)	778 (1.08)
6-9	95 (0.54)	33 (1.46)	128 (0.65)	420 (0.88)	168 (0.70)	588 (0.83)
10 and above	03 (0.02)	03 (0.13)	06 (0.03)	34 (0.08)	28 (0.12)	62 (0.08)
Total	17590	2242	19832	47498	23922	71420

Source : Economic Census, 1990

Table 2.19 presents the distribution of the enterprises by activity categories and location in 1990. It can be seen from the table that the number of units of own account enterprises in the urban areas was highest for the category Wholesale and Retail Trade and Restaurants and Hotels (53.02%) followed by Community, Social and Personal Services (22.38%). Next comes, Manufacturing and Repair with a share of 10.58 per cent followed by Agriculture, Hunting, Forestry and Fishing (8.65%). The proportion of workers engaged in the different activities in the own account enterprises followed the same pattern.

Table 2.18

Distribution of Agricultural Non Agricultural
Establishments by employment Size - class in Visakhapatnam District, 1990

Empt. Size Class	Agricultural			Non-agricultural		
	R	U	T	R	U	T
1-2	402 (48.43)	37 (31.90)	439 (46.41)	5689 (59.14)	5386 (40.24)	11075 (48.14)
3	164 (19.76)	25 (21.55)	189 (19.98)	1350 (14.03)	2309 (17.25)	3659 (15.91)
4	93 (11.20)	12 (10.34)	105 (11.09)	731 (7.60)	1403 (10.48)	2134 (9.28)
5	40 (4.83)	07 (6.04)	47 (4.97)	500 (5.20)	905 (6.76)	1405 (6.11)
Sub - Total	699	81	780	8270	10003	18273
6-9	102 (12.29)	21 (18.10)	123 (13.00)	653 (6.79)	1490 (11.13)	2143 (9.32)
10-19	24 (2.89)	08 (6.90)	32 (3.38)	459 (4.77)	1095 (8.19)	1554 (6.75)
20-49	03 (0.36)	05 (4.31)	08 (0.85)	185 (1.92)	534 (3.99)	719 (3.12)
50-199	02 (0.24)	01 (0.86)	03 (0.32)	42 (0.44)	215 (1.61)	257 (1.12)
200-499	00	00	00	08 (0.08)	25 (0.19)	33 (0.14)
500 and above	00	00	00	03 (0.03)	22 (0.16)	25 (0.11)
	830	116	946	9620	13384	23004

Source : Economic census - 1990
Note : Figures within brackets show the percentages to total.

Table 2.19

Distribution of Enterprises by Activity, Location and Workers
in Visakhapatnam Dist. - 1990

Sl.No.	Major Activity Group	O A E					
		No. of Units			Workers		
		R	U	T	R	U	T
1.	Agriculture,Hunting, Forestry & Fishing (01 - 06)	17590 (27.08)	2242 (8.65)	19832 (21.82)	29705 (30.41)	3261 (8.51)	32966 (24.24)
2.	Mining and Quarring (10 - 19)	502 (0.77)	7 (0.03)	509 (0.56)	774 (0.79)	10 (0.03)	784 (0.58)
3.	Manufacturing & Repair (20 - 39)	14737 (22.69)	2743 (10.58)	17480 (19.23)	29117 (29.81)	4711 (12.29)	33828 (24.87)
4.	Electricity, Gas & Water (40 - 42)	7 (0.01)	9 (0.03)	16 (0.02)	8 (0.01)	6 (0.01)	14 (0.01)
5.	Construction (50 - 51)	288 (0.44)	192 (0.74)	480 (0.53)	323 (0.33)	256 (0.67)	579 (0.43)
6.	Wholesale and Retail Trade & Restuarants and Hotel (60 - 69)	20222 (31.13)	13751 (53.02)	33973 (37.38)	31622 (32.37)	20116 (52.50)	51738 (38.04)
7.	Transport, Storage & Communications (70 - 75)	1540 (2.37)	1114 (4.30)	2654 (2.92)	1630 (1.67)	1231 (3.21)	2861 (2.10)
8.	Financing, Insurance, Real Estate and Business Services (80 - 83)	51 (0.08)	71 (0.27)	122 (0.13)	75 (0.08)	125 (0.33)	200 (0.15)
9.	Community, Social and Personal Services (90 - 99)	10023 (15.43)	5803 (22.38)	15826 (17.41)	4430 (4.53)	8601 (22.45)	13031 (9.58)
10.	(02 - 99) G. Total	64960 (100.00)	25932 (100.00)	90892 (100.00)	97684 (100.00)	38317 (100.00)	136001 (100.00)

Source : Economic Census - 1990
Note : Figures within brackets show percentages to Grand Total.

In the case of establishments in the urban areas, again it is found that the category of Wholesale and Retail Trade and Restaurants and Hotels had a share of 43.58 per cent of the units followed by Community, Social and Personal Services (35.24%). Establishments engaged in Manufacturing and Repair accounted for 12.45 per cent of the units in the urban areas of

Visakhapatnam. 43.24 per cent of the workers in the urban establishments were engaged in community, Social and Personal Services whereas 17.89 per cent of them were engaged in wholesale and Retail Trade and Restaurants and Hotels. Manufacturing and Repairing establishments in the urban areas of Visakhapatnam engaged another 29.03 per cent of the workers out of the total workers engaged in the establishments in 1990 (Table 2.20).

Table 2.20

Distribution of Enterprises by Activity, Location and Workers in Visakhapatnam Distt., 1990.

Sl. No.	ESTABLISHMENTS						HIRED WORKERS		
	No. of Units			Workers					
	R	U	T	R	U	T	R	U	T
1.	830 (7.98)	1168 (0.8)	946 (4.01)	2913 (6.18)	689 (0.49)	3602 (1.93)	2053 (5.09)	559 (0.45)	2612 (1.59)
2.	75 (0.72)	10 (0.07)	85 (0.36)	1386 (2.94)	112 (0.08)	1498 (0.80)	1316 (3.26)	110 (0.09)	1426 (0.87)
3.	1652 (15.88)	1642 (12.45)	3294 (13.96)	11562 (24.54)	40417 (29.03)	51979 (27.90)	9536 (23.64)	38069 (30.78)	47605 (29.02)
4.	17 (0.16)	47 (0.36)	64 (0.27)	61 (0.13)	399 (0.29)	460 (0.25)	61 (0.15)	397 (0.32)	458 (0.28)
5.	39 (0.37)	97 (0.73)	136 (0.58)	116 (0.25)	582 (0.42)	698 (0.37)	95 (0.24)	508 (0.41)	603 (0.37)
6.	1600 (15.37)	5749 (43.58)	7349 (31.14)	5925 (12.58)	24909 (17.89)	30834 (16.55)	2985 (7.40)	15811 (12.78)	18796 (11.46)
7.	608 (5.84)	554 (4.20)	1162 (4.92)	2229 (4.73)	6745 (4.85)	8974 (4.82)	2132 (5.28)	6337 (5.12)	8469 (5.16)
8.	150 (1.44)	328 (2.49)	478 (2.02)	847 (1.80)	5165 (3.71)	6012 (3.23)	839 (2.08)	4730 (3.82)	5569 (3.40)
9.	5437 (52.24)	4649 (35.24)	10086 (42.74)	22071 (46.85)	60192 (43.24)	82263 (44.15)	21325 (52.86)	57170 (46.22)	78495 (47.85)
10.	10408 (100.00)	13192 (100.00)	23600 (100.00)	47110 (100.00)	139210 (100.00)	186320 (100.00)	40342 (100.00)	123691 (100.00)	164033 (100.00)

Source : Economic Census, 1990

Note : Figures within brackets show percentages to grand total.

INDUSTRIAL STRUCTURE

Growth of Visakhapatnam has primarily occurred due to industrial development. Geographical location and the advantage of port complex has made Visakhapatnam an ideal place for industrial investment in the region. Added to this, the Government announced certain incentives for large, medium and small scale industries in the district, except Visakhapatnam Municipal Corporation limits. As a result, a large number of large and medium industries have developed in Visakhapatnam district over the last four decades. It is not only the number and growth, but also the change in the composition of the industries which is important. Starting with shipyard, sugar, textiles etc. the industrial structure has diversified to a great extent to include chemicals, petroleums, non-metallic mineral products, metal and metal products and consumer based industry.

The Annual Survey of Industries data on registered factories in 1984-85, 1989-90 and 1994-95 supports such a shift in the industrial structure of Visakhapatnam (Table 2.21). The basic metals and alloys industries emerges as the most predominant group of industries which employ about 40 per cent of the industrial workforce. Within this group, the Visakhapatnam Steel plant is the single largest unit. The number of industrial units in this category declined sharply from 51 in 1984-85 to 9 in 1989-90 and increased again to 36 in 1994-95. This is because of the setting of the steel plant in the early 1980s, which resulted in the closing down of a number of small iron and steel producing units. The reemergence of more industrial units in this category in the recent years is largely due to anciallirisation related to the steel plant. Important among small industries dependent on the steel plant are wire drawing units, casting and fabrication units. Important among small industries dependent on the steel plant are wire drawing units, casting and fabrication units. Other industries which have a significantly large share in terms of number of units and employment and which have also been gaining importance during the ten years period under consideration are : food products, transport equipment and parts, rubber, plastic, petroleum and coal products; chemical and chemical products, and non-metallic mineral products.

Table 2.21

Number of Factories and Employees in Visakhapatnam

NIC code	Industry Group	1984-85		1989-90		1994-95	
		Factories	Employees	Factories	Employees	Factories	Employees
20	Food products	48	3637	42	4735	54	6335
21	Food products, oil/starch	22	212	20	202	32	1799

22	Beverages, tobacco & products	-	-	7	241	5	198
23	Cotton textiles	-	-	-	-	-	-
24	Wool, silk & synthetic textiles	-	-	-	-	-	-
25	Jute, hemp & mesta textiles	3	9424	1	3774	-	-
26	Textile products	-	-	-	-	-	-
27	Wood & wood products	-	-	12	95	9	150
28	Paper & products, printing, publishing & allied industries	4	334	21	1246	15	948
29	Leather, fur and products	-	-	-	-	-	-
30	Rubber, plastic, petroleum and coal products	5	1069	23	2330	23	3159
31	Chemicals and chemical products	16	1993	13	1187	24	1704
32	Non-metallic mineral products	54	1243	67	1057	72	1055
33	Basic metals & alloys industries	51	3837	9	2066	36	22556
34	Metal products & parts, except machinery & transport equipment	19	740	34	7888	29	1003
35	Machinery, machine tools & parts	21	3750	45	4990	16	4163
36	Electrical machinery, apparatus appliances & suppliers & parts	5	114	-	-	13	422
37	Transport equipment & parts	14	9011	12	1203	13	7261
38	Other manufacturing industries	4	164	2	10	8	21
39	Repair	-	-	15	1170	20	1209
40	Electricity	n.a.	n.a.	1	148	n.a.	n.a.
41	Gas and steam	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
42	Water works & supply	n.a.	n.a.	1	25	5	136
91	Sanitary services	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
97	Repair services	9	814	5	92	11	182
	Total	275	36342	330	32459	384	55757

Source: Government of Andhra Pradesh, Report on the Annual Survey of Industries, 1984-95, 1989-90 and 1994-95, Directorate of Economics and Statistics, Hyderabad.

Note: 1. In 1984-85, other manufacturing industries (38) includes units 26 and 27 industry group.
2. In 1994-95, other manufacturing industries (38) includes units of 24,25 and 29 industry groups.

Principal Characteristics

The principal characteristics of the factory sector in Visakhapatnam for the year 1994-95 is presented in Table 2.22. According to ASI data, 384 factories located in Visakhapatnam district had a total fixed capital of Rs. 779,775.86 lakhs and employed 55,530 employees. These units produced a total output of Rs. 562,187.04 lakhs using a total input of Rs. 457,576.19 lakhs and added a net value of Rs. 55,971.58 lakhs.

In terms of fixed capital it was the industry producing basic metals and alloys which had the largest investment of Rs. 682,328.46 lakhs (87.5%) in 1994-95 followd by the industry producing rubber, plastic, petroleum and coal products which had a share of 5.3 per cent of the total fixed capital. Other major industries in respect of fixed capital in 1994-95 were chemical and chemical products, transport equipment and parts, food products and the industry producing machinery, machine tools and parts.

The total value of output in 1994-95 was highest for the industry producing basic metals and alloys which produced more than 40 per cent of the output. Two other major industries in respect of the value of output produced in 1994-95 were chemicals and chemical products (31.7%) and rubber, plastic, petroleum and coal products (10.7%). Other prominent industries in respect of value of output were food products (6.4%), transport equipment and parts (4.7%) and the industry producing machinery, machine tools and parts (4%).

The industries producing basic metals and alloys and chemicals and chemical products consumed 36.5 per cent and 35.8 per cent of the total inputs respectively. The other major industries in respect of the inputs consumed were rubber, plastic, petroleum and coal products (10.5%); food products (6.6%); transport equipment and parts (4.9%) and machinery, machine tools and parts (3.7%).

It is the industry producing basic metals and alloys again which had the maximum net value added in 1994-95. It added a net value of Rs. 16,541.50 lakhs i.e. 29.6 per cent of the total value added by the industries in 1994-95. This was followed by the industry, producing chemicals and chemical products which had a net value added of Rs. 12,445.50 lakhs (22.2%) and the industry producing rubber, plastic, petroleum and coal products which added a net value of Rs. 10,005.41 lakhs (17.9%) in 1994-95.

Table 2.22

Principal Characteristics of Industries in Visakhapatnam in 1994-95

Indus-try Code	Food products	No.of Industr-ies	Total Fixed Capital (Rs.lakhs)	Total employme nt (No.)	Total Output (Rs. Lakhs)	Total Input (Rs. Lakhs)	Net value added (Rs.lakhs)
20	Manufacuture of food products	54	4020.62	6335	36123.77	30079.30	5430.88
21	Manufacture of Oil and starch	32	270.36	1799	1559.56	1338.16	175.94
22	Manufacture of Beverage, Tobacco and Tobacco Products	5	574.72	198	599.57	407.49	169.30
27	Manufacture of Wood and Wood Products, Furniture and Fixtures	9	144.57	150	693.91	620.42	61.21
28	Manufacture of Paper and Paper Products, and Printing, Publishing and Allied Industries	15	318.96	948	2722.36	2608.41	71.98
30	Manufacture of Rubber, Plastic, Petroleum and Coal Products	23	41621.00	3159	59880.47	47823.94	10005.41
31	Manufacture of Chemicals and Chemical Products (excep Products of Petroleum and Coal)	24	38063.29	1704	178301.31	163602.65	12445.50
32	Maufacture of Non-Metallic Mineral Products	72	179.40	1055	818.96	572.93	222.61
33	Basic Metal and Alloys Industries	35	682328.46	22556	225935.76	166963.66	16541.50
34	Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	29	147.65	1003	920.06	596.55	302.66

35	Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	16	2912.24	4163	22224.45	16932.26	4990.75
36	Manufacture of Electrical Machinery, Apparatus, Appliances and Supplies and Parts	13	148.83	422	527.13	446.18	67.71
37	Manufacture of Transport Equipment and Parts	13	7533.12	7261	26396.37	22322.12	3362.67
38	Other Manufacturing Industries	3	5.29	21	70.52	56.13	13.18
39	Repair	20	421.17	1203	846.15	200.58	622.84
42	Water Works and Supply	5	100.77	136	168.73	141.28	21.88
97	Repair Services	11	66.93	182	75.75	42.68	28.23
99	Services not elsewhere classified	5	918.48	3235	4322.24	2821.45	1437.33
Total		384	779775.86	55530	562187.04	457576.19	55971.58

Source : Annual Survey of Industries, Directorate of Economics and Statistics, Hyderabad.

Table 2.23

Structural Ratios for Industries in Visakhapatnam in 1994-95

Rs. Lakhs

Industry code	Per Factory				Per Employee			
	Food products	Fixed Capital	Employ ment No.	Gross Output	Net value added	Fixed Capital	Gross Output	Net value added
20	Manufacuture of food products	74.5	117.3	669.0	100.6	0.6	5.7	0.9
21	Manufacture of Oil and starch	8.4	56.2	48.7	5.5	0.2	0.9	0.1
22	Manufacture of Beverage, Tobacco and Tobacco Products	114.9	39.6	119.9	33.9	2.9	3.0	0.9

27	Manufacture of Wood and Wood Products, Furniture and Fixtures	16.1	16.7	77.1	6.8	1.0	4.6	0.4
28	Manufacture of Paper and Paper Products, and Printing, Publishing and Allied Industries	21.3	63.2	181.5	4.8	0.3	2.9	0.1
30	Manufacture of Rubber, Plastic, Petroleum and Coal Products	1809.6	137.3	2603.5	435.0	13.2	19.0	3.2
31	Manufacture of Chemicals and Chemical Products (excep Products of Petroleum and Coal)	1586.0	71	7429.2	518.6	22.3	104.6	7.3
32	Maufacture of Non-Metallic Mineral Products	2.5	14.7	11.4	3.1	0.2	0.8	0.2
33	Basic Metal and Alloys Industries	19495.1	644.5	6455.3	472.6	30.3	10.0	0.7
34	Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	5.1	34.6	31.7	10.4	0.1	0.9	0.3
35	Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	182.0	260.2	1389.0	311.9	0.7	5.3	1.2
36	Manufacture of Electrical Machinery, Apparatus, Appliances and Supplies and Parts	11.4	32.5	40.5	5.2	0.4	1.2	0.2
37	Manufacture of Transport Equipment and Parts	579.5	558.5	2030.5	258.7	1.0	3.6	0.5
38	Other Manufacturing Industries	1.8	7	23.5	4.4	0.3	3.4	0.6
39	Repair	21.1	60.2	42.3	31.1	0.4	0.7	0.5
42	Water Works and Supply	20.2	27.2	33.7	4.4	0.7	1.2	0.2
97	Repair Services	6.1	16.5	6.9	2.6	0.4	0.4	0.2
99	Services not elsewhere classified	183.7	647	864.4	287.5	0.3	1.3	0.4
Total		2030.67	144.6	1464.03	145.8	14.0	10.1	1.0

Source: Calculated from ASI data 1994-95.

Structural Ratios

A few structural ratios are presented in table 2.23 reveal that the industries in Visakhapatnam had Rs. 2030.67 lakhs of fixed capital per factory 1994-95. The industry producing basic metals and alloys had the highest fixed capital per factory with Rs. 19495.1 lakhs and other manufacturing industries had the least with Rs. 1.8 lakhs.

There were 144.6 employees per factory in industry in Visakhapatnam in 1994-95. The industry producing basic metals and alloys had 645 employees per factory which was the highest and other manufacturing industry had the least with 7 employees.

Gross output per factory was Rs. 1464.03 lakhs in Visakhapatnam in 1994-95 Industries producing chemicals and chemical products had the largest output of Rs. 7429.2 lakhs per factory whereas the industry of repair services products had the least with Rs. 6.9 lakhs.

Net value added per factory in Visakhapatnam in 1994-95 was Rs. 145.8 lakhs. Chemical and chemical products had the highest net value added per factory at Rs. 518.6 lakhs whereas repair services had a net value added of 2.6 lakhs per factory.

Fixed capital per employees was Rs. 14.0 lakhs in industries of Visakhapatnam in 1994-95. The industry producing basic metal and alloys had the largest fixed capital per employee at Rs. 30.3 lakhs.

One employee of industry of Visakhapatnam produced Rs. 10.1 lakhs of gross output in 1994-95. Manufacture of Chemicals and Chemical Products had the highest gross output per employee with Rs. 104.6 lakhs. One employee in industry of Visakhapatnam added a net value of Rs. 1.0 lakhs in 1994-95.

Thus in sum, it can be said that, a factory in Visakhapatnam in 1994-95, with an average fixed capital investment of Rs. 2030.67 lakhs employed 144.6 employees, produced goods and services at ex-factory prices worth Rs. 1464.03 lakhs and added net value of Rs. 145.8 lakhs to the national income. Further, the ASI data revealed that an employee in the organised industrial sector in Visakhapatnam in 1994-95 used Rs. 14.0 lakhs of fixed capital, produced Rs. 10.1 lakhs of output and added a net value of Rs. 1.0 lakh to the national income.

SMALL SCALE INDUSTRIES

Growth of industrialisation in the lead sectors in any region is followed by the growth of small scale industries. In 1990 there were 5716 units of small scale industries operating in Visakhapatnam district employing 42885 workers (Table 2.24). The total number of units

increased by 30 per cent between 1988 and 1990 whereas the total employment rose by 26 per cent within this period. The total capital investment was found to be 4675 lakhs of rupees in these industries in 1990 and it grew by 85 per cent between 1988 and 1990. The ORG survey of 1986 found that a significantly large number of small scale units were established within VMR. The same trend is reflected in Table 2.24. In 1990, more than 40 per cent of the units were found to be engineering based. This was followed by the units dependent on primary sector. However, it is found that in 1993 the number of small scale industries in Visakhapatnam has come down significantly.

Table 2.24

Small Scale Industrial Units in Visakhapatnam District
1988-93

Category	1988			1990			1993		
	No. of units	Total capital invest-ment (lakhs)	Total employ-ment	No. of units	Total capital investment (lakhs)	Total employ-ment	No. of units	Total capital investment (lakhs)	Total employ-ment
Agrobased	554	571.00	5312	739	851.00	6396	53	51.59	291
Forest based	445	135.00	2905	797	286.00	4497	339	44.78	1508
Livestock based	93	181.00	399	113	34.00	518	69	34.97	246
Textile based	91	227.00	813	92	24.00	818	1	0.95	2
Mineral based	267	371.00	5642	262	398.00	6003	13	49.50	330
Building material and ceramic based	4	1.00	345	30	102.00	1381	10	57.91	160
Chemical based	426	604.00	3155	461	748.00	3397	23	108.69	234
Engg. based	1754	125.00	11968	2328	1521.00	14475	400	292.95	1900
Misc.	487	309.00	3575	894	711.00	5400	163	163.87	1105
Total	4121	2524.00	34114	5716	4675.00	42885	1071	805.21	5776

Source: Statistical abstract, Visakhapatnam District 1987-88, Handbook of Statistics, 1989-90, 1992-93 Visakhapatnam District.

SPECIAL FEATURES OF CITY ECONOMY

The three most important aspects of industrial growth of Visakhapatnam have been the port, the Steel Plan and the Export Processing Zone. It would be pertinent lure to highlight the broad features of these three things.

Visakhapatnam Port

Visakhapatnam port has played a vital role in the development of industry and commerce in the region. Several major industries including the steel plant have been established here because of its accessibility to the port.

Visakhapatnam port was established in 1933. But till 1963 it was a minor port. It gained the status of a major port in 1963 and the Port Trust was constituted in 1964. Though the development activities of the port started from First Five Year Plan, the major part of the investments were made during Fourth, Fifth and Sixth Plan periods. A total of Rs. 204.53 crores of investment was made between First and Sixth plan. These investments were made for the development of outer harbour, procurement of tugs, construction of additional mooring berth etc.

The total area of the port is more than 4000 hectares of which the area occupied by inner harbour is around 95%. The inner harbour facilities cater to the needs of Eastern Naval Command and large industries like HPCL, Hindustan Shipyards, Coromondal Fertilisers etc. Exports of iron ore is handled by outer harbour. There are adequate berth facilities in the harbour and the cargo handling is done through most modern methods. The outer harbour is very deep and highly mechanised. The port has also got a fishing harbour which was constructed at a cost of about Rs. 10 crores. The harbour offers a number of facilities to the trawlers. The export of marine products is increasing from this port.

A number of commodities are exported and imported through the port. Mostly the commodities are either for export or import, but there are some commodities which have two way flow. The main commodities of export are iron ore, manganese ore, ferro products, steel products, thermal coal, alumina powder, cement etc. The items of import include fertilizers, sulphur, rock phosphate, coking coal, coke, limestone, phosphoric acid, iron scrap,manufactures of iron and steel.

The total income of the port during the year 1991-92 was Rs. 15,713.03 lakhs of which the operating income was Rs. 13,493.37 lakhs as against the total income of Rs. 13,954.54 lakhs and operating income of Rs. 11,826.47 lakhs in the previous year. The total expenditure of the port during 1991-92 was Rs. 11,860.74 lakhs of which the operating expenditure was Rs.

9,799.95 lakhs as against the total expenditure of Rs. 10,546.16 lakhs and operating expenditure of Rs. 8.059.08 lakhs in the previous year.

The total traffic handled by the port in 1991-92 was 21.52 million tonnes as against 19.42 million tonnes in the previous year, showing an increase of 2.10 million tonnes (11 per cent). Imports during the year increased to 96.91 lakh tonnes from 96.09 lakh tonnes in 1990-91 showing an increase of 0.82 lakh tonnes (1 per cent). Exports during the year increased to 110.91 lakh tonnes from 90.99 lakh tonnes in 1990-91 showing an increase of 19.92 lakh tonnes (22 per cent). As far as the employment situation is concerned, the sanctioned strength of port employees has reduced over the years from 1991. The sanctioned strength of the port employees was 11021 in 1992 which came down in 10074 in 1995. Similarly the total workers of dock labour board also came down from 2589 in 1992 to 2405 in 1995.

Visakhapatnam Steel Plant

Visakhapatnam steel plant is the most important aspect of the industrial growth of Visakhapatnam. It has an overwhelming effect on the investment, output and income generation in the region. The plant construction started in 1982 with technical and economic assistance of Russia. In 1993 the total fixed capital of the project was Rs. 617,056.95 lakhs and it employed 17,454 persons. It has a licenced capacity of 1,096 Tonnes of saleable steel, 556 tonnes of Pig Iron and 877 tonnes of by products. In 1993 the plant was producing 879.1 tonnes of saleable steel which was valued at Rs. 648.14 lakhs and 914.3 tonnes of pig iron which was valued at Rs. 3090.30 lakhs. The establishment of the steel plant has also led to the growth of a number of ancilliary industries and downstream industries.

The steel plant and its township area cover around 100 sq. km. the industrial and urban infrastructure within this area is managed and provided by Steel Authority of India. The infrastructural facilities like water, power and transport facilities are supposed to be provided by the state as well as the central government.

Visakhapatnam Export Processing Zone (VEPZ)

With a view to increase exports from the state, the Visakhapatnam Export Processing Zone (VEPZ) has been set up. It was approved in March 1989. At a distance of 25 km. from the city 370 acres of land has been acquired by the side of Madras-Calcutta national highway. The project is proposed to be developed in two phases. In the first phase, 163 acres of land has been taken up for development at a cost of Rs. 17.00 crores, 72 plots have already been developed. VEPZ is offering basic infrastructural facilities like developed land or plots. It is also providing ready built up area in standard design factory building for undertaking production straightaway. Other infrastructural facilities like roads, power, water supply and drainage system etc. are also being provided. Customs clearance facilities are being offered

within the area itself without any extra cost. Bank, post office and telecom facilities are also located within the service centre of VEPZ. To make the project successful, the central government as well as the state government are offering a liberal package. VEPZ has the system of single window clearance of the applications. Government of India is offerning exemption from Customs Duty on import of capital goods, raw materials, components, consumables and office equipment. There is no need of import licence also to import capital goods, raw-materials, consumables, spares etc. in VEPZ. Further, there is exemption on Central Excise Duty on Capital goods and manufactured items in VEPZ. There are other attractions like exemption from payment of Central Sales Tax, eligibility for 100 per cent convertibility, tax holiday or profits etc. Likewise the state government is also offering facilities like investment subsidy, deferment of sales tax, rebate on power tariff, exemptions to small scale industrial units etc. With all these facilities VEPZ holds a lot of promise to the state.

SHARE OF INFORMAL SECTOR

A large number of workers are engaged in informal sector activities in the cities of developing countries. Thus we need to know the proportion of workers in this sector to understand the overall economic activities in the city. In the absence of any secondary data on this sector, we have attempted to estimate the number of informal sector workers in Visakhapatnam from Economic Census 1990. Thus by our definition, the total number of workers in the informal sector turns out to be 60,320 which is more than 33 per cent of the total workers in the urban area of Visakhapatnam district. Our estimate of informal sector also finds that around 93 per cent of the units in manufacturing sector and 90 per cent of the units in the non-manufacturing sector in Visakhapatnam are in informal sector. These units employ around 21 per cent of the workers in manufacturing sector and 39 per cent of the workers in non-manufacturing sector.

The ORG-EPD report (1988) estimated the size of the informal sector in Visakhapatnam U.A. for the year 1981 to be 45,000 or about 29 per cent. Although this study used a different definition of informal sector, it gives some idea of the considerable increase in the share of the informal sector in Visakhapatnam between 1981 and 1991.

Chapter 3

ESTIMATES OF CITY INCOME

City income is a key indicator of the dynamism of urban economy and it also helps in assessing the contribution of a city, or a class of cities, in the total income generated in the state. Such a perspective is necessary for realising the role of cities in economic development as well as for visualising the support required for the local economic development in a planned manner. It must be noted here that estimation of city income is fraught with risks arising out of high degree of approximation involved. First, because of the openness of the city economy it is extremely difficult to accurately quantify the contribution of the high incidence of cross-border flow of trade and services in city's income. Second, because secondary data on establishments provided by the Economic Census and detailed data on registered factories published by the Annual Survey of Industries is not available at the city level and using district level aggregates can only yield very rough estimates. Third, hardly any information on the informal sector establishments and workers is available in the secondary data sets and very time consuming and expensive primary data collection has been undertaken only in a few cities to enable incorporating the income of this sector in the total income of cities.

`Conceptually, the city income consists of the total value of the flow of final goods and services that either originate (produced) in the city or are available to the city community (for consumption). The former highlights the production potential of the city, whereas the latter indicates the extent to which potential is internalised and shared by the city's inhabitants (Kashyap, Tiwari, and Veena, 1984, p. 10).' Both the concepts will give different estimates of city income. Also, the city income arrived at by using different methods of estimating city income, that is aggregating income accruals, value added or the expenditure approach will vary significantly.

Keeping the above stated methodological limitations and risks in mind, this chapter focuses on examining the structure of city economy in terms of income generated, both total income at the city level as well as sectoral distribution of the city income for Ahmedabad and Visakhapatnam urban agglomerations for the year 1995. The concept of total flow of goods and services produced in the city has been adopted for estimating the city income at producers' prices. The income generated in various sectors of the city economy has been estimated by following the dual approach, that is a value added approach for the manufacturing sector and income (wages and salaries) approach for the service sector. First, income per person engaged, including the wage employees and self/family workers, in each of the sectors was estimated and then it was multiplied by the total number of persons engaged in that sector.

For this purpose, projection of the city's population and sector-wise distribution of the work force for the year 1995 was necessary. The two case study cities' population was projected

by applying the average annual compound growth for the 30 year period 1961-1991. This was done in order to minimise the effect of any drastic changes in the past population growth patterns on the population projections of the two cities. The economic participation rate of main plus marginal workers in the 1991 Census was used for estimating the total number of workers in 1995, with an assumption that the work participation rate has not changed a great deal between 1991 and 1995. The sectoral distribution of total workers in 1995 was arrived at by applying the percentage distribution of the main workers into nine-fold industrial classification in 1991 assuming that the distribution of workers remained unaltered between the four year period. The number of rental housing units in 1995 was derived at by projecting the growth trends revealed by the city level census housing tables between 1981 and 1991.

Initially, NIC three digit data obtained from the 1990 Economic Census for the urban areas of each of the two districts (urban) on number and employment size of the establishments was utilised as a universe for the quick survey undertaken to collect data on incomes. The average income per worker estimated for the Economic Census categories of employment were clubbed in such a way so as to fit the Census data on employment structure. The final use of Census data as a base for estimating the city income was considered more appropriate as this was available for the unit of analysis or the urban agglomeration. The components of the city economy that have been identified for the purpose of presenting the estimated city income are: primary sector including agriculture and allied activities, mining and quarrying, forest based activities and fishing; manufacturing and processing; construction; trade and commerce, banking and insurance and hotels and restaurants; transport, storage and communication; other services including electricity, gas and water supply; and rental income.

However, it was not possible to estimate the extent of contribution of the informal sector in city income due to the unavailability of disaggregated income data for formal and informal sectors for a few of the components of urban economy for which we had not conducted a primary survey. Another important methodological limitation that has to be born in mind is that we were unable to give relative weightage to the disaggregated income per person by components according to the number of workers in each of the sub-categories of employment before averaging it for each sector on the whole. This was because further division-wise break up of employment data by the nine-fold industrial classification for the 1991 census year was not available. This may have introduced some inaccuracies in the estimation of sector wise incomes of the city, and in the total income of the two case study cities in general.

AHMEDABAD

The following methodological clarifications regarding the income estimation for different sectors of the city economy specific to Ahmedabad are necessary before analysing the structure of city income and changes that have taken place in the total income and the income distribution over the twenty year period.

i. The Quick Survey conducted by the National Institute of Urban Affairs with the help of local resource persons and investigators in 1995 provided average income data per person engaged in formal and informal units in manufacturing and processing; construction; trade, commerce and financial services, transport, storage and communication; and other services.

ii. For the manufacturing sector, the employment and value added data which emerged from the Industrial Survey for the year 1994-95 was also taken into consideration while estimating the average value added per person engaged.

iii. The income per person in each component of the primary sector was inflated from the 1976-77 data using the consumer price index for agricultural workers separately.

iv. The income per worker for the `other services' category which includes formal sector administration, education, health, water supply, electricity, gas and sanitation as well as many personal services falling in the informal category was estimated using the data collected on employment and salaries for formal establishments from the secondary sources and the Quick Survey results for the informal services. The average income thus derived for each sector was multiplied with the projected number of workers in the respective category.

v. The rental income per unit was derived by inflating the income given in the 1976-77 data set by consumer price index for urban non-manual workers.

According to the projection of the work force for the year 1995, there were a total of 11.10 lakh workers in Ahmedabad Urban Agglomeration, as against 6.07 lakh workers estimated for the year 1976-77. This indicates that the number of workers in the metropolis nearly doubled in the twenty year period. The total income generated by these workers in Ahmedabad was about Rs. 8,606 crores in 1995 and Rs. 578 crores in 1976-77 (Table 3.1). This means an increase in the gross income generated at the respective years' current prices of about 15 times during the period under consideration. Even after inflating the 1976-77 income by using the consumer price index for non- manual workers for bringing the two incomes at par in terms of purchasing power, the adjusted income works out to be Rs. 2,229.2 crores. It means that the growth in city's income was about four times between the twenty year period which is phenomenal. This indeed comes as a surprise in the context of a so called industrially declining

city. Therefore, a closer look at the sectoral distribution of city income is necessary to identify the key factors responsible for the growth dynamics of this magnitude.

Table 3.1

A Composite Statement of Workforce Engaged and Annual Income Generated, in Ahmedabad 1976-77, 1995

Activities	1976-77			1995		
	Person engaged (no.)	Value added per person (Rs.)	Total value added (Rs. crores)	Person engaged (no.)	Value added per person (Rs.)	Total value added (Rs. crores)
PRIMARY SECTOR						
Agriculture and allied, mining and quarrying	10614 (1.8)	2712	2.9 (0.5)	23456 (2.1)	5048	11.84 (0.1)
SECONDARY SECTOR						
Manufacturing and processing	281550 (46.4)	9128	257.0 (44.4)	404791 (36.5)	90741	3673.11 (42.7)
Construction	20060 (3.3)	12740	25.8 (4.5)	52296 (4.7)	136527	713.98 (8.3)
TERTIARY SECTOR						
Trade, commerce, and financial services	116000 (19.1)	10922	126.7 (21.9)	278987 (25.1)	80784	2253.76 (26.2)
Transport, storage and communication	43900 (7.2)	8018	35.20 (6.1)	101899 (9.2)	32172	327.83 (3.8)
Other services	134582 (22.2)	6382	85.90 (14.8)	248238 (22.4)	60331	1497.64 (17.4)
Rental income	-	-	44.9 (7.8)	-	-	127.97 (1.5)
Total value added	606706 (100.0)	9533 (100.0)	578.4 (100.0)	1109667 (100.0)	77520 (100.)	8606.13 (100.)

Source: For 1976-77 figures, Kashyap, Tiwari and Veena (1984).

The sectoral distribution of income generated in Ahmedabad in 1995 shows that manufacturing and processing is the most predominant component of the city economy, both in terms of the share of employment and income generation. This sector employed 36.5 per cent of the work force and accounted for 42.7 per cent (Rs. 3,673.11 crores) of the total income generated in the city. Trade, commerce and financial services is the second ranking group of economic activities which employed 25.1 per cent of the work force and generated 26.2 per cent

(Rs. 2,253.76 crores) of the city's income. Other services, which is a mixed bag of formal salaried class employees as well as low income informal sector workers, accounted for 17.4 per cent (Rs. 1,497.64 crores) of the city's income with a proportionately high share of workers of 22.2 per cent. The economic activates which had a relatively much smaller contribution in the income generation in Ahmedabad are construction (8.3%), Transport, storage and communication (3.8%), rental income (1.5%), and primary sector activities (0.1%).

Comparative analysis of the distribution of employment and income between 1976-77 and 1995 in Ahmedabad reveals that the share of income generated in the manufacturing and processing sector has declined by about 2 per cent points, which is relatively much smaller than the decline in the proportion of workers engaged in this sector, that is about 10 percent from 46.4 per cent in 1976-77 to 36.5 per cent. This is an indication of change in the industrial production process and adoption of increasingly more capital intensive technologies which are displacing labour and yielding higher incomes. Increasing share of trade, commerce and financial services and also of other services in terms of employment as well as incomes conforms to the general pattern of increasing tertiarisation of urban economies in the country. Increase in the income generated in the construction sector is also well within the broader pattern of changes taking place in the city economy in India. Decline in the contribution of the primary sector with increasing urban expansion is easily understandable. But decline in the share of income and employment in transport, storage and communication is hard to explain. Increasing trends in private vehicle ownership may be to some extent responsible for this change. Sharp decline in the share of rental income can be easily explained by the decreasing numbers of rental housing units and increasing proportion of owned housing units in Ahmedabad. The number of rental units declined from 266,280 or 56.64 per cent of total housing units in 1981 to 214,655 or 32.29 per cent of total housing units in 1991, that means a decline of 24.35 per cent in the number of rental housing units between 1981 and 1991.

The contribution of a city in the regional economy is an indicator of the role of the city economy in regional economic development. Ahmedabad accounted for 8.02 per cent of the total and 23.25 per cent of the urban population of the state and contributed 17.40 per cent in the total income of the state in 1995 (Table 3.2). With 7 per cent of the total population of the State, the city had contributed 14.3 per cent of the total income in 1976-77. A comparison of city income with that of the state income places Ahmedabad in a high-income place to live, with the per capita income in the city being twice as high as the per capita income in the state in 1995 as well as in 1976-77.

Table 3.2

A Comparative Statement of Income of Ahmedabad
UA and Gujarat State 1976-77 and 1995

Item	1976-77		1995	1995-96
	Ahmedabad	Gujarat	Ahmedabad	Gujarat
Total income (crores)	579	4035	8606	49447*
Per capita income (Rs.)	2793	1340	23395	11970
% share of city's income in the state's income	14.35	-	17.40	-

Source: For 1996-97, Kashyap, Tiwari and Veena (1984).

* SDP at factor cost at current price, report on currency and Finance Vol. II Statistical Statement & Economic Review, 1996-97, Reserve Bank of India, New Delhi.

The above description of the structure of city income and its comparison with the income level in the state over the twenty year period suggests that Ahmedabad has a vibrant and highly productive economy in spite of the perceptible downturn in the large composite mill based textile industry. Such growth and dynamism is most likely to have a positive impact on the income levels and standard of living of the residents in the city. The National Council for Applied Economic Research has generated valuable time series data on household incomes in selected cities in India. The information collected by primary surveys classifies households in five annual income classes, that in lower income (upto Rs. 25,000), lower middle income (Rs. 25,001-50,000), middle income (Rs. 50,001-77,000) middle high income (Rs. 77,001-10,600) and high income (above Rs. 106,000) income groups (Rao, 1993). The income level in each year is adjusted by using consumer price index based deflator to bring temporal parity in the purchasing power of every rupee earned. The distribution of households by income groups in Ahmedabad between 1986 and 1996-97 provides supporting empirical evidence to this positive correlation (Table 3.3). Over the years, the percentage of households in the lowest income group having an annual household income of less than Rs. 25,000 has been declining consistently, suggesting a discernible trend in lowering down of the poverty levels in the city. There has been some fluctuation in the lower-middle income group with an annual household income of Rs. 25,001-50,000. The percentage share of households in the three middle and higher income groups with an annual income of more than Rs. 50,000 has increased every year indicating an increasing prosperity of the city residents.

Table 3.3

Estimated Number (in'000) and Percentage Distribution of Households by Income Group in Ahmedabad

Annual Income Class (Rs.)	1996-97	1995-96	1994-95	1993-94	1992-93	1989-90	1988	1986
Upto 25,000	66 (8.68)	85 (11.33)	112 (15.62)	126 (18.24)	130 (19.23)	167 (25.79)	177 (28.58)	198 (35.22)
25,001-50,000	298 (39.21)	322 (42.93)	308 (42.96)	300 (43.37)	309 (45.82)	255 (39.27)	265 (42.83)	222 (39.31)
50,001-77,000	221 (29.08)	201 (26.80)	178 (24.82)	161 (23.28)	150 (22.23)	153 (23.53)	128 (20.67)	96 (16.98)
77,001-106,000	106 (13.95)	95 (12.67)	76 (10.60)	68 (9.86)	57 (8.48)	48 (7.43)	30 (4.86)	25 (4.46)
Above 106,000	69 (9.08)	47 (6.27)	43 (6.00)	36 (5.25)	29 (4.24)	26 (4.00)	19 (3.05)	23 (4.03)
Total	760 (100.00)	750 (100.00)	717 (100.00)	692 (100.00)	675 (100.00)	649 (100.00)	618 (100.00)	563 (100.00)

Source: Data generated and provided by the National Council of Applied Economic Research, New Delhi.

Note: The income level in each year has been brought at par with the base year in terms of purchasing power by using consumer price index based deflator.

Figures in parantheses are percentages to total households.

VISAKHAPATNAM

The method of estimation of the city income by first estimating the income of various sectors is quite similar to the one followed in the case of Ahmedabad, with a few differences in the income data used for a few sectors and sub-sectors. The details pertaining to the data base for Visakhapatnam's income estimation are as follows:

i. Quick Survey conducted by the National Institute of Urban Affairs with the help of local resource persons and investigators in 1995 provided average income data per person engaged in formal and informal units in manufacturing and processing; trade, commerce and financial services, transport, storage and communication; and other services.

ii. For the manufacturing sector, the employment and value added data which emerged from the Industrial Survey for the year 1994-95 was also taken into consideration while estimating the average value added per person engaged.

iii. The income per person in each component of the primary sector was estimated on the basis of the data presented in the ORG-EPD study on Visakhapatnam Metropolitan Region for the year 1983-84 using the consumer price index for agricultural workers separately.

iv. The income estimates for the construction sector were also inflated from the data obtained from the ORG-EPD study using the consumer price index for industrial workers.

v. As in the case of Ahmedabad, the income per worker for the `other services' category including public administration, education, health, water supply, electricity, gas and sanitation as well as personal services was estimated using the data collected on employment and salaries for formal establishments from the secondary sources and the Quick Survey results for the informal services. The average income thus derived for each sector was multiplied with the projected number of workers in the respective category.

vi. The average rental income per unit was assessed on the basis of discussions with the local resource person, investigators and government officials on the rents prevailing in the city in the year 1995.

Unfortunately, the income data presented in the ORG-EPD study on Visakhapatnam was not suitable for undertaking a time series analysis of city income, as the two data sets were not comparable. The coverage of the ORG-EPD study was the metropolitan region, including a rural segment that was even larger than the urban component of the region, while the unit of the present analysis was the urban agglomeration.

In 1995, there were 3.85 lakh persons engaged in various economic activities in Visakhapatnam who generated a total income of Rs. 2071.56crores (Table 3.4). The structure of employment and income in the city clearly indicates that although the value added per person engaged is the highest in the manufacturing and processing sector, it is the tertiary sector which generates the bulk of the income. Looking at each sector separately, the manufacturing sector ranks first with a percentage share of 29.9 per cent (Rs. 619.08 crores), followed by trade, commerce and financial services with 19.9 per cent (Rs. 412.20 crores), other services with 18.1 per cent (Rs. 375.72 crores), construction with 16.6 per cent (Rs. 343.32 crores), transport, storage and communication with 8.2 per cent (Rs. 170.04 crores), primary sector with 3.9 per cent (Rs. 79.20 crores), and rental income accounting for the smallest share of 3.5 per cent (Rs. 72.00 crores). The relatively small share of rental housing in city income can be partly explained by increasing incidence of ownership of housing units in the city. Although, the total number of rental units increased from 70,905 in 1981 to 98,530 in 1991, that is a decadal growth of about 39 per cent, the preparation of rental housing units declined from 58.9 per cent in 1981 to 44.7 per cent in 1991.The fairly large contribution made by the construction sector can be explained by the increase in construction activity in association with the past industrial development in and around the city as also in anticipation of the future industrial growth in the region. A significantly large proportion of the income in the primary sector originates in fishing and allied activates. However, with increasing industralisation, the manufacturing and processing activities are expected to contribute significantly more in the city's income in the near future.

Visakhapatnam UA accounts for 1.6 per cent of the total and 5.9 per cent of the urban population of the state and generates a proportionately larger share of income of 3.80 per cent of the total income of the state. As expected in the case of most large cities, the per capita income of Visakhapatnam is more than twice as much of the per capita income recorded in the state (Table 3.5).

Table 3.4

A Composite Statement of Workforce engaged and Income generated in Visakhapatnam, 1995

Activities	1995		
	Person engaged (no.)	Value added per person (Rs.)	Total value added (Rs. crores)
PRIMARY SECTOR			
Agriculture and allied, mining and quarrying, fishing	27570 (7.2)	28716	79.20 (3.8)
SECONDARY SECTOR			
Manufacturing and processing	77363 (20.1)	80028	619.08 (29.9)
Construction	30376 (7.9)	113040	343.32 (16.6)
TERTIARY SECTOR			
Trade commerce, and financial services	57677 (15.0)	71472	412.20 (19.9)
Transport storage and communication	58446 (15.2)	29100	170.04 (8.2)
Other services	133080 (34.6)	28236	375.72 (18.1)
Rental income	-	-	72.00 (3.5)
Total	384512 (100.00)	32419	2071.56 (100.00)

Table 3.5

A Comparative Statement of Income of Visakhapatnam UA
and Andhra Pradesh State 1995

Item	Visakhapatnam	Andhra Pradesh
Total income (crores)	2072	55230
Per capita income (Rs.)	19547	8327
% share of city's income in the states income	3.80	-

Source:For the state data, SDP at factor cost at current price, Report on Currency and Finance, Vol. II, Statistical Statement & Economic Reviews, 1996-97, Reserve Bank of India, New Delhi.

The household income data is available for Visakhapatnam from 1992-93, after the city become a metropolis in 1991. The distribution of households by income groups reveals a relatively mixed trend between 1992-93 and 1996-97 in comparision with the picture that emerged for Ahmedabad (Table 3.6). The proportion of housholds falling in the lowest income group declined every year by one or two per cent points, with the exception of 1993-94 when the same increased by four per cent points. But it can be stated that poverty levels in Visakhapanam in general also exihibit a downward trend during the five year period. The proportion of households in the lower-middle income group (25,001-50,000) first declined sharply in the first two years, then registered a marginal increase in 1994-95 and then remained at about the same level in 1996-97. The percentage share of households in the three relatively higher income groups has been slowly but consistently increasing over the five year period. It can be summarised, therefore, that the growth dynamism of Visakhapatnam has not yet translated into more equitable income distribution and a significant increase in the standard of living in the city in general.

Table 3.6

Estimated Number (in'000) and Percentage Distribution of Households by Income Group in Visakhapatnam

Annual Income Class (Rs.)	1996-97	1995-96	1994-95	1993-94	1992-93
Upto 25,000	61 (18.77)	65 (20.44)	62 (20.88)	70 (25.27)	57 (21.76)
25,001-50,000	147 (45.23)	144 (45.28)	132 (44.44)	139 (50.18)	142 (54.20)
50,001-77,000	71 (21.85)	65 (20.44)	62 (20.88)	35 (12.64)	33 (12.59)
77,001-106,000	29 (8.92)	27 (8.49)	26 (8.75)	19 (6.86)	18 (6.87)
Above 106,000	17 (5.23)	17 (5.35)	15 (5.05)	14 (5.05)	12 (4.58)
Total	325 (100.00)	318 (100.00)	297 (100.00)	277 (100.00)	262 (100.00)

Source: Data generated and provided by the National Council of Applied Economic Research, New Delhi.

Note: The income level in each year has been brought at par with the base year in terms of purchasing power by using consumer price index based deflator.

Chapter 4

ANALYSIS OF INDUSTRIAL LINKAGES

It is important to note at the out set that the aim of this study is not to prepare conventional input-output tables for the two case study cities. Considering the openness of the city economy and limitation of obtaining accurate quantitative information on all transactions, it is very difficult to make an input-output table for any city, be it the conventional final demand model or Szymer type total flow model. But given the paucity of studies on linkages of city economy, it was considered that even an illustrative presentation of these interdependencies can be of great value for understanding the functioning of urban economy in India.

As noted earlier in the First Chapter, we have used the modified input-output framework of analysis to focus on the entire production process to examine relationships existing between various sectors, that is between the lead and dependent industries as well as between formal and informal manufacturing units. An attempt has also been made to analyse regional linkages of the industries located in the selected cities, with special emphasis on distinguishing between transactions which take place within the city as against those which take place between the city and other regions. Both backward and forward linkages have been included in the analytical framework. These relationships have been quantified to the extent possible given the data constraints. An attempt has also been made to develop a suitable `index of intensity' of transactions taking place between sectors/industries located in these cities. Two measures for assessing the intensity of various industrial transactions have been applied, as permitted by the data. First, the number of transactions or the frequency of industrial units reporting a particular type of linkage, with the possibility of each sampled industrial unit giving a single or multiple linkage response. Second, total value of transactions or flow of input-output between sectors and regions.

The basic structure of the modified model is similar to that of Leontief Input-Output model and the data requirements are thus identical. The key requirement for such an analysis is that of a transaction table containing basic information on total flow of goods and services across the sectors. The data for the transaction tables has been generated by conducting a detailed primary survey in the two case study cities. A primary survey of 301 industrial units in Ahmedabad and 115 units in Visakhapatnam was undertaken in 1995 to generate the primary data for industrial linkage analysis. The sampled units were identified on the basis of secondary data on industries at three digit NIC code level obtained from ASI, Chief Inspector of Factories and the district industries centre. This was then clubbed into NIC two digit classification for the purpose of linkage analysis, which has been limited to the manufacturing and processing units only. Since the secondary data on the universe pertained to different years, it was difficult to ascertain the exact proportion of the sampled units with reference to the universe and also to

arrive at a systematically representative sample distribution. But the sample roughly represents the actual distribution of industries in the two cities.

The following three types of industrial linkages have been examined in this chapter:

Industrial Inter-dependence within the City-Region

Industrial inter-dependence can be defined as functional relationships between firms and industries that lead to reduction in the cost of production because of locational proximity. Alfred Weber has identified `agglomeration economies' as one of the locational factors, besides the least cost of transport and labour. E. M. Hoover later introduced `transfer economies' which implied locational juxtaposition (in a large urban centre or metropolis) of industries resulting from input output transactions between a set of technologically inter-dependent industries, leading to minimisation of the opportunity cost (Pathak, 1984).

For the purpose of examining the incidence of industrial inter-dependence in the selected cities, the linkages of the sampled units located in the city with other industrial units located within the city and the district, named as the city region, have been considered. This was necessary for assessing the effect of agglomeration economies on industrial location keeping in mind the spread of industrial activity in the non-urban periphery of most cities in India, including in the two case study cities. The industrial inter-dependence has been measured in terms of the number of input and output linkages, or transactions, reported by the sample industrial units. Due to the lack of appropriately disaggregated data, it was not possible to quantify the strength of these linkages in terms of their Rupee value.

Regional Linkages of Industries

In a regional context, industrial linkages are perceived as channels through which growth impulses are transmitted through demand for and sale of raw materials, semi-finished and finished products. The frequency and strength of backward and forward industrial linkages determines how much of the growth generated at a given location (a city for example) will be diffused to other regions or trickle-down to the hinterland.

The regional linkages of industries located in the selected cities have been examined in terms of the total value of flow of inputs and outputs. The levels of regional analysis include: within the city, within the district but outside the city, within the state but outside the district, rest of India, and outside the country.

Linkages between Formal and Informal Manufacturing

The formal and informal sectors are closely linked facets of urban economy. The formal sector makes use of cheap goods and services produced in the informal sector while informal

sector depends on the formal sector for some of the inputs and sometimes markets. Formal and informal manufacturing activities are linked both for input purchase and output disposal as well as through subcontracting of a part of the production from the formal to informal units. It is expected that there will be a greater degree of inter-dependence between the two sectors with increasing decentralisation of the production process. Some scholars view the relationship between the two sectors as benign (e.g. Papola, 1981: and Sethuraman, 1981), while some others perceive it as exploitative (e.g. Bose, 1978: Davis, 1979; Remy, 1982; and Romatet, 1983).

The analysis of linkages between the formal and informal manufacturing activities has been undertaken at two levels. First, the broad inter-sectoral flow of total inputs and outputs has been examined in order to assess the significance of direct exchange between formal and informal manufacturing via-a-vis exchange with other sectors of the economy. The scheme of sectoral classification includes: formal sector industrial units employing 10 or more persons, informal industrial units employing less than 10 persons, wholesalers, retailers, agents or middle persons, packers and distributors, and individuals and households for final consumption. Second, the input and output linkages between formal and informal industries have been further examined at the two digit NIC classification level. Both types of linkages have been presented in value terms to indicate the intensity of exchange taking place between the two sectors.

The key findings of the industrial linkage analysis undertaken in Ahmedabad and Visakhapatnam cities are briefly presented in the following section. An effort has also been made to list the three most important factors that have affected the choice of the city, and the chosen site within the city, in order to assess whether agglomeration economies was a key consideration in determining the location of industries in the two case study cities. Finally, we have listed major operational constraints which have hampered the production and growth of the selected industrial units, with a view to identifying key interventions for promoting industrial growth in and around Indian cities.

AHMEDABAD

Industrial Inter-dependence within the City - Region

A total of 171 industrial units out of a sample of 301 industrial units, or 57 per cent of the sample units, have reported technological linkages with other industrial units located within the district. Implying that these industrial units either purchased inputs from, or sold their output to, other industrial units located within the district. Table 4.1 shows the number of input and output transactions of these 171 industrial units as an indicator of the intensity of industrial interdependence within the city region. These industrial units together have revealed a total of 342 input-output transactions.

The incidence of input-output exchange in Ahmedabad is the highest within the industrial group chemical and chemical products, excluding petroleum and coal products. The second ranking highly linked group of industries are electrical machinery, apparatus and appliances. Other groups of industries with high degree of intra-group linkages are: machinery, machine tools and parts; manufacture of rubber, plastic and petroleum products; and cotton textile group of industries. Technological interdependence between industries falling into different two digit NIC classification are: manufacture of rubber, plastic and petroleum products and chemical and chemical products; basic metals and alloys industries and metal products and parts; basic metals and alloys industries and machinery, machine tools and parts industries.

Regional Linkages of Industries

The regional pattern of backward linkages presented in Table 4.2 shows that on an average over half of the inputs for the industries located in Ahmedabad are purchased from within the district. The industries with strong backward linkages within the city, which buy more than 60 per cent of their inputs locally are: cotton textile; textile products; wood and wood products; leather, fur and products; non-metallic mineral products; metal products and parts; and other manufacturing industries. The beverage and tobacco industry has strong regional linkages in terms of procuring all the materials from other states in India. Other industries which have some input purchase linkages with other states in India are: food industry producing oil and starch and chemical and chemical products manufacturing. Strong backward linkages within the city and district as against the poor linkage with other parts of the country can be explained by the predominance of materials being procured and supplied locally to the industries in the city by the wholesalers and agents.

Table 4.1

Number of Input and Output Transactions of 171 Technologically linked Industries in Ahmedabad, 1994-95

Name of industry			Input (Consuming Industries)																				Total
			20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
Output (Producting Industries)	20	Manufacture of Food Products	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
	21	Manufacture of Oil & Starch	2	5	0	4	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	14
	22	Manufacture of Beverages, Tobacco Products		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	23	Manufacture of Cotton Textiles	0	0	0	12	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	21
	24	Manufacture of Wool, Silk and Synthetic fibre Products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	25	Manufacture of Jute Hemp and Mesta Textile	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
	26	Manufacture of Textile Products (including wearing apparel other that footwear)	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	27	Manufacture of Wood and Wood Products, Furniture and Fixtures	0	0	0	0	0	0	3	5	0	0	1	2	1	2	2	3	4	0	1	0	24
	28	Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	1	0	0	0	0	0	1	0	3	0	0	2	0	0	1	0	1	0	3	0	12
	29	Manufacture of Leather and Leather/Fur Products (except Products of petroleium and coal)	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	3
	30	Manufacture of Rubber, Plastic, Petroleium and coal Products	2	3	1	6	0	0	4	0	0	1	20	11	0	1	1	4	6	0	2	0	62
	31	Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	1	1	0	9	0	0	3	1	0	1	7	34	0	0	2	2	1	0	3	0	65
	32	Manufacture of Non-Metalic Mineral Products	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
	33	Basic Metal and Alloys Industries	0	0	0	0	0	0	0	0	0	0	0	2	1	3	12	11	1	0	0	0	30
	34	Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	0	1	0	0	0	0	0	0	1	0	1	5	0	0	9	1	5	0	3	1	27
	35	Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	1	0	0	2	0	0	2	0	0	0	1	4	0	0	0	10	3	0	2	0	25
	36	Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	31	0	2	0	37
	37	Manufacture of Transport Equipment and Parts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	38	Other Manufacturing Industries	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	39	Repair	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total		17	12	2	35	0	0	25	6	5	4	32	63	5	6	28	33	52	0	16	1	342

Source: Calculated from NIUA's Industrial Survey.

Table 4.2
Regional Pattern of Input Purchase of Industries in Ahmedabad
1994-95

(Rs. In lakh)

Name of the Industry	Within the City	Within District but Outside City	Within State but Outside District	Rest of India	Outside India	Total
Manufacture of Food Products	248.79	29.10	268.12	0.00	0.00	546.01
%	45.57	5.33	49.10	0.00	0.00	100.00
Manufacture of Oil & Starch	1354.94	1026.95	1135.95	121.24	3.00	3642.08
%	37.20	28.20	31.19	3.33	0.08	100.00
Manufacture of Beverages, Tobacco Products	0.00	0.00	0.00	5.00	0.00	5.00
%	0.00	0.00	0.00	100.00	0.00	100.00
Manufacture of Cotton Textiles	1457.59	84.06	5.33	0.00	0.00	1552.31
%	93.90	5.42	0.34	0.00	0.00	100.00
Manufacture of Textile Products (including wearing apparel other that footwear)	153.89	73.84	27.95	0.00	0.00	255.68
%	60.19	28.88	10.93	0.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	68.52	4.13	6.50	24.06	0.00	103.21
%	66.39	4.00	6.30	23.31	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	85.68	45.53	34.50	0.00	0.00	165.71
%	51.70	27.48	20.82	0.00	0.00	100.00
Manufacture of Leather and Leather/Fur Products (except Products of petroleium and coal)	68.92	10.88	6.65	0.00	0.00	86.44
%	79.73	12.58	7.69	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	409.77	190.57	777.45	881.31	0.00	2259.41
%	18.14	8.43	34.41	39.01	0.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	1453.81	141.96	344.88	2820.06	1.93	4762.63
%	30.53	2.98	7.24	59.21	0.04	100.00
Manufacture of Non-Metalic Mineral Products	107.84	8.00	33.55	9.00	0.00	158.39
%	68.08	5.05	21.18	5.68	0.00	100.00
Basic Metal and Alloys Industries	813.82	0.00	635.26	700.00	0.00	2149.08
%	37.87	0.00	29.56	32.57	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	1349.66	295.32	280.37	101.60	0.00	2026.95
%	66.59	14.57	13.83	5.01	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	620.43	206.22	214.83	269.99	0.00	1311.47
%	47.31	15.72	16.38	20.59	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	651.86	60.49	171.28	399.17	0.00	1282.81
%	50.82	4.72	13.35	31.12	0.00	100.00
Other Manufacturing Industries	34.00	0.29	0.00	0.00	0.00	34.29
%	99.15	0.85	0.00	0.00	0.00	100.00
Total	8879.52	2177.34	3942.61	5331.43	4.93	20341.46
%age	43.65	10.70	19.38	26.19	0.05	100.00

Source: NIUA'a Industrial Survey.

Table 4.3

Regional Output Disposal Pattern of Industries in Ahmedabad, 1994-95

Rs. In lakh

Name of the Industry	Within the City	Within District but Outside City	Within Distt. but Outside City	Rest of India	Outside India	Total
Manufacture of Food Products	354.33	352.54	321.17	159.50	0.00	1187.54
%	29.84	29.69	27.04	13.43	0.00	100.00
Manufacture of Oil & Starch	1640.65	1438.10	1481.85	1489.05	170.00	6219.64
%	26.38	23.12	23.83	23.94	2.74	100.00
Manufacture of Beverages, Tobacco Products	3.00	3.00	3.00	0.00	0.00	9.00
%	33.33	33.33	33.33	0.00	0.00	100.00
Manufacture of Cotton Textiles	545.39	440.45	813.78	412.25	0.00	2211.88
%	24.66	19.91	36.79	18.64	0.00	100.00
Manufacture of Textile Products (including wearing apparel other than footwear)	155.14	96.33	51.87	119.53	76.78	499.65
%	31.05	19.28	10.38	23.92	15.37	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	85.00	22.90	29.40	3.40	0.00	140.71
%	60.41	16.28	20.90	2.42	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	123.45	82.00	74.00	74.00	0.00	353.45
%	34.93	23.20	20.94	20.94	0.00	100.00
Manufacture of Leather and Leather/Fur Products (except Products of petroleium and coal)	50.81	36.43	36.43	3.77	28.50	155.95
%	32.58	23.36	23.36	2.42	18.28	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	345.73	722.20	796.54	686.34	737.57	3288.38
%	10.51	21.96	24.22	20.87	22.43	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	2927.74	144.69	2059.34	2286.72	496.70	7915.19
%	36.99	1.83	26.02	28.89	6.28	100.00
Manufacture of Non-Metalic Mineral Products	93.10	26.08	34.33	0.00	205.00	358.52
%	25.97	7.28	9.58	0.00	57.18	100.00
Basic Metal and Alloys Industries	13.00	26.65	5013.00	197.00	0.00	5249.65
%	0.25	0.51	95.49	3.75	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	2204.83	1519.81	1071.80	1334.92	0.00	6131.36
%	35.96	24.79	17.48	21.77	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	1040.05	661.04	871.13	754.16	37.17	3363.56
%	30.92	19.65	25.90	22.42	1.10	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	727.16	525.27	620.75	1113.74	46.25	3033.18
%	23.97	17.32	20.47	36.72	1.52	100.00
Other Manufacturing Industries	8.60	8.60	8.60	0.00	0.00	25.80
%	33.33	33.33	33.33	0.00	0.00	100.00
Total	10318.01	6106.10	13287.00	8634.39	1797.97	40143.46
%	25.70	15.21	33.10	21.51	4.48	100.00

Source: NIUA's Industrial Survey.

The industries of Ahmedabad have relatively stronger forward linkages with the rest of the state and country, with about 43 per cent of the total output being sold outside the district and to other states (Table 4.3). A significant proportion of about 16.74 per cent of the output of industries located in the city is also exported out of India. The industries which predominantly cater to the local demand with more than 30 per cent of their output being sold within the city are: food manufacturing and processing; beverages and tobacco; textile products; wood and wood products; paper and paper products; leather and fur products; chemicals and chemical products; metal products; manufacturing of machinery, machine tools and parts; and other manufacturing industries. The industries which have strong forward regional linkages with about one-third of their output going to other states are: electrical machinery, apparatus, appliances and parts; and chemicals and chemical products. Industries with significant export orientation are: basic metal and alloys industries; non-metallic mineral products; and rubber, plastic, petroleum and coal products.

Linkages between Formal and Informal Manufacturing

An examination of sectoral inter-dependence of industries located in Ahmedabad reveals that they have poor input purchase links with the informal sector manufacturing activity (Table 4.4). The bulk of input purchase is made from the formal manufacturing units and wholesale traders. Beverages and tobacco manufacturing procures the largest proportion of their raw material requirement from informal sector industries.

A relatively larger percentage of total sale of the industrial output goes to the informal sector manufacturing (Table 4.5). But, the sale of products to formal sector industries is about twice as much. About half of the total industrial output of the city is sold to the wholesale traders. The informal sector industries to which relatively higher proportion of output disposal is directed are: basic metals and alloys industry; and manufacturing of rubber, plastic, petroleum and coal products.

Locational Factors

A listing of the three most important reasons for setting up each industrial unit in the two case study cities in response to an open ended question yielded a set of 15 constraints (Table 4.6). The factor which got the highest ranking for industrial location in Ahmedabad is possibility of easy marketing. Other important locational factors stated by the respondents are: good transport facility, availability of raw materials, availability of skilled and cheap labour, good potential for development and proximity to native place. Industrial exchange within the city or district leading to reduction in the cost of production did not appear as a locational factor, at least in the consciousness of the respondents. Although availability of raw materials may also be indirectly alluding to materials to be purchased from other industrial units in some cases. Easy marketing certainly relates to the potential demand of a large urban centre such as Ahmedabad.

Table 4.4

Sectoral Pattern of Input Purchase of Industries in Ahmedabad, 1994-95

Rs. In lakh

Name of the Industry	Formal Industrial unit employing 10 or more workers	Informal Industrial unit employing less than 10 workers	Wholesaler	Retailer	Agent/middle persons	Individual/ households producers particularly of primary prdoucts	Total
Manufacture of Food Products	185.02	1.73	106.62	12.52	240.00	0.12	546.01
%	33.89	0.32	19.53	2.29	43.96	0.02	100.00
Manufacture of Oil & Starch	185.60	0.00	260.22	54.63	126.63	3015.00	3642.08
%	5.10	0.00	7.14	1.50	3.48	82.78	100.00
Manufacture of Beverages, Tobacco Products	2.75	2.25	0.00	0.00	0.00	0.00	5.00
%	55.00	45.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Cotton Textiles	1382.84	1.25	149.11	3.11	0.00	16.00	1552.31
%	89.08	0.08	9.61	0.20	0.00	1.03	100.00
Manufacture of Textile Products (including wearing apparel other that footwear)	109.89	3.33	135.26	5.42	1.78	0.00	255.68
%	42.98	1.30	52.90	2.12	0.69	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	28.72	7.33	48.73	13.23	5.20	0.00	103.21
%	27.83	7.11	47.21	12.82	5.04	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	18.06	0.07	123.71	23.44	0.43	0.00	165.71
%	10.90	0.04	74.65	14.15	0.26	0.00	100.00
Manufacture of Leather and Leather/Fur Products (except Products of petroleium and coal)	28.16	0.15	29.19	23.68	1.03	4.22	86.44
%	32.58	0.17	33.77	27.39	1.20	4.89	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	505.19	261.30	410.15	63.03	1015.71	3.73	2259.41
%	22.36	11.56	18.15	2.79	44.95	0.17	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	2770.20	39.08	927.18	95.96	929.03	1.18	4762.63
%	58.17	0.82	19.47	2.01	19.51	0.02	100.00
Manufacture of Non-Metalic Mineral Products	20.93	8.05	83.65	44.08	1.68	0.00	158.39
%	13.21	5.08	52.81	27.83	1.06	0.00	100.00
Basic Metal and Alloys Industries	172.85	0.00	722.02	634.21	0.00	620.00	2149.08
%	8.04	0.00	33.60	29.51	0.00	28.85	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	802.05	225.63	749.27	146.66	103.34	0.00	2026.95
%	39.57	11.13	36.97	7.24	5.10	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	586.79	133.59	336.80	182.53	71.75	0.00	1311.47
%	44.74	10.19	25.68	13.92	5.47	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	390.02	16.16	313.01	78.72	484.90	0.00	1282.81
%	30.40	1.26	24.40	6.14	37.80	0.00	100.00
Other Manufacturing Industries	2.49	0.59	23.80	7.41	0.00	0.00	34.29
%	7.26	1.72	69.41	21.61	0.00	0.00	100.00
Total	7191.55	700.53	4418.72	1388.62	2981.49	3660.25	20341.46
%	35.35	3.44	21.72	6.83	14.66	17.99	100.00

Source: NIUA's Industrial Survey

Table 4.5

Sectoral Output Disposal Pattern of Industries in Ahmedabad, 1994-95

Rs. In lakh

Name of the Industry	Formal Industrial unit employing 10 or more workers	Informal Industrial unit employing less than 10 workers	Wholesaler	Retailer	Agent/ middle persons	Packers	Individuals/ household for final consumption or further processing	Total
Manufacture of Food Products	0.00	117.50	674.79	375.94	0.51	0.00	18.80	1187.54
%	0.00	9.89	56.82	31.66	0.04	0.00	1.58	100.00
Manufacture of Oil & Starch	320.95	7.50	5744.86	77.96	33.10	0.00	3.00	6187.38
%	5.19	0.12	92.85	1.26	0.53	0.00	0.05	100.00
Manufacture of Beverages, Tobacco Products	0.00	0.00	4.50	4.50	0.00	0.00	0.00	9.00
%	0.00	0.00	50.00	50.00	0.00	0.00	0.00	100.00
Manufacture of Cotton Textiles	909.66	0.00	1129.47	36.47	0.00	0.00	66.89	2211.88
%	41.13	0.00	51.06	1.65	0.00	0.00	3.02	100.00
Manufacture of Textile Products (including wearing apparel other than footwear)	0.00	0.00	308.82	117.83	41.00	0.00	0.00	499.65
%	0.00	0.00	61.81	23.58	8.21	0.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	23.87	5.50	64.84	22.67	0.00	0.00	8.83	140.71
%	16.96	3.91	46.08	16.11	0.00	0.00	6.28	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	47.67	47.67	103.47	126.97	5.50	0.00	22.17	353.45
%	13.49	13.49	29.28	35.92	1.56	0.00	6.27	100.00
Manufacture of Leather and Leather/Fur Products (except Products of petroleium and coal)	0.00	0.00	67.47	62.48	26.00	0.00	0.00	155.95
%	0.00	0.00	43.27	40.06	16.67	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	1324.12	722.50	927.52	125.23	189.01	0.00	0.00	3288.38
%	40.27	21.97	28.21	3.81	5.75	0.00	0.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	1388.92	1102.50	4651.85	258.10	438.80	0.00	0.00	7915.19
%	17.55	13.93	58.77	3.26	5.54	0.00	0.00	100.00
Manufacture of Non-Metalic Mineral Products	15.50	0.00	166.33	156.59	20.09	0.00	0.00	358.52
%	4.32	0.00	46.39	43.68	5.60	0.00	0.00	100.00
Basic Metal and Alloys Industries	1726.67	1666.67	1762.48	12.67	81.17	0.00	0.00	5249.65
%	32.89	31.75	33.57	0.24	1.55	0.00	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	379.23	79.98	2844.42	2263.26	527.16	33.33	3.98	6131.36
%	6.19	1.30	46.39	36.91	8.60	0.54	0.06	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	1537.89	161.01	656.86	88.42	907.32	7.40	4.67	3363.56
%	45.72	4.79	19.53	2.63	26.97	0.22	0.14	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	522.44	236.21	1222.01	563.09	142.23	0.00	194.21	3033.18
%	17.22	7.79	40.29	18.56	4.69	0.00	6.40	100.00
Other Manufacturing Industries	0.00	0.00	12.90	12.90	0.00	0.00	0.00	25.80
%	0.00	0.00	50.00	50.00	0.00	0.00	0.00	100.00
Total	8196.91	4147.03	20342.60	4305.07	2411.89	40.73	322.54	40111.20
%	20.44	10.34	50.72	10.73	6.01	0.10	0.80	100.00

Source: NIUA's Industrial Survey

Table 4.6

Reasons for Industrial Location in Ahmedabad (Multiple Response)

Name of the Industry	Availability of Skilled and Cheap Labour	Availability of Financial Sources	Availability of Raw Material	Easy Marketing	No Power Problem	Good Transport Facility	Cheap Land by Government	Telephone Facility	Proximity of Native Place	Sales Tax/ Octroi Relief	Good Potential for Development	Availability of Infrastructure	Well Established City	Industrial Area	Import Facility	Total
Manufacture of Food Products	0	2	4	11	0	4	0	0	3	0	0	0	0	0	0	24
%	0.00	8.33	16.67	45.83	0.00	16.67	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Oil & Starch	1	0	8	14	2	8	2	0	0	0	2	0	0	1	0	38
%	2.63	0.00	21.05	36.84	5.26	21.05	5.26	0.00	0.00	0.00	5.26	0.00	0.00	2.63	0.00	100.00
Manufacture of Beverages, Tobacco Products	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
%	0.00	50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Cotton Textiles	5	0	6	9	4	6	1	0	0	0	2	0	0	0	0	33
%	15.15	0.00	18.18	27.27	12.12	18.18	3.03	0.00	0.00	0.00	6.06	0.00	0.00	0.00	0.00	100.00
Manufacture of Textile Products (including wearing apparel other than footwear)	7	1	6	12	0	8	3	1	0	1	4	0	0	0	0	43
%	16.28	2.33	13.95	27.91	0.00	18.60	6.98	2.33	0.00	2.33	9.30	0.00	0.00	0.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	3	0	6	9	1	5	0	0	4	0	4	0	0	0	0	32
%	9.38	0.00	18.75	28.13	3.13	15.63	0.00	0.00	12.50	0.00	12.50	0.00	0.00	0.00	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	3	1	3	4	1	4	0	1	4	0	5	0	0	0	0	26
%	11.54	3.85	11.54	15.38	3.85	15.38	0.00	3.85	15.38	0.00	19.23	0.00	0.00	0.00	0.00	100.00
Manufacture of Leather and Leather/Fur Products (except Products of petroleum and coal)	2	0	2	7	1	6	0	0	5	0	2	0	0	0	0	25
%	8.00	0.00	8.00	28.00	4.00	24.00	0.00	0.00	20.00	0.00	8.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleum and coal Products	8	1	2	17	2	16	3	2	3	1	9	0	0	4	0	68
%	11.76	1.47	2.94	25.00	2.94	23.53	4.41	2.94	4.41	1.47	13.24	0.00	0.00	5.88	0.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleum and coal)	9	1	9	24	2	13	3	4	9	1	5	0	0	2	0	82
%	10.98	1.22	10.98	29.27	2.44	15.85	3.66	4.88	10.98	1.22	6.10	0.00	0.00	2.44	0.00	100.00
Manufacture of Non-Metalic Mineral Products	6	0	8	6	2	6	0	0	1	0	0	0	0	0	0	29
%	20.69	0.00	27.59	20.69	6.90	20.69	0.00	0.00	3.45	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Basic Metal and Alloys Industries	1	0	3	3	1	1	4	1	0	0	1	0	0	0	0	15
%	6.67	0.00	20.00	20.00	6.67	6.67	26.67	6.67	0.00	0.00	6.67	0.00	0.00	0.00	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	21	1	20	21	10	18	2	1	7	1	9	0	0	2	0	113
%	18.58	0.88	17.70	18.58	8.85	15.93	1.77	0.88	6.19	0.88	7.96	0.00	0.00	1.77	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	17	1	11	29	7	20	3	5	6	2	14	1	2	1	0	119
%	14.29	0.84	9.24	24.37	5.88	16.81	2.52	4.20	5.04	1.68	11.76	0.84	1.68	0.84	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	20	1	19	37	6	18	6	4	13	0	9	0	0	5	0	138
%	14.49	0.72	13.77	26.81	4.35	13.04	4.35	2.90	9.42	0.00	6.52	0.00	0.00	3.62	0.00	100.00
Other Manufacturing Industries	0	0	1	1	0	2	0	0	0	0	2	0	0	0	0	6
%	0.00	0.00	16.67	16.67	0.00	33.33	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	100.00
Total	103	10	108	205	39	135	27	19	55	6	68	1	2	15	0	793
%	12.99	1.26	13.62	25.85	4.92	17.02	3.40	2.40	6.94	0.76	8.58	0.13	0.25	1.89	0.00	100.00

Source: NIUA's Industrial Survey.
Note: Based on multiple response.

The reasons for industrial site selection within Ahmedabad also do not reveal agglomeration economies as a determining factor for industrial location (Table 4.7). The five most frequently quoted reasons in order of their importance are: no marketing problem, good transport facilities, availability of raw materials, cheap labour, and availability of rented sheds.

Operational Constraints

The response to the question pertaining to operational constraints faced by the industries located in the case study cities was elicited through a set of already identified constraints to industrial functioning and growth. On the basis of multiple response to this question, it was found that the three most important problems faced by industries located in Ahmedabad were lack of adequate demand, import regulation related restrictions, and too much competition (Table 4.8). The lack of demand and too much competition both are indicators of the willingness of the industrialists to increase their production but owing to the prevailing market condition they are not able to achieve this goal. The other factors hampering industrial production in the city were lack of physical infrastructure, indequate credit facility, inadequate and erratic electricity supply and lack of adequate supply of basic raw materials.

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Industrial Inter-dependence within the City - Region

Of the 115 sample industrial units, 42 or 37 per cent reveal industrial inter-dependence on other industries located within the city region or the district. These industries have recorded a total of 71 transactions or incidences of input and output exchanges (Table 4.9).

As expected, the most predominant industrial inter-dependence in Visakhapatnam is between basic metals and alloys industries and metal products and parts group of industries followed by high level of inter-industry linkages between basic metals and alloys industries and machinery, machine tools and parts industries. The steel plant falling in the basic metals and alloys group of industries is clearly the focal point and a lead industry in the city and a significant proportion of industrial activities are linked to it either through input provision or output utilisation. The steel plant has also led to the development of a great deal of relatively smaller scale industrial activities through anciallerisation in and around the city. The Important intra-group input output linkages have been recorded in the case of two groups of industries, namely chemicals and chemical products and non-metallic mineral products.

Table 4.7

Reasons for Selecting the Site for Location in Ahmedabad

Name of the Industry	Availability of Skilled and Cheap Labour	Availability of Financial Sources	Availability of Raw Material	Easy Marketing	No Power Problem	Good Transport Facility	Cheap Land by Government	Telephone Facility	Proximity of Native Place	Sales Tax/ Octroi Relief	Availability of Rented Sheds	Subsidy Advantage	Better Environment	Infrastructure Developoment	Total
Manufacture of Food Products	5	0	0	0	5	1	1	2	0	0	0	0	0	0	14
%	35.71	0.00	0.00	0.00	35.71	7.14	7.14	14.29	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Oil & Starch	4	0	3	4	5	2	6	0	0	0	0	0	0	1	25
%	16.00	0.00	12.00	16.00	20.00	8.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	100.00
Manufacture of Beverages, Tobacco Products	data no available														
%															
Manufacture of Cotton Textiles	6	0	0	2	5	2	4	1	3	0	1	0	1	5	30
%	20.00	0.00	0.00	6.67	16.67	6.67	13.33	3.33	10.00	0.00	3.33	0.00	3.33	16.67	100.00
Manufacture of Textile Products (including wearing apparel other than footwear)	8	1	1	4	6	10	5	3	3	0	0	0	0	0	41
%	19.51	2.44	2.44	9.76	14.63	24.39	12.20	7.32	7.32	0.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	4	0	1	1	4	6	2	2	2	0	1	0	0	0	23
%	17.39	0.00	4.35	4.35	17.39	26.09	8.70	8.70	8.70	0.00	4.35	0.00	0.00	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	6	0	1	1	4	4	4	1	1	0	0	0	0	1	23
%	26.09	0.00	4.35	4.35	17.39	17.39	17.39	4.35	4.35	0.00	0.00	0.00	0.00	4.35	100.00
Manufacture of Leather and Leather/Fur Products (except Products of petroleium and coal)	6	0	3	0	5	2	5	1	1	0	1	0	0	0	24
%	25.00	0.00	12.50	0.00	20.83	8.33	20.83	4.17	4.17	0.00	4.17	0.00	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	10	1	1	2	11	9	15	3	3	0	0	0	1	1	57
%	17.54	1.75	1.75	3.51	19.30	15.79	26.32	5.26	5.26	0.00	0.00	0.00	1.75	1.75	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	10	1	4	4	8	20	14	6	6	0	0	0	2	4	79
%	12.66	1.27	5.06	5.06	10.13	25.32	17.72	7.59	7.59	0.00	0.00	0.00	2.53	5.06	100.00
Manufacture of Non-Metalic Mineral Products	3	2	0	2	3	1	3	5	3	0	0	0	0	0	22
%	13.64	9.09	0.00	9.09	13.64	4.55	13.64	22.73	13.64	0.00	0.00	0.00	0.00	0.00	100.00
Basic Metal and Alloys Industries	3	0	1	1	2	1	2	1	2	0	0	0	0	1	14
%	21.43	0.00	7.14	7.14	14.29	7.14	14.29	7.14	14.29	0.00	0.00	0.00	0.00	7.14	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	14	1	7	2	13	18	12	12	14	1	0	0	0	5	99
%	14.14	1.01	7.07	2.02	13.13	18.18	12.12	12.12	14.14	1.01	0.00	0.00	0.00	5.05	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	21	0	7	8	18	14	12	6	8	0	1	0	2	7	104
%	20.19	0.00	6.73	7.69	17.31	13.46	11.54	5.77	7.69	0.00	0.96	0.00	1.92	6.73	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	14	3	3	6	16	14	17	12	17	1	1	0	0	4	108
%	12.96	2.78	2.78	5.56	14.81	12.96	15.74	11.11	15.74	0.93	0.93	0.00	0.00	3.70	100.00
Other Manufacturing Industries	1	0	1	0	2	0	2	0	0	0	0	0	0	0	6
%	16.67	0.00	16.67	0.00	33.33	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Total	115	9	33	37	107	104	104	55	63	2	5	0	6	29	669
%	17.19	1.35	4.93	5.53	15.99	15.55	15.55	8.22	9.42	0.30	0.75	0.00	0.90	4.33	100.00

Source: NIUA's Industrial Survey.

Note: Based on multiple response.

Table 4.8

Operational Problems Faced by Industries in Ahmedabad

Name of the Industry	Import Regulation	Lack of Demand	Too much Competetion	Lack of Physical Infrastructure	Inadequate Credit Faciiity	Inadequate and Erratic Supply of Electricity	Lack of Aequate Supply of basic Raw Material	Any Other	No Problem	Total
Manufacture of Food Products	8	7	7	3	5	4	5	3	1	43
%	18.60	16.28	16.28	6.98	11.63	9.30	11.63	6.98	2.33	100.00
Manufacture of Oil & Starch	12	11	9	2	1	3	1	6	1	46
%	26.09	23.91	19.57	4.35	2.17	6.52	2.17	13.04	2.17	100.00
Manufacture of Beverages, Tobacco Products	1	1	1	1	1	0	0	0	0	5
%	20.00	20.00	20.00	20.00	20.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Cotton Textiles	9	9	7	5	3	2	2	5	2	44
%	20.45	20.45	15.91	11.36	6.82	4.55	4.55	11.36	4.55	100.00
Manufacture of Textile Products (including wearing apparel other than footwear)	16	16	12	11	10	7	7	4	1	84
%	19.05	19.05	14.29	13.10	11.90	8.33	8.33	4.76	1.19	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	10	10	6	7	3	3	2	5	0	46
%	21.74	21.74	13.04	15.22	6.52	6.52	4.35	10.87	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	9	8	8	6	6	4	3	1	1	46
%	19.57	17.39	17.39	13.04	13.04	8.70	6.52	2.17	2.17	100.00
Manufacture of Leather and Leather/Fur Products (except Products of petroleum and coal)	9	9	9	7	3	1	1	0	0	39
%	23.08	23.08	23.08	17.95	7.69	2.56	2.56	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	21	21	23	15	14	9	5	4	1	113
%	18.58	18.58	20.35	13.27	12.39	7.96	4.42	3.54	0.88	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	25	26	24	24	21	20	19	7	3	169
%	14.79	15.38	14.20	14.20	12.43	11.83	11.24	4.14	1.78	100.00
Manufacture of Non-Metalic Mineral Products	10	10	10	10	9	9	6	0	0	64
%	15.63	15.63	15.63	15.63	14.06	14.06	9.38	0.00	0.00	100.00
Basic Metal and Alloys Industries	5	5	4	4	4	4	4	0	1	31
%	16.13	16.13	12.90	12.90	12.90	12.90	12.90	0.00	3.23	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	36	39	38	37	30	28	28	4	1	241
%	14.94	16.18	15.77	15.35	12.45	11.62	11.62	1.66	0.41	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	35	37	39	32	29	25	25	5	1	228
%	15.35	16.23	17.11	14.04	12.72	10.96	10.96	2.19	0.44	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	44	42	45	34	27	22	22	7	4	247
%	17.81	17.00	18.22	13.77	10.93	8.91	8.91	2.83	1.62	100.00
Other Manufacturing Industries	2	2	2	0	0	0	0	1	0	7
%	28.57	28.57	28.57	0.00	0.00	0.00	0.00	14.29	0.00	100.00
Total	252	253	244	198	166	141	130	52	17	1453
%	17.34	17.41	16.79	13.63	11.42	9.70	8.95	3.58	1.17	100.00

Source: NIUA's Industrial Survey.

Note: Based on mulitple response.

Table 4.9

Number of Input and Output Transaction of 42 Technologically linked Industries in Visakhapatnam, 1994-95

Name of industry		Input (Consuming Industries)																				Total
		20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
Output (Producting Industries)	20 Manufacture of Food Products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	21 Manufacture of Oil & Starch	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	22 Manufacture of Beverages, Tobacco Products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	23 Manufacture of Cotton Textiles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	24 Manufacture of Wool, Silk and Synthetic fibre Products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	25 Manufacture of Jute Hemp and Mesta Textile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
	26 Manufacture of Textile Products (including wearing apparel other than footwear)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	27 Manufacture of Wood and Wood Products, Furniture and Fixtures	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	28 Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	0	0	0	0	0	0	0	0	2	0	0	1	1	0	1	0	0	0	0	0	5
	29 Manufacture of Leather and Leather/Fur Products (except Products of petroleium and coal)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	30 Manufacture of Rubber, Plastic, Petroleium and coal Products	0	1	1	0	0	0	0	1	1	0	2	1	2	2	1	2	0	0	0	3	17
	31 Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	0	1	1	0	0	0	0	0	2	0	0	4	1	0	1	0	0	0	0	1	11
	32 Manufacture of Non-Metalic Mineral Products	0	0	0	0	0	0	0	0	0	0	0	2	4	2	0	0	0	0	1	0	9
	33 Basic Metal and Alloys Industries	0	0	0	0	0	0	0	0	0	0	0	0	1	0	11	5	0	0	0	0	17
	34 Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	1	0	1	0	0	7
	35 Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	36 Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
	37 Manufacture of Transport Equipment and Parts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	38 Other Manufacturing Industries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	39 Repair	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		0	2	3	0	0	0	0	2	5	0	2	9	9	4	19	9	0	1	2	4	71

Source: NIUA's Industrial Survey.

Regional Linkages of Industries

Industries located in Visakhapatnam reveal weaker backward linkages with the local economy and stronger linkages with the other regions and countries as compared to Ahmedabad. Only about 27 per cent of the input purchase is made within the district where as 36.61 per cent of the inputs are bought from other states in the country and 31.46 per cent are imported from other countries (Table 4.10). The industry-wise distribution of the regional pattern of input purchase shows that some industries have strong local backward linkages which buy more than 60 per cent of their inputs within the city, for example: food manufacturing and processing; beverages and tobacco products; paper and paper products, printing, publishing and allied activities; non-metallic mineral products; machinery, machine tools and parts manufacturing; and repairs. The rubber, plastic, petroleum, and coal manufacturing industry acquires almost all its inputs, where as basic metals and alloys industry, and transport equipment and parts manufacturing purchase about half of their inputs from other states in India. Two of the industries that import a large part of their raw materials are: wood and wood products; and basic metals and alloys industry.

The forward linkages of industries located in Visakhapatnam are relatively more geared towards local demand. About 40 per cent of the total industrial output is sold within the district, 10.86 per cent in the other parts of the state, 32.72 per cent is sent to other states in India, and 16.98 per cent is exported out (Table 4.11). The industries which have recorded more than 30 per cent of their sales within the city are: food industry producing oil and starch; rubber, plastic, petroleum, and coal products; machinery, machine tools and parts; and electrical machinery, apparatus, appliances and parts manufacturing. The two industries which have strong forward linkages with other regions in India are basic metals and alloys and metal products and parts manufacturing. The two industries that export more than half of their output are manufacturing and processing of food products (shrimps) and transport equipment and parts (ships).

Linkages between Formal and Informal Manufacturing

The backward linkages between the formal and informal sector manufacturing activities are even weaker than those observed in the case of Ahmedabad. Less than one per cent of the inputs for both formal and informal industrial units are bought from informal sector firms where as 94 per cent of the inputs are purchased from formal sector firms (Table 4.12). The industries which have relatively stronger purchase linkages with the informal sector manufacturing than the overall picture are: beverages and tobacco manufacturing; non-metallic mineral products; and paper and products, printing, publishing and allied industries.

Table 4.10

Regional Pattern of Input Purchase of Industries in Visakhapatnam, 1994-95

Rs. In Lakh

Name of the Industry	Within the City	Within Distt. but Outside City	Within State but Outside District	Rest of India	Outside India	Total
Manufacture of Food Products	572.84	2.00	2.50	21.26	0.00	598.60
%	95.70	0.33	0.42	3.55	0.00	100.00
Manufacture of Oil & Starch	98.15	1.45	0.79	0.00	0.00	100.39
%	97.77	1.44	0.79	0.00	0.00	100.00
Manufacture of Beverages, Tobacco Products	209.40	0.00	64.00	0.00	0.00	273.40
%	76.59	0.00	23.41	0.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	15.27	98.60	45.20	131.79	412.50	703.36
%	2.17	14.02	6.43	18.74	58.65	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	38.96	7.30	3.00	0.00	0.00	49.27
%	79.09	14.83	6.09	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	98.83	52.80	37.75	3275.25	0.00	3464.63
%	2.85	1.52	1.09	94.53	0.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	7796.67	6307.09	6400.83	633.29	0.00	21137.88
%	36.88	29.84	30.28	3.00	0.00	100.00
Manufacture of Non-Metalic Mineral Products	175.47	0.60	36.24	9.82	0.00	222.13
%	78.99	0.27	16.31	4.42	0.00	100.00
Basic Metal and Alloys Industries	16104.53	80.89	2.20	45834.69	45834.69	107857.01
%	14.93	0.08	0.00	42.50	42.50	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	255.48	4317.27	74.80	656.69	0.00	5304.24
%	4.82	81.39	1.41	12.38	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	80.74	0.00	0.00	47.15	0.00	127.89
%	63.13	0.00	0.00	36.87	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	69.67	0.00	497.00	48.80	0.00	615.47
%	11.32	0.00	80.75	7.93	0.00	100.00
Manufacture of Transport Equipment and Parts	3151.70	0.00	0.00	3151.56	0.00	6303.26
%	50.00	0.00	0.00	50.00	0.00	100.00
Repair	252.02	0.00	1.30	8.49	0.00	261.81
%	96.26	0.00	0.50	3.24	0.00	100.00
Total	28919.73	10868.02	7165.61	53818.80	46247.19	147019.35
%	19.67	7.39	4.87	36.61	31.46	100.00

Source: NIUA's Industrial Survey

Table 4.11

Regional Output Disposal Pattern of Industries in Visakhapatnam, 1994-95

Rs. In Lakh

Name of the Industry	Within the City	Within District but Outside City	Within State but Outside District	Rest of India	Outside India	Total
Manufacture of Food Products	189.25	64.65	152.60	0.00	505.00	911.50
%	20.76	7.09	16.74	0.00	55.40	100.00
Manufacture of Oil & Starch	25.60	0.00	0.00	0.00	0.00	25.60
%	100.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Beverages, Tobacco Products	0.00	361.95	0.00	0.00	0.00	361.95
%	0.00	100.00	0.00	0.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	72.17	106.64	278.81	323.50	330.85	1111.96
%	6.49	9.59	25.07	29.09	29.75	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	18.25	44.75	24.00	0.00	0.00	87.00
%	20.98	51.44	27.59	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	4754.82	58.73	78.15	8.55	0.00	4900.25
%	97.03	1.20	1.59	0.17	0.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	34.35	71.22	340.94	1228.80	0.00	1675.31
%	2.05	4.25	20.35	73.35	0.00	100.00
Manufacture of Non-Metalic Mineral Products	42.70	118.45	54.00	15.00	0.00	254.15
%	16.80	46.61	21.25	5.90	0.00	100.00
Basic Metal and Alloys Industries	4554.68	36.86	36.86	11882.03	1107.50	17617.94
%	25.85	0.21	0.21	67.44	6.29	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	267.10	72.65	7.40	30.82	0.00	377.97
%	70.67	19.22	1.96	8.15	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	289.80	192.89	192.89	60.00	0.00	735.59
%	39.40	26.22	26.22	8.16	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	574.00	450.00	576.00	0.00	0.00	1600.00
%	35.88	28.13	36.00	0.00	0.00	100.00
Manufacture of Transport Equipment and Parts	0.75	0.00	0.00	0.00	4000.00	4000.75
%	0.02	0.00	0.00	0.00	99.98	100.00
Repair	45.80	174.00	78.00	11.00	0.00	308.80
%	14.83	56.35	25.26	3.56	0.00	100.00
Total	10869.28	1752.79	1819.66	13559.70	5943.35	33968.77
%	32.00	5.16	5.36	39.92	17.50	100.00

Source: NIUA's Industrial Survey.

Table 4.12

Sectoral Pattern of Input Purchase of Industries in Visakhapatnam, 1994-95

Rs. In lakh

Name of the Industry	Formal Industrial unit employing 10 or more workers	Informal Industrial unit employing less than 10 workers	Wholesaler	Retailer	Agent/ middle persons	Individual/ households producers particularly of primary prdoucts	Total
Manufacture of Food Products	7.04	0.00	590.81	0.00	0.75	0.00	598.60
%	1.18	0.00	98.70	0.00	0.13	0.00	100.00
Manufacture of Oil & Starch	96.73	0.00	3.48	0.18	0.00	0.00	100.39
%	96.35	0.00	3.47	0.18	0.00	0.00	100.00
Manufacture of Beverages, Tobacco Products	101.25	94.00	77.65	0.00	0.50	0.00	273.40
%	37.03	34.38	28.40	0.00	0.18	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	10.99	0.00	91.60	3.84	596.93	0.00	703.36
%	1.56	0.00	13.02	0.55	84.87	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	8.70	9.21	29.90	1.46	0.00	0.00	49.27
%	17.66	18.69	60.69	2.96	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleum and coal Products	3272.11	2.25	167.27	0.00	23.00	0.00	3464.63
%	94.44	0.06	4.83	0.00	0.66	0.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	20656.59	1.20	480.09	0.00	0.00	0.00	21137.88
%	97.72	0.01	2.27	0.00	0.00	0.00	100.00
Manufacture of Non-Metalic Mineral Products	103.74	49.16	61.19	2.86	5.18	0.00	222.13
%	46.70	22.13	27.55	1.29	2.33	0.00	100.00
Basic Metal and Alloys Industries	102411.83	7.80	5437.39	0.00	0.00	0.00	107857.01
%	94.95	0.01	5.04	0.00	0.00	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	5112.14	0.00	190.39	1.40	0.26	0.05	5304.24
%	96.38	0.00	3.59	0.03	0.00	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	88.33	0.10	36.95	2.51	0.00	0.00	127.89
%	69.07	0.08	28.89	1.96	0.00	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	1.45	0.00	579.92	0.00	34.10	0.00	615.47
%	0.24	0.00	94.22	0.00	5.54	0.00	100.00
Manufacture of Transport Equipment and Parts	6303.25	0.00	0.00	0.01	0.00	0.00	6303.26
%	100.00	0.00	0.00	0.00	0.00	0.00	100.00
Repair	47.16	0.00	206.11	0.54	0.00	8.00	261.81
%	18.01	0.00	78.73	0.21	0.00	3.06	100.00
Total	138221.32	163.72	7952.74	12.80	660.72	8.05	147019.35
%	94.02	0.11	5.41	0.01	0.45	0.01	100.00

Source: NIUA's Industrial Survey.

Industries located in Visakhapatnam appear to have no forward linkage with the informal sector as no direct sale has been recorded between the sampled industrial units to the informal manufacturing activity (Table 4.13). This could be partly explained by the industrial structure of the city and partly by the sample of industries which is dominated by large industrial units such as the Visakhapatnam Steel Plant and Hindustan Shipyard. But even if a different sample of industries was taken excluding these industrial units, the incidence of linkage between formal and informal manufacturing would have been insignificant. Bulk of the industrial outputs of Visakhapatnam is sold to wholesale traders, individuals and households for final consumption and formal sector industries for further manufacturing and processing.

Locational Factors

The important factors for location of industries in Visakhapatnam as stated by the respondents are: easy marketing, well established city, availability of water, sales tax/octroi relief, availability of raw materials, and availability of skilled and cheap labour (Table 4.14). The locational factors which emerged from the survey of industries in this city were not very different than the ones identified in Ahmedabad.

The reasons for selecting a particular location within Visakhapatnam are also quite similar to the reasons quoted in Ahmedabad. The most frequently stated factors for industrial site selection in Visahkapatnam are: no marketing problem, better environment, good transport facility, sales tax benefits, availability of raw materials, and availability of cheap and skilled labour (Table 4.15).

Operational Constraints

Amongst the crucial constraints which have hampered the production and growth of industries in Visahkatpatnam inadequate and erratic electricity supply is top on the list which is being faced by about one quarter of the responding industrial units (Table 4.16). The other key problems which need to be addressed are: too much competition, inadequate credit facility, lack of adequate supply of raw materials, lack of physical infrastructure, and lack of demand. Only a small proportion of about 3 per cent of the sample units stated that they have no problems in operating in the city. There is some variation in the nature of constraints faced by different industries.

Table 4.13
Sectoral Output disposal Pattern of Industries in Visakhapatnam

Rs. In lakh

Name of the Industry Selling	Formal Industrial unit employing 10 or more workers	Informal Industrial unit employing less than 10 workers	Wholesaler	Retailer	Agent/ middle persons	Packers	Individuals/ household for final consumption or further	Total
Manufacture of Food Products	0.00	0.00	556.50	0.00	0.00	0.00	5.00	911.50
%	0.00	0.00	61.05	0.00	0.00	0.00	0.55	100.00
Manufacture of Oil & Starch	0.00	0.00	23.10	0.00	0.00	0.00	2.50	25.60
%	0.00	0.00	90.23	0.00	0.00	0.00	9.77	100.00
Manufacture of Beverages, Tobacco Products	0.00	0.00	61.95	300.00	0.00	0.00	0.00	361.95
%	0.00	0.00	17.12	82.88	0.00	0.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	4.26	0.00	401.53	20.87	388.00	287.00	10.30	1111.96
%	0.38	0.00	36.11	1.88	34.89	25.81	0.93	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	24.00	0.00	11.50	19.00	19.00	0.00	13.50	87.00
%	25.48	0.00	13.22	21.84	21.84	0.00	15.52	100.00
Manufacture of Rubber, Plastic, Petroleum and coal Products	13.85	0.00	136.32	22.55	0.00	0.00	4727.53	4900.25
%	0.28	0.00	2.78	0.46	0.00	0.00	96.48	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleum and coal)	476.00	0.00	1168.43	2.78	0.00	0.00	28.10	1675.31
%	1.76	0.00	69.74	0.71	0.00	0.00	1.68	100.00
Manufacture of Non-Metalic Mineral Products	99.32	0.00	45.60	20.60	6.81	4.75	63.26	254.15
%	4.66	0.00	17.94	8.11	0.00	1.87	24.89	100.00
Basic Metal and Alloys Industries	17562.65	0.00	0.00	0.00	0.00	0.00	55.30	17617.94
%	99.69	0.00	0.00	0.00	0.00	0.00	0.31	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	49.45	0.00	264.42	16.00	0.00	0.00	35.10	377.97
%	0.79	0.00	69.96	4.23	0.00	0.00	9.29	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	60.00	0.00	267.06	207.89	0.00	0.00	200.63	735.59
%	8.16	0.00	36.31	28.26	0.00	0.00	27.28	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	124.00	0.00	1476.00	0.00	0.00	0.00	0.00	1600.00
%	7.75	0.00	92.25	0.00	0.00	0.00	0.00	100.00
Manufacture of Transport Equipment and Parts	0.00	0.00	0.00	0.00	0.00	0.00	4000.75	4000.75
%	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00
Repair	0.00	0.00	11.00	0.00	11.00	0.00	286.80	308.80
%	0.00	0.00	3.56	0.00	3.56	0.00	92.88	100.00
Total	18413.53	0.00	4789.73	609.69	435.30	291.75	9428.77	33968.77
%	54.21	0.00	14.10	1.79	1.28	0.86	27.76	100.00

Source: NIUA's Industrial Survey.

Table 4.14
Reasons of Industrial Locaton in Visakhapatnam

Name of the Industry	Availability of Skilled and Cheap Labour	Availability of Financial Sources	Availability of Raw Material	Easy Marketing	No Power Problem	Good Transport Facility	Cheap Land by Government	Telephone Facility	Proximity of Native Place	Sales Tax/ Octroi Relief	Good Potential for Development	Availability of Infrastructure	Well Established City	Industrial Area	Import Facility	Total
Manufacture of Food Products	0	2	1	1	0	4	2	0	2	0	0	0	0	4	1	17
%	0.00	11.76	5.88	5.88	0.00	23.53	11.76	0.00	11.76	0.00	0.00	0.00	0.00	23.53	5.88	100.00
Manufacture of Oil & Starch	0	0	1	4	0	2	1	0	2	0	0	0	0	1	0	11
%	0.00	0.00	9.09	36.36	0.00	18.18	9.09	0.00	18.18	0.00	0.00	0.00	0.00	9.09	0.00	100.00
Manufacture of Beverages, Tobacco Products	1	1	0	1	0	0	1	0	0	0	0	0	0	1	0	5
%	20.00	20.00	0.00	20.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	1	1	9	8	0	8	1	0	1	0	2	0	0	3	0	34
%	2.94	2.94	26.47	23.53	0.00	23.53	2.94	0.00	2.94	0.00	5.88	0.00	0.00	8.82	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	2	1	2	2	0	0	1	0	0	0	1	0	1	2	0	12
%	16.67	8.33	16.67	16.67	0.00	0.00	8.33	0.00	0.00	0.00	8.33	0.00	8.33	16.67	0.00	100.00
Manufacture of Rubber, Plastic, Petroleum and coal Products	1	1	1	6	2	3	2	0	1	0	4	0	0	4	0	25
%	4.00	4.00	4.00	24.00	8.00	12.00	8.00	0.00	4.00	0.00	16.00	0.00	0.00	16.00	0.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleum and coal)	2	2	2	5	0	6	0	0	1	0	2	1	0	4	0	25
%	8.00	8.00	8.00	20.00	0.00	24.00	0.00	0.00	4.00	0.00	8.00	4.00	0.00	16.00	0.00	100.00
Manufacture of Non-Metalic Mineral Products	2	0	4	10	2	2	0	0	3	0	4	0	0	5	0	32
%	6.25	0.00	12.50	31.25	6.25	6.25	0.00	0.00	9.38	0.00	12.50	0.00	0.00	15.63	0.00	100.00
Basic Metal and Alloys Industries	0	0	1	1	0	3	1	0	0	0	1	0	0	1	0	8
%	0.00	0.00	12.50	12.50	0.00	37.50	12.50	0.00	0.00	0.00	12.50	0.00	0.00	12.50	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	6	1	1	9	1	9	9	0	5	0	6	0	0	9	0	56
%	10.71	1.79	1.79	16.07	1.79	16.07	16.07	0.00	8.93	0.00	10.71	0.00	0.00	16.07	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	3	3	3	5	0	1	2	0	1	0	3	0	0	4	0	25
%	12.00	12.00	12.00	20.00	0.00	4.00	8.00	0.00	4.00	0.00	12.00	0.00	0.00	16.00	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	0	0	1	0	0	1	0	0	0	0	0	0	0	3	0	5
%	0.00	0.00	20.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	100.00
Manufacture of Transport Equipment and Parts	0	0	0	1	0	1	0	0	1	0	0	1	1	0	0	5
%	0.00	0.00	0.00	20.00	0.00	20.00	0.00	0.00	20.00	0.00	0.00	20.00	20.00	0.00	0.00	100.00
Repair	4	1	1	4	0	1	0	0	4	0	4	0	0	1	0	20
%	20.00	5.00	5.00	20.00	0.00	5.00	0.00	0.00	20.00	0.00	20.00	0.00	0.00	5.00	0.00	100.00
Total	22	13	27	57	5	41	20	0	21	0	27	2	2	42	1	280
%	7.86	4.64	9.64	20.36	1.79	14.64	7.14	0.00	7.50	0.00	9.64	0.71	0.71	15.00	0.36	100.00

Source: NIUA's Industrial Survey.
Note: Based on multiple response.

Table 4.15
Reasons for Selecting the Site for Location in Visakhapatnam

Name of the Industry	Availability of Skilled and Cheap Labour	Availability of Financial Sources	Availability of Raw Material	Easy Marketing	No Power Problem	Good Transport Facility	Cheap Land by Government	Telephone Facility	Proximity of Native Place	Sales Tax/ Octroi Relief	Availability of Rented Sheds	Subsidy Advantage	Better Environment	Infrastructure Developoment	Total
Manufacture of Food Products	3	1	1	2	0	5	1	0	1	0	1	0	0	1	16
%	18.75	6.25	6.25	12.50	0.00	31.25	6.25	0.00	6.25	0.00	6.25	0.00	0.00	6.25	100.00
Manufacture of Oil & Starch	1	0	0	0	0	2	1	0	4	0	0	0	0	1	9
%	11.11	0.00	0.00	0.00	0.00	22.22	11.11	0.00	44.44	0.00	0.00	0.00	0.00	11.11	100.00
Manufacture of Beverages, Tobacco Products	1	1	0	0	0	0	1	0	0	0	0	0	0	0	3
%	33.33	33.33	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	5	0	5	8	0	7	4	0	7	0	1	0	0	1	38
%	13.16	0.00	13.16	21.05	0.00	18.42	10.53	0.00	18.42	0.00	2.63	0.00	0.00	2.63	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	1	0	1	1	0	4	2	0	1	0	0	0	0	0	10
%	10.00	0.00	10.00	10.00	0.00	40.00	20.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	4	0	1	1	2	1	3	0	4	0	0	1	0	3	20
%	20.00	0.00	5.00	5.00	10.00	5.00	15.00	0.00	20.00	0.00	0.00	5.00	0.00	15.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	3	2	0	4	0	0	2	0	3	0	0	0	0	4	18
%	16.67	11.11	0.00	22.22	0.00	0.00	11.11	0.00	16.67	0.00	0.00	0.00	0.00	22.22	100.00
Manufacture of Non-Metalic Mineral Products	2	1	4	8	1	1	5	0	3	0	1	0	0	7	33
%	6.06	3.03	12.12	24.24	3.03	3.03	15.15	0.00	9.09	0.00	3.03	0.00	0.00	21.21	100.00
Basic Metal and Alloys Industries	0	1	0	0	0	1	0	0	0	0	0	2	0	0	4
%	0.00	25.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	4	5	0	3	0	9	7	0	7	0	3	0	1	7	46
%	8.70	10.87	0.00	6.52	0.00	19.57	15.22	0.00	15.22	0.00	6.52	0.00	2.17	15.22	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	0	1	0	4	0	2	1	0	0	0	0	0	0	7	15
%	0.00	6.67	0.00	26.67	0.00	13.33	6.67	0.00	0.00	0.00	0.00	0.00	0.00	46.67	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	0	0	0	0	0	0	0	0	1	0	0	0	0	3	4
%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	75.00	100.00
Manufacture of Transport Equipment and Parts	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2
%	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	100.00
Repair	2	0	1	4	0	3	2	0	3	0	0	0	0	1	16
%	12.50	0.00	6.25	25.00	0.00	18.75	12.50	0.00	18.75	0.00	0.00	0.00	0.00	6.25	100.00
Total	26	12	13	35	3	35	30	0	34	0	6	3	1	36	234
%	11.11	5.13	5.56	14.96	1.28	14.96	12.82	0.00	14.53	0.00	2.56	1.28	0.43	15.38	100.00

Source: NIUA's Industrial Survey.
Note: Based on multiple response.

Table 4.16
Operational Problems Faced by Industries in Visakhapatnam

Name of the Industry	Import Regulation	Lack of Demand	Too much Competetion	Lack of Physical Infrastructure	Inadequate Credit Facility	Inadequate and Erratic Supply of Electricity	Lack of Aequate Supply of basic Raw Material	Any Other	No Problem	Total
Manufacture of Food Products	1	4	5	1	5	6	2	0	1	25
%	4.00	16.00	20.00	4.00	20.00	24.00	8.00	0.00	4.00	100.00
Manufacture of Oil & Starch	1	0	1	1	2	3	0	0	1	9
%	11.11	0.00	11.11	11.11	22.22	33.33	0.00	0.00	11.11	100.00
Manufacture of Beverages, Tobacco Products	1	1	1	2	2	2	1	1	0	11
%	9.09	9.09	9.09	18.18	18.18	18.18	9.09	9.09	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	1	4	10	7	10	14	5	0	1	52
%	1.92	7.69	19.23	13.46	19.23	26.92	9.62	0.00	1.92	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	0	1	3	0	0	4	1	1	0	10
%	0.00	10.00	30.00	0.00	0.00	40.00	10.00	10.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	0	3	6	2	6	9	7	3	1	37
%	0.00	8.11	16.22	5.41	16.22	24.32	18.92	8.11	2.70	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	2	2	5	2	5	8	4	0	1	29
%	6.90	6.90	17.24	6.90	17.24	27.59	13.79	0.00	3.45	100.00
Manufacture of Non-Metalic Mineral Products	1	6	7	1	8	10	4	4	3	44
%	2.27	13.64	15.91	2.27	18.18	22.73	9.09	9.09	6.82	100.00
Basic Metal and Alloys Industries	1	0	1	1	2	3	2	0	0	10
%	10.00	0.00	10.00	10.00	20.00	30.00	20.00	0.00	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	2	5	14	11	11	21	7	6	1	78
%	2.56	6.41	17.95	14.10	14.10	26.92	8.97	7.69	1.28	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	1	5	8	3	6	9	7	1	0	40
%	2.50	12.50	20.00	7.50	15.00	22.50	17.50	2.50	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	0	0	1	1	2	2	2	1	0	9
%	0.00	0.00	11.11	11.11	22.22	22.22	22.22	11.11	0.00	100.00
Manufacture of Transport Equipment and Parts	1	1	1	1	1	1	1	0	1	8
%	12.50	12.50	12.50	12.50	12.50	12.50	12.50	0.00	12.50	100.00
Repair	1	1	4	3	4	5	3	0	2	23
%	4.35	4.35	17.39	13.04	17.39	21.74	13.04	0.00	8.70	100.00
Total	13	33	67	36	64	97	46	17	12	385
%	3.38	8.57	17.40	9.35	16.62	25.19	11.95	4.42	3.12	100.00

Source: NIUA's Industrial Survey.
Note: Based on multiple response.

IMPACT OF LIBERALISATION ON CITY ECONOMY

Substantial investment is usually a precondition for economic growth and transformation of the economy. But, it is the productivity of the investment which generates further reinvestible resources. Thus, efficiency and optimality in resource utilisation has a major role to play in ensuring industrial development and overall economic growth of a country, region or city (Majumdar, 1996; and Nayyar, 1994).

Indian industrial efficiency was high in the 1990s compared to its performance in the 1960s, 1970s and most of the 1980s. The industrial efficiency started recovering in the late 1980s, and the trend continued in the 1990s. It is held that regulatory industrial policies of 1960s and 1970s were largely responsible for the drop in industrial efficiency during this period. The industrial deregulation and reform process in India which started in the 1980s has got further impetus since broader liberalisation policies were initiated in 1991. The industrial turnaround process which started in Ahmedabad during the second half of 1980s falls well within the national trends but considerable credit also goes to local entrepreneurship and interest of the residents in reviving the city economy.

Whether the liberalisation policies had a positive effect on increase in economic efficiency is widely debated. International comparison between a number of countries does not reveal a general pattern of relationship between liberalisation policies and productivity performance. In the Indian context, a study by Ahluwalia (1991) attributed the growth in total factor productivity in the 1980s to the more liberal policies, where as work of some scholars surmised that the relationship is negative (Balakrishnan and Pushpangadan, 1994), and some others argue that no definite pattern of relationship exists between the two and it may even vary depending on the methodology of assessing the impact (Mohanty, 1994; and Srivastava, 1996).

The liberalisation policies implemented in India since 1991 may be able to achieve the main goal of faster and more sustained economic growth through positive changes in fiscal and monetary policies, deregulation of trade and industries, exit policy for labour, and more investment friendly norms both for domestic investments and foreign direct investments, although the short-term consequences of these polices for employment and real incomes of people may be negative (Pathak, 1993). The question that has remained largely unanswered in the Indian context is what will be the impact of liberalisation policies on the city economy in general and on industries located in and around major cities in particular. As stated earlier, studies of the impact of liberalisation policies on Indian cities' economy are almost non-existent. It is primarily because it is too early for the impact of liberalisation policies and consequent macro-economic changes to begin showing in the secondary data sets. The primary data based

studies of such impact analysis are very complex, time consuming and expensive, and therefore, not very commonly undertaken.

This study makes a limited attempt to assess the impact of macro-economic policies initiated in 1991 on the city economy in general and on the industrial structure and performance in particular. The broader impact on city economy has been assessed on the basis of the trends that have emerged from whatever time series secondary data is available as well as through discussions with local officials and academics regrading the major changes taking place in the two case study cities. The firm-level analysis of impact of liberalisation has been done using the industrial survey data on five key indicators of change, namely product diversification, value added per unit, employment, technology upgradation, and the incidence of sub-contracting between 1990 and 1994. However, it is not possible to state with confidence to what extent these changes have taken place in response to the liberalisation policies and what has been the influence of some other factors.

AHMEDABAD

Major Changes in the City Economy

The major changes in the economy of Ahmedabad in the post-liberalisation period are: (i) boom in the service sector, particularly in the retail trade; (ii) city emerging as an important domestic financial centre, with Ahmedabad Stock Exchange ranking second next to Bombay in terms of volume of financial transactions; (iii) industrial growth has picked up again and structural shifts are taking place, particularly from large cotton textile mills to smaller textile units as well as to other industries such as, rubber, plastic, petroleum and coal products, basic metals and alloys industry, machinery, machine tools and parts industry, and chemicals industry, three of the top ten pharmaceutical companies of the country are now located in Ahmedabad; and (iv) after the spurt in the early 1990s the construction activity is showing signs of slow down with economy-wide recession and stagnation in real estate prices since 1996.

But in comparison with the closing of several textile mills and considerable decline in employment and incomes experienced in the 1980s, the city economy is being revived in the 1990s. Special efforts that are being made in this direction are: proposed setting up of an International Finance and Trade Centre and Gujarat Habitat and Environment Centre; Ahmedabad Local Economy Rejuvenation Plan for rehabilitation of workers and redevelopment of the land belonging to the closed textile mills; and efforts to improve municipal administration, infrastructure and civic services in the city. Ahmedabad is known as the first city in Asia to raise Rs. 1000 million from the domestic market through general obligation municipal bonds without any state guarantee (Mehta, 1998; and Pathak, 1997).

The data on employment and incomes in Ahmedabad presented in the second and third chapter shows that: (i) between 1987-88 and 1993-94, usual status work participation rate for both male and female workers has improved and unemployment rate has come down for male workers and gone up for female workers; (ii) regular wage employment has increased for male workers and self-employment is becoming more predominant amongst female workers while casual wage employment has declined for both male and female workers; (iii) there has been a discernible decline in the non-household manufacturing employment as against the increase in employment in construction and tertiary sectors; (iv) even after adjusting to 1995 prices, the total income generated in the city shows an increased of about four times between 1976-77 and 1995; (v) the share of city's income in the state's income has gone up from 14.35 per cent in 1976-77 to 17.40 per cent in 1995; and (vi) the proportion of persons in the lowest income group has consistently declined between 1986 and 1996 suggesting a reduction in the poverty levels between the ten year period. Contrary to the expectation, the overall picture of the city economy that emerges is not gloomy at all. Despite the decline of the textile industry and consequent short-term setbacks and predictions of negative impact of the macro-economic reforms, the city economy shows tremendous dynamism and growth potential.

Impact on industries

Product Diversification

Most of the sampled industrial units amongst the 301 responding units, including 4 units set up in 1994, continued to produce the same items between 1990 and 1994, as about 85 per cent reported no change in their product mix (Table 5.1). About 11 per cent of the units reported change in product mix once, about 2 per cent twice and less than one per cent units added a new product thrice during the four year period. The industry groups which reported most incidences of product diversification are: electrical machinery; chemicals and chemical products; machinery, machine tools and parts and metal products and parts.

Value Added

Most of the industries located in Ahmedabad have reported an increase in their profits between 1990 and 1994. About half of the sample industrial units have registered an increase of more than 75 per cent in their value added while a small proportion of about 8 per cent units have experienced a negative growth in their value added (Table 5.2). The industry groups which have significant number of units doubling their profits in the four year period are: machinery, machine tools and parts; electrical machinery, apparatus, appliances and parts; chemical and chemical products; metal products and parts; and cotton textile manufacturing. The units which have recorded losses interestingly fall in the same industry groups which also have relatively larger number of profit making units.

Technology Upgradation

A total of 64 units out of the 301, or about 21 per cent industrial units located in Ahmedabad reported an investment in technology addition and/or replacement of old machinery between 1990 and 1994 (Table 5.3). These units together invested a sum of Rs. 637,18 lakh in technology upgradation. The highest investment in technology was made in rubber, plastic, petroleum and coal products followed by machinery, machine tools and parts; chemical and chemical products; and metal products and parts manufacturing. These four industry groups accounted for nearly 75 per cent of the total investment made in technology upgradation in the city. However, it is difficult to say whether this was a routine replacement of machinery, addition required for product diversification, or in response to the liberalisation process facilitating better and modern technology availability.

Employment

About half of the industrial units in Ahmedabad have expanded their work force by 76-100 per cent while only about three per cent of the units have recorded a decline in their work force during the four year period (Table 5.4). The highest incidence of increase in the work force of more than 75 per cent has been reported by industry groups: food products producing oil and starch; metal parts and products; cotton textiles; machinery, machine tools and parts; non-metallic mineral products; chemicals and chemicals and products; textile products; and wood and wood products manufacturing and processing.

In absolute terms, the aggregate industrial employment in industries in Ahmedabad increased from 5487 in 1990 to 8845 in 1994, excluding 4 units established in 1994. This means an over all employment expansion of 61.20 per cent (Table 5.5). The maximum employment growth of more than 100 per cent was recorded in basic metals and alloys industries; manufacture of paper and paper products; manufacture of food products; and manufacture of leather and leather and fur products.

Table 5.1

Change in Product Mix in Industries of Ahmedabad, 1990-94

Sectors	Diversification					
	No	Once	Twice	Thrice	N. A.	Total
Manufacture of Food Products	9	0	0	0	1	10
%	90.00	0.00	0.00	0.00	10.00	100.00
Manufacture of Oil and Starch Products	14	0	0	1		15
%	93.33	0.00	0.00	6.67	0.00	100.00
Manufacture of Beverages, Tobacco and Tobacco Products	1	0	0	0		1
%	100.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Cotton Textiles	12	0	1	0		13
%	92.31	0.00	7.69	0.00	0.00	100.00
Manufacture of Textiles Products	16	0	0	0	1	17
%	94.12	0.00	0.00	0.00	5.88	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	10	1	0	0		11
%	90.91	9.09	0.00	0.00	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	10	0	0	0		10
%	100.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Leather and Leather and Fur Products	9	0	0	0		9
%	100.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleum and Coal Products	22	2	1	0		25
%	88.00	8.00	4.00	0.00	0.00	100.00
Manufacture of Chemicals and Chemical Products	24	8	0	0	1	33
%	72.73	24.24	0.00	0.00	3.03	100.00
Manufacture of Non-Metallic Mineral P	7	1	1	0	1	10
%	70.00	10.00	10.00	0.00	10.00	100.00
Basic Metal and Alloys Industries	5	0	1	0		6
%	83.33	0.00	16.67	0.00	0.00	100.00
Manufacture of Metal Products and Parts	35	6	1	0		42
%	83.33	14.29	2.38	0.00	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	36	6	2	0		44
%	81.82	13.64	4.55	0.00	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and Supplies and Parts	43	9	0	1		53
%	81.13	16.98	0.00	1.89	0.00	100.00
Other Manufacturing Industries	2	0	0	0		2
%	100.00	0.00	0.00	0.00	0.00	100.00
Total	255	33	7	2	4*	301
%	84.72	10.96	2.33	0.66	1.33	100.00

* units established at 1994

Source - NIUA Industrial Survey.

Table 5.2

Distribution of Industrial Units by Change in Value Added Per Unit in Ahmedabad, 1990-94

Sectors	% Value Added Change Per Unit							
	< 0	1-25	26-50	51-75	76-100	100+	N. A.	Total
Manufacture of Food Products	2	0	3	2	2	0	1	10
%	20.00	0.00	30.00	20.00	20.00	0.00	10.00	100.00
Manufacture of Food Products	2	1	3	2	3	4		15
%	13.33	6.67	20.00	13.33	20.00	26.67	0.00	100.00
Manufacture of Beverages, Tobacco Products	0	1	0	0	0	0		1
%	0.00	100.00	0.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Cotton Textiles	0	2	0	1	3	7		13
%	0.00	15.38	0.00	7.69	23.08	53.85	0.00	100.00
Manufacture of Textile Products (including wearing apparel other that footwear)	2	2	2	4	4	2	1	17
%	11.76	11.76	11.76	23.53	23.53	11.76	5.88	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	2	1	1	2	2	3		11
%	18.18	9.09	9.09	18.18	18.18	27.27	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	1	2	3	1	1	2		10
%	10.00	20.00	30.00	10.00	10.00	20.00	0.00	100.00
Manufacture of Leather and Leather/Fur Products (except Products of petroleium and coal)	0	0	1	1	6	1		9
%	0.00	0.00	11.11	11.11	66.67	11.11	0.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	2	3	5	5	6	4		25
%	8.00	12.00	20.00	20.00	24.00	16.00	0.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	1	2	7	6	7	9	1	33
%	3.03	6.06	21.21	18.18	21.21	27.27	3.03	100.00
Manufacture of Non-Metalic Mineral Products	0	1	2	2	2	2	1	10
%	0.00	10.00	20.00	20.00	20.00	20.00	10.00	100.00
Basic Metal and Alloys Industries	2	1	0	1	1	1		6
%	33.33	16.67	0.00	16.67	16.67	16.67	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	4	4	7	6	13	8		42
%	9.52	9.52	16.67	14.29	30.95	19.05	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	3	2	8	6	12	13		44
%	0.00	4.55	18.18	13.64	27.27	29.55	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	3	6	9	11	11	13		53
%	5.66	11.32	16.98	20.75	20.75	24.53	0.00	100.00
Other Manufacturing Industries	1	0	0	0	0	1		2
%	50.00	0.00	0.00	0.00	0.00	50.00	0.00	100.00
Total	25	28	51	50	73	70	4*	301
%	8.31	9.30	16.94	16.61	24.25	23.26	1.33	100.00

Source - NIUA Industrial Survey.

* Units established at 1994

Table 5.3

Investment in Technology/Machinery Addition and Replacement in Ahmedabad, 1990-94

Sector	Units with investment	Amount (Rs. In lakh)	Units without investment	Total units
Manufacture of Food Products	1	19.80	9	10
%	1.56	3.11	3.80	3.32
Manufacture of Oil and Starch Products	5	14.55	10	15
%	7.81	2.28	4.22	4.98
Manufacture of Beverages, Tobacco and Tobacco products	0	0.00	1	1
%	0.00	0.00	0.42	0.33
Manufacture of Cotton Textiles	3	43.85	10	13
%	4.69	6.88	4.22	4.32
Manufacture of Textile Products (including wearing apparel other that footwear)	2	13.76	15	17
%	3.13	2.16	6.33	5.65
Manufacture of Wood and Wood Products, Furniture and Fixtures	3	1.56	8	11
%	4.69	0.24	3.38	3.65
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	3	13.50	7	10
%	4.69	2.12	2.95	3.32
Manufacture of Leather and Leather and Fur Products	1	0.15	8	9
%	1.56	0.02	3.38	2.99
Manufacture of Rubber, Plastic, Petroleum and Coal Products	6	252.20	19	25
%	9.38	39.58	8.02	8.31
Manufacture of Chemicals and Chemical Products	6	69.62	27	33
%	9.38	10.93	11.39	10.96
Manufacture of Non-Metallic Mineral Products	4	28.75	6	10
%	6.25	4.51	2.53	3.32
Basic Metal and Alloys Industries	1	1.75	5	6
%	1.56	0.27	2.11	1.99
Manufacture of Metal Products and Parts	9	59.30	33	42
%	14.06	9.31	13.92	13.95
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	9	83.47	35	44
%	14.06	13.10	14.77	14.62
Manufacture of Electrical Machinery, Apparatus, Appliances and Supplies and Parts	10	31.52	43	53
%	15.63	4.95	18.14	17.61
Other Manufacturing Industries	1	3.40	1	2
%	1.56	0.53	0.42	0.66
Total	64	637.18	237	301
%	100.00	100.00	100.00	100.00

Source - NIUA's Industrial Survey.

Table 5.4

Distribution of Industrial Units by Change in Employment in Ahmedabad, 1990-94

Sectors	%Employment Change							
	< 0	1-25	26-50	51-75	76-100	100+	N.A.	Total
Manufacture of Food Products	0	0	1	5	3	0	1	10
%	0.00	0.00	10.00	50.00	30.00	0.00	10.00	100.00
Manufacture of Oil and Starch Products	0	0	1	4	10	0		15
%	0.00	0.00	6.67	26.67	66.67	0.00	0.00	100.00
Manufacture of Beverages, Tobacco Products	0	0	0	1	0	0		1
%	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00
Manufacture of Cotton Textiles	0	0	1	4	6	2		13
%	0.00	0.00	7.69	30.77	46.15	15.38	0.00	100.00
Manufacture of Textile Products (including wearing apparel other that footwear)	2	0	2	3	8	1	1	17
%	11.76	0.00	11.76	17.65	47.06	5.88	5.88	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	0	1	0	4	6	0		11
%	0.00	9.09	0.00	36.36	54.55	0.00	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	1	0	2	4	3	0		10
%	10.00	0.00	20.00	40.00	30.00	0.00	0.00	100.00
Manufacture of Leather and Leather/Fur Products (except Products of petroleium and coal)	0	1	3	3	2	0		9
%	0.00	11.11	33.33	33.33	22.22	0.00	0.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	1	0	3	11	10	0		25
%	4.00	0.00	12.00	44.00	40.00	0.00	0.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	1	0	5	8	16	2	1	33
%	3.03	0.00	15.15	24.24	48.48	6.06	3.03	100.00
Manufacture of Non-Metalic Mineral Products	0	0	2	2	5	0	1	10
%	0.00	0.00	20.00	20.00	50.00	0.00	10.00	100.00
Basic Metal and Alloys Industries	0	0	0	3	3	0		6
%	0.00	0.00	0.00	50.00	50.00	0.00	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	0	0	2	12	28	0		42
%	0.00	0.00	4.76	28.57	66.67	0.00	0.00	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	1	0	6	13	22	2		44
%	0.00	0.00	13.64	29.55	50.00	4.55	0.00	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	2	2	11	13	25	0		53
%	3.77	3.77	20.75	24.53	47.17	0.00	0.00	100.00
Other Manufacturing Industries	0	0	0	1	1	0		2
%	0.00	0.00	0.00	50.00	50.00	0.00	0.00	100.00
Total	8	4	39	91	148	7	4*	301
%	2.66	1.33	12.96	30.23	49.17	2.33	1.33	100.00

* Units established at 1994.

Source - NIUA Industrial Survey.

Table 5.5
Employment and Wages in Industries of Ahmedabad, 1990-94

Sectors	Employees 1990	Employees 1994	% change in employees
Manufacture of Food Products	152	346	127.63
Manufacture of Oil and Starch Products	230	358	55.65
Manufacture of Beverages, Tobacco and Tobacco Products	0	28	
Manufacture of Cotton Textiles	460	555	20.65
Manufacture of Textiles Products	613	756	23.33
Manufacture of Wood and Wood Products, Furniture and Fixtures	121	156	28.93
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	89	219	146.07
Manufacture of Leather and Leather and Fur Products	79	179	126.58
Manufacture of Rubber, Plastic, Petroleum and Coal Products	414	801	93.48
Manufacture of Chemicals and Chemical Products	748	1151	53.88
Manufacture of Non-Metallic Mineral Products	114	215	88.60
Basic Metal and Alloys Industries	111	520	368.47
Manufacture of Metal Products and Parts	879	1276	45.16
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	728	1022	40.38
Manufacture of Electrical Machinery, Apparatus, Appliances and Supplies and Parts	743	1252	68.51
Other Manufacturing Industries	6	11	83.33
Total	5487	8845	61.20

Source - NIUA Industrial Survey.

Note: Excluding 4 units established in 1994.

Sub-contracting

Contrary to general perception, the incidence of sub-contracting in industrial production is not very high in Ahmedabad. A total of 14 units, or 4.75 per cent of the sample, are involved in sub-contracting or taking sub-contracted work. The 10 industrial units which are sub-contracting out a part of their production include: 4 units producing machine tools, 3 units producing metal products and parts, and one unit each manufacturing plastic products, pharmaceutical, and non-metallic mineral products. Of the four units accepting job work two are engaged in producing metal products and parts, and one each in producing non-metallic mineral products, and machinery, machine tools and parts.

Discussions with some of the local industrialists and academics revealed that although open sub-contracting of industrial production is low, the system of hidden sub-contracting has been widely practiced in Ahmedabad even prior to liberalisation. Sometimes the factories employ supervisors and contractors who then hire either home-based or small workshop based workers to produce the goods on piece rate basis. At times, sub-contracted activity takes place within the factory premise as an independent unit of production. This is primarily a mechanism for not disclosing the actual size of industrial operations, often to remain within the jurisdiction of small- scale industrial units. However, it is not possible to estimate the magnitude of such sub-contracting as these details are not revealed by the responding sample units.

The above results have been corroborated by a study on liberalisation and local economic response undertaken in 1996 (Swamy, Djik and Acharya, 1998). From the analysis of change in output, profits and overall situation, it has emerged that most industrial enterprises in Ahmedabad have shown significant growth and improvement in their performance since liberalisation. The small scale sector has recorded a very high growth in the sale of output.

VISAKHAPATNAM

Major Changes in the City Economy

After the initial expansion in industrial activities in the late 1970s and through the 1980s, the city saw a slump in industrial growth in terms of setting up of new industrial units in the early 1990s, largely on account of poor infrastructure and lack of adequate power and water supply. But the existing units continued to sustain and increase their production levels. The small scale industrial sector grew rapidly between 1987 and 1992 and then it started declining where as the large scale sector started growing at a relatively faster pace after 1992. Amongst the existing industries which have really benefitted form the recent macro-economic changes is the export oriented shrimp industry. The new industries which have started coming up in the post liberalisation period are basic metals, oil refinery, petro-chemicals, port-based industries and power generation. In the year 1995 alone, there were 135 letters of intent for setting up new factories in Visakhapatnam district. Setting up of a major privately owned power generation plant is being negotiated, with 30 mega watts capacity and investment of Rs. 300 crores. This has become possible after the central government has relaxed private investment norms in the basic infrastructure sector. As a result of the exit policy, retrenchment of industrial labour has taken place only in the public sector undertakings, particularly in the Hindustan Shipyard, and a segment of the displaced labour has been redeployed on contract basis.

The state government is making concerted efforts to attract industrial investments in the Visakhapatnam metropolitan region. These efforts include: adopting a policy to encourage location of new industrial units outside the municipal corporation limits comes with package of incentives; single window system at the district industrial centre for all approvals and clearances; and setting up of state industrial finance corporation.

Construction of residential and commercial buildings in the city is going through a boom period despite the general recession and downturn in the property market in the rest of the country. The entire beach front is being developed as prime high-rise apartment housing area.

There is very little comparative secondary data for Visakhapatnam in the pre and post liberalisation periods to enable us to assess the impact of liberalisation on employment and incomes in the city. The Annual Survey of Industries data shows a steady increase in the number of registered factories, that was 275 in 1984-85, 330 in 1989-90 and 384 1994-95. But the total employment in these industries declined by 10.68 per cent between 1984-85 and 1989-90 and increased by 70.08 per cent between 1989-90 and 1994-95. This indicates that the industrial activity in the city was going through a low employment and productivity phase in the pre-liberalisation period which improved significantly in the post-liberalisation period. Looking at the distribution of households by income groups it is found that proportion of households in

the lowest income group first increased between 1992-93 and then started decreasing steadily after 1993-94. It can be inferred, therefore, that the poverty level in the city are being reduced and general income levels of the residents in Visakhapatnam are rising after fluctuating for two to three years after the liberalisation.

Impact on Industries

Product Diversification

Very low level of product diversification was recorded in Visakhapatnam. Only one of the 115 responding sampled industrial units in the city, of which 10 units were established in 1994, reported addition of a new product in its line of production. This unit falling in the industry group wood and wood products used to manufacture finished wood and in 1992 also started producing wooden furniture.

Value Added

Of the 115 responding units, about 22 per cent have recorded more than 100 per cent increase in the value added per unit (Table 5.6). About 10 per cent units have registered a negative growth in their value added. The remaining units have reported growth in their value added ranging from 1 per cent to 100 per cent. The industries which have recorded high growth in their profits of more than 75 per cent are: wood and wood products; non-metallic mineral products; food products; and chemical and chemical products. The predominant industries which have experienced losses fall in the following industry groups: transport equipments and parts; and beverages and tobacco products.

Technology Upgradation

In Visakhapatnam, 20 per cent of the responding industrial units have invested in technology addition and/or replacement (Table 5.7). The total investment made was Rs. 206.46 lakh. About 65 per cent of the investment was made in food processing industry alone, a major share of this investment being made in upgrading the technology for export oriented shrimp processing industry. The other two industry groups which also recorded substantial investment are: rubber, plastic, petroleum , coal products; and electrical machinery, appliances, apparatus and parts.

Table 5.6

Distribution of Industrial Units by Change in Value Added Per Unit in Visakhapatnam, 1990-94

Sectors	% Value Added change Per Unit							
	< 0	1-25	25-50	50-75	75-100	100+	N.A.	Total
Manufacture of Food Products	0	0	4	0	1	2		7
%	0.00	0.00	57.14	0.00	14.29	28.57	0.00	100.00
Manufacture of Oil and Starch Products	0	1	0	1	0	2		4
%	0.00	25.00	0.00	25.00	0.00	50.00	0.00	100.00
Manufacture of Beverages, Tobacco Products	1	1	0	0	0	0		2
%	50.00	50.00	0.00	0.00	0.00	0.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	2	3	0	2	6	2		15
%	13.33	20.00	0.00	13.33	40.00	13.33	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	0	2	0	0	0	1	1	4
%	0.00	50.00	0.00	0.00	0.00	25.00	25.00	100.00
Manufacture of Rubber, Plastic, Petroleium and coal Products	1	2	4	2	0	1		10
%	10.00	20.00	40.00	20.00	0.00	10.00		100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	0	2	2	1	1	3	1	10
%	0.00	20.00	20.00	10.00	10.00	30.00	10.00	100.00
Manufacture of Non-Metalic Mineral Products	0.00	2.00	3.00	2.00	2.00	5.00	2.00	16
%	0.00	12.50	18.75	12.50	12.50	31.25	12.50	100.00
Basic Metal and Alloys Industries	1	1	0	0	0	1		3
%	33.33	33.33	0.00	0.00	0.00	33.33	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	3	2	6	4	1	3	3	22
%	13.64	9.09	27.27	18.18	4.55	13.64	13.64	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	1	3	1	2	0	1	1	9
%	11.11	33.33	11.11	22.22	0.00	11.11	11.11	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	0	0	0	0	0	2	1	3
%	0.00	0.00	0.00	0.00	0.00	66.67	33.33	100.00
Manufacture of Transport Equipment and Parts	1	0	0	0	0	0	1	2
%	50.00	0.00	0.00	0.00	0.00	0.00	50.00	100.00
Repair	1	1	1	1	2	2		8
%	0.00	12.50	12.50	12.50	25.00	25.00	0.00	100.00
Total	11	20	21	15	13	25	10*	115
%	9.57	17.39	18.26	13.04	11.30	21.74	8.70	100.00

* Units established in 1994.

Source - NIUA Industrial Survey.

Table 5.7

Investment in Technology/Machinery Addition and Replacement in Visakhapatnam, 1990-94

Sectors	Unit with investment	Amount	Units without investment	Total units
Manufacture of Food Products	3	134.00	4	7.00
%	13.04	64.90	4.35	6.09
Manufacture of Oil and Starch Products	1	0.80	3	4.00
%	4.35	0.39	3.26	3.48
Manufacture of Beverages, Tobacco Products	1	1.00	1	2.00
%	4.35	0.48	1.09	1.74
Manufacture of Wood and Wood Products, Furniture and Fixtures	1	1.00	14	15.00
%	4.35	0.48	15.22	13.04
Manufacture of Paper and paper Products, and Printing Publishing and Allied Industries	0	0.00	4	4.00
%	0.00	0.00	4.35	3.48
Manufacture of Rubber, Plastic, Petroleium and coal Products	3	22.75	7	70.00
%	13.04	11.02	7.61	60.87
Manufacture of Chemicals and Chemical Products	0	0.00	10	10.00
%	0.00	0.00	10.87	8.70
Manufacture of Non-Metalic Mineral Products	3	10.30	13	16.00
%	13.04	4.99	14.13	13.91
Basic Metal and Alloys Industries	0	0.00	3	3.00
%	0.00	0.00	3.26	2.61
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	4	2.46	18	22.00
%	17.39	1.19	19.57	19.13
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	4	12.62	5	9.00
%	17.39	6.11	5.43	7.83
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	1	20.00	2	3.00
%	4.35	9.69	2.17	2.61
Manufacture of Transport Equipment and Parts	1	1.02	1	2.00
%	4.35	0.49	1.09	1.74
Repair	1	0.51	7	8.00
%	4.35	0.25	7.61	6.96
Total	23	206.46	92	115.00
%	100.00	100.00	100.00	100.00

Source - NIUA Industrial Survey.

Employment

Considering the response from 115 sample industrial units, it was found that all except one of them have recorded an increase in the number of persons employed between 1990 and 1994 (Table 5.8). About 60 per cent of the total units have increased their work force by more than 75 to 100 per cent, about 23 per cent of the units have added 50 to 75 per cent workers, about 7 per cent units increased their work force by 25 to 50 per cent. Large number of industries which have increased their work force by more than 100 per cent fall in the industry groups: food products processing shrimps; non-metallic mineral products; wood and wood products; metal products and parts; and transport equipments and parts manufacturing.

Total employment in industrial units in Visakhapatnam, excluding 10 units established in 1994, increased by about 227 per cent during 1990-94, that is from 9871 in 1990 to 32,290 in 1994 (Table 5.9). All categories of industries recorded positive growth in employment, except manufacture of transport equipments and parts. The most phenomenal growth in employment of over 86,622 per cent occurred in the basic metals and alloys group of industries. This was primarily due to establishment of two large iron and steel mills in 1991. Other industries which experienced significant expansion in employment were: manufacture of machinery, machine tools and parts; beverage and tobacco products; and oil and starch products.

Sub-contracting

As noted in the case of Ahmedabad, the incidence of sub-contracting in industrial production process in Visakhapatnam is very low. Only 7 out of the sample of 115 industrial units, or 6 per cent, located in the city are involved in sub-contracting out or taking sub-contracted work. Three industrial units producing wood and wood products, basic metals and alloys, and metal products and parts are sub-contracting out work to smaller units. Two units engaged in manufacturing metal products and parts, and non-metallic mineral products are taking sub-contracted job work. Other two units manufacturing electrical machinery, apparatus, appliances and parts, and transport equipment and parts are giving out work to other units and also taking sub-contracted work from other units, suggesting high level of specialisation involved in the production process of these goods.

Table 5.8

Distribution of Industrial Units by Change in Employment in Visakhapatnam, 1990-94

Sectors	% Employment Change							
	< 0	1-25	26-50	51-75	76-100	100+	N.A.	Total
Manufacture of Food Products	0	0	0	2	4	1		7
%	0.00	0.00	0.00	28.57	57.14	14.29	0.00	100.00
Manufacture of Oil and Starch Products	0	0	0	2	2	0		4
%	0.00	0.00	0.00	50.00	50.00	0.00	0.00	100.00
Manufacture of Beverages, Tobacco Products	0	1	0	1	0	0		2
%	0.00	50.00	0.00	50.00	0.00	0.00	0.00	100.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	0	0	3	8	3	1		15
%	0.00	0.00	20.00	53.33	20.00	6.67	0.00	100.00
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	0	0	0	0	3	0	1	4
%	0.00	0.00	0.00	0.00	75.00	0.00	25.00	100.00
Manufacture of Rubber, Plastic, Petroleum and coal Products	0	0	1	1	8	0		10
%	0.00	0.00	10.00	10.00	80.00	0.00	0.00	100.00
Manufacture of Chemicals and Chemical Products (except Product of petroleum and coal)	0	0	0	2	7	0	1	10
%	0.00	0.00	0.00	20.00	70.00	0.00	10.00	100.00
Manufacture of Non-Metalic Mineral Products	0	0	2	3	8	1	2	16
%	0.00	0.00	12.50	18.75	50.00	6.25	12.50	100.00
Basic Metal and Alloys Industries	0	0	0	0	3	0		3
%	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	1	0	1	6	10	1	3	22
%	4.55	0.00	4.55	27.27	45.45	4.55	13.64	100.00
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	0	0	1	0	7	0	1	9
%	0.00	0.00	11.11	0.00	77.78	0.00	11.11	100.00
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	0	0	0	0	2	0	1	3
%	0.00	0.00	0.00	0.00	66.67	0.00	33.33	100.00
Manufacture of Transport Equipment and Parts	0	0	0	0	0	1	1	2
%	0.00	0.00	0.00	0.00	0.00	50.00	50.00	100.00
Repair	0	0	0	2	5	1		8
%	0.00	0.00	0.00	25.00	62.50	12.50	0.00	100.00
Total	1	1	8	27	62	6	10*	115
%	0.87	0.87	6.96	23.48	53.91	5.22	8.70	100.00

* units established at 1994

Source - NIUA Industrial Survey.

Table 5.9

Employment in Industries of Visakhapatnam, 1990-94

Sectors	Employees 1990	Employees 1994	% change in employees
Manufacture of Food Products	73	305	317.81
Manufacture of Oil and Starch Products	10	29	190.00
Manufacture of Beverages, Tobacco Products	15	108	620.00
Manufacture of Wood and Wood Products, Furniture and Fixtures	178	381	114.04
Manufacture of Paper and Paper Products, and Printing Publishing and Allied Industries	51	69	35.29
Manufacture of Rubber, Plastic, Petroleium and coal Products	125	162	29.60
Manufacture of Chemicals and Chemical Products (except Product of petroleium and coal)	1236	1286	4.05
Manufacture of Non-Metalic Mineral Products	204	360	76.47
Basic Metal and Alloys Industries	22	19079	86622.73
Manufacture of Metal Products and Parts, except Machinery and Transport Equipment	224	4461	1891.52
Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery	54	111	105.56
Manufacture of Electrical Machinery, Apparatus, Appliances and supplies and Parts	101	121	19.80
Manufacture of Transport Equipment and Parts	7369	5564	-24.49
Repair	209	254	21.53
Total	9871	32290	227.12

Source - NIUA Industrial Survey.
Note: Excluding 10 units established in 1994.

Chapter 6

CONCLUSIONS

The major objectives of this study are: (i) to arrive at a comprehensive understanding of employment and income generated in various sectors of the city economy and how it is changing over time; and (ii) to analyse the inter-industrial, sectoral and spatial linkages of industries located in the selected cities for assessing the impact of such inter-dependence on the city's capacity to generate employment and income. Other objectives of the study include developing an appropriate methodological framework for examining both the economic structure as well as inter-regional and inter-sectoral linkages of urban economy at the city level, and to explore the availability of data on city economy in published and unpublished secondary sources in India.

Ahmedabad and Visakhapatnam have been identified as the case study cities. These two cities are at different stages of industrialisation and are expected to reveal different patterns of structure and dynamics of urban economy at the city level. Ahmedabad is a city where there is a perceptible decline in the traditional manufacturing activities while Visakhapatnam is a newly industriliasing city. The major conclusions drawn from this study of two different types of cities which can through some light on the structure and dynamics of urban economy in India are presented in the following section in a comparative framework.

1. The population of Ahmedabad was 3.31 million and Visakhapatnam 1.06 million in 1991. Ahmedabad registered significant decline in its population growth rate that came to about 30 per cent in 1981-91. Visakhapatnam recorded high growth rate of about 75 per cent in the same decade. The population projected on the basis of growth trends between 1961-91 is 3.78 million for Ahmedabad and 1.31 million for Visakhapatnam for the year 1995. However, the provisional results of the 2001 Census reveal very different population growth trends for the two cities. Ahmedabad's decadal population growth rate improved to about 37 per cent while Visakhapatnam's growth rate declined drastically to about 25 per cent between 1991 and 2001. It is clear that both cities are showing very different growth dynamism and buoyancy of city economy in the 1990s, than the expected pattern based on the experience of the past three decades.

2. The work participation rate for both male and female workers in Ahmedabad has improved, unemployment rate for male workers has come down and for females it has gone up considerably between 1987-88 and 1993-94. Regular wage employment has increased for male workers and self-employment is becoming more predominant amongst female workers while

casual wage employment for both male and female workers has declined during the same period. In Visakhapatnam, the work participation has improved between 1981 and 1991. Comparable data on unemployment and employment status is not available for Visakhapatnam.

3. Considering the broad functional characteristics, Ahmedabad can be identified as an industrial city while Visakhapatnam qualifies to be a service-cum-industrial centre. The changing structure of city economy in terms of employment indicates that there has been a discernible decline in non-household manufacturing employment and increase in employment in construction and tertiary sector activities in Ahmedabad between 1981 and 1991.

In Visakhapatnam during the same period, there has been a decline in the percentage share of total employment in household industry as well as in transport, storage and communication. The employment in non-household manufacturing has remained more or less the same, while there has been an increase in the share of employment in construction, and other services.

4. Despite the closure of a number of large textile mills in Ahmedabad in the 1980s, the number of registered factories and organised industrial employment has increased consistently between 1977 and 1992. This can be explained by openning of smaller textile units and diversification in the industrial structure of the city, with new industries coming up, such as manufacturing of rubber, plastic, petroleum and coal products; machinery, machine tools and parts; basic metals and alloys and chemical industry.

In Visakhapatnam, basic metals and alloys group of industries dominates the industrial scene. The other industries which have been gaining importance between 1984-85 and 1994-95 are: manufacturing of food products; transport equipment and parts; rubber plastic, petroleum and coal products; chemical and chemical products; and non-metallic mineral products.

5 About half of the work force in Ahmedabad and one-third of the work force in Visahkapatnam is engaged in informal sector activities and the share of informal sector workers has been increasing in both the cities.

6. The total income generated in Ahmedabad was about Rs. 8,606 crores in 1995 and Rs. 578 crores in 1976-77. Even after adjusting the 1976-77 income estimates to make it comparable with 1995 prices, the growth in the city's income was four times in the twenty year which is phenomenal. This indeed comes as a surprise in the context of a so called industrially declining city. The sectoral distribution of income generated in Ahmedabad in 1995 shows that

manufacturing and processing is the most predominant component of the city economy, both in terms of the share of employment and income generation. This sector employed 36.5 per cent of the work force and accounted for 42.7 per cent of the total income generated in the city.

In 1995, 3.85 lakh persons engaged in various economic activities in Visakhapatnam generated a total income of Rs. 2071.56 crores. The structure of employment and income in the city clearly indicates that although the value added per person engaged is the highest in the manufacturing and processing sector, it is the tertiary sector which generates about 46 per cent of the city's income.

7. Ahmedabad accounted for 8.02 per cent of the total population of the state and contributed 17.40 per cent in the total income of the state in 1995. With 7 per cent of the total population of the State, the city had contributed 14.3 per cent of the total income in 1976-77. Visakhapatnam accounted for 1.6 per cent of the state's total population and contributed 3.80 per cent in the state's income. A comparison of the city income with that of the state income places both Ahmedabad and Visakhapatnam in a high-income category, with the per capita income in both the cities being twice as high as the per capita income recorded in the respective states in 1995.

8. The distribution of households by income groups in Ahmedabad between 1986 and 1996-97 shows that the percentage of households in the lowest income group having an annual household income of less than Rs. 25,000 has been declining consistently, suggesting a discernible trend in lowering down of the poverty levels in the city.

Data on Visakhapatnam reveals a relatively mixed trend between 1992-93 and 1996-97. The proportion of households falling in the lowest income group declined by about one per cent point every year, with the exception of 1993-94 when the same increased by four per cent points. But it can be stated that poverty levels in Visakhapatnam in general also exhibit a downward trend during the five year period.

9. In Ahmedabad, about 57 per cent of the sample units have reported technological linkages with other industrial units located within the city region, that is assumed to be coterminous with the district boundary for the purpose of this study. The incidence of input-output exchange is the highest within the industrial group chemical and chemical products. In Visakhapatnam, about 37 per cent of the sample units have revealed having inter-industry technological linkages within the city region. As expected, the most predominant industrial inter-dependence in Visakhapatnam is between basic metals and alloys industries and metal products and parts group of industries.

10. The two cities have varied patterns of regional backward and forward linkages. The regional pattern of backward linkages in Ahmedabad shows that on an average over half of the inputs for industries are purchased from within the district. The industries of Ahmedabad have relatively stronger forward linkages with the rest of the country, with about 43 per cent of the total output being sold outside the district and to other states. A significant proportion of about 17 per cent of the output of industries located in the city is also exported out of India.

Industries located in Visakhapatnam reveal weaker backward linkages with the local economy and stronger linkages with the other regions and countries as compared to Ahmedabad. Only about 27 per cent of the input purchase is made within the district. The forward linkages of industries located in Visakhapatnam are relatively more geared towards local demand. About 40 per cent of the total industrial output is sold within the district, while 16.98 per cent is exported out of the country.

11. Both the case study cities appear to have weak linkages between formal and informal sector manufacturing activities. In Ahmedabad, the sample units have poor input purchase links with the informal sector manufacturing activity. A relatively larger percentage of the total sale of the industrial output goes to the informal sector manufacturing.

In Visakhapatnam, the backward linkages between the formal and informal sector manufacturing activities are even weaker than those observed in the case of Ahmedabad. Less than one per cent of the inputs for both formal and informal industrial units are bought from informal sector firms. Industries located in Visakhapatnam appear to have no forward linkage with the informal sector as no direct sale has been recorded between the sample industrial units and the informal manufacturing activity.

12. Industrial exchange within the city leading to a reduction in the cost of production did not appear as a locational factor, at least in the consciousness of the respondents in both the cities. In fact, the key reasons given for selecting the two cities for locating their industry are the same, namely: easy marketing, good transport facility, availability of raw materials, availability of skilled and cheap labour, and good potential for development in the city. The only locational factors which indirectly refer to input output exchange related advantage are easy marketing and availability of raw material in some cases. Easy marketing certainly relates to the demand potential of large urban centres, such as Ahmedabad and Visakhapatnam.

13. The reasons for industrial site selection within the two cities also do not reveal agglomeration economies as a determining factor for industrial location. Land and infrastructure related considerations have clearly been important determining factors in making intra-city locational decision in Ahmedabad and Visakhapatnam.

14. Amongst the crucial constraints which have hampered the production and growth of industries in Ahmedabad are lack of adequate demand, import regulation related restrictions, and too much competition. In Visakhapatnam, inadequate and erratic electricity supply, too much competition and inadequate credit facility are cited as the main problems. Lack of demand and too much competition both are indicators of the willingness of the industrialists to increase their production but owing to the prevailing market condition they are not able to achieve this goal.

15. The major macro-level changes in the economy of Ahmedabad in the post-liberalisation period that have taken place are: boom in the service sector, city emerging as an important domestic financial centre, and revival of industrial sector. In Visakhapatnam, the large scale sector has started growing at a relatively faster pace after 1992. The new industries which have started coming up in the post liberalisation period are basic metals, oil refinery, petro-chemicals, port-based industries and privately owned power generation.

16. The impact of liberalisation on industries in the two cities presents a reasonably positive picture. In both the cities, there has been low product diversification, substantial increase in value added per unit, some technology upgradation, significant expansion in industrial employment, and very low level of sub-contracting arrangements. The fear of retrenchment in the organised industrial sector in the context of post-liberalisation with more flexible labour legislation does not hold good in the case of these cities. However, it is not possible to state with confidence to what extent these changes have taken place in response to the liberalisation policies and what has been the influence of some other factors.

Recommendations for Supporting City Economy

Cities are known to have open economy with linkages within and outside their regions. Therefore, larger macro-economic forces and national and international market conditions have considerable impact on industrial structure and output of cities. The demand as well as prices of industrial inputs and outputs have an impact on the city economy in general and on the industry with strong backward and forward linkages with other parts of the country and the world in particular. Providing suggestions for macro-economic changes and faster national economic growth which will lead to an increase in demand for goods and services produced in specific

cities is outside the purview of this study. However, it will be possible to offer some directions for supporting local economic development based on the results of this study of the structure and dynamics of city economy, that focuses particularly on the industrial structure, growth patterns and linkages of two case study cities, namely Ahmedabad and Visakhapatnam.

This study on structure and dynamics of urban economy indicates that in general Ahmedabad is a city with tremendous growth dynamism and entrepreneurship, which have facilitated its economic revival. Visakhapatnam, on the other hand, is a city where economic growth momentum has started picking up and it has yet to realise its full development potential. Although the tertiary sector has been expanding in the recent past, industrial growth has played a lead role in the economic and demographic growth of both the cities. Basic infrastructure and other facilities provided for industrial development have been important factors in attracting industrial investment in these cites. The analysis of the distribution of city income also shows that such high growth and dynamism is beginning to have a positive impact on the poverty levels and the standard of living of the residents in both the cities.

Following key recommendations can be made to support city economy on the basis of this study of two different types of cities, which will also be relevant for a number of cities in India:

- Keeping in mind the contribution of cities in national economic development as well as in poverty reduction, a positive approach to support local economic development, as against the policy of starving the cities of growth impetus in order to induce population redistribution, has to be accepted in the national and regional planning perspectives.

- It is widely accepted that economic growth and population growth are closely linked. Economic dynamism of cities is invariably associated with concentration of urban population. Therefore, the cities in general have to be made attractive places to invest and live, with development of high quality physical, financial and social infrastructure for economic activities as well as for residential purpose.

- Referring specifically to industrial development, land and infrastructure related considerations appear to be important locational factors. Good transport facility, easy marketing possibilities, and availability of raw materials are important factors for industrial development of the selected cities. Efforts in improvement of these facilities at the city level will go a long way in developing the industrial potential of cities and city regions in India.

- Major constraints which have hampered the growth of industrial production in the two case study cities are: import regulation related restrictions, inadequate and erratic electricity supply, and inadequate credit facility. Removing such barriers that come in

the way of increase in industrial production is essential for supporting local economic development.

- An incentive system is already in place for supporting industrial development of backward districts and regions in the country. A suitable incentive package also needs to be developed for cities with high industrial and economic growth potential.

- It is important to note that this study has been highly constrained by the absence of ready city level secondary data. Most of the relevant statistics are compiled at the state and district levels. Hence, this study can be seen as an attempt for making a case for developing a systematic information base on the structure of employment, economic activities and incomes for Indian cities of various sizes. This will enable undertaking more studies, which are required for arriving at a more comprehensive understanding of structure and dynamics of urban economy in India.

- Finally, a closer examination of the industrial production process, linkages between various industries involved in different stages of production as well as the nature of exchange between formal and informal sectors requires more detailed study of specific industries. This is an important area for further research in urban studies.

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