



Vijay K. Seth

THE STORY OF **INDIAN MANUFACTURING**

Encounters with
the Mughal and
British Empires
(1498–1947)



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To the princess of the story of my life, Arpita

PREFACE

History informs us that most of the economies of the world that were able to sustain long-term and consistent higher rates of growth, and were able to transform themselves from the status of underdeveloped to developed economies, have experienced revolution in their manufacturing sector. The revolutionary changes that occurred took place during what is known as the Industrial Revolution. Development in the manufacturing sector provides conditions, when economies develop capability to create unlimited amounts of wealth. The manufacturing sector also facilitates the transfer of manpower from farming to manufacturing. The transfer of manpower results in higher standards of living. It is now being increasingly realized that the nature of development and efficiency of other sectors also depends on the level of growth of the manufacturing sector of the economy. It is due to these important historical facts, that in the literature on economics of development, industrialization and development have become coterminous.

The process of this kind of transformation initially occurred in Britain, and then it spread to different economies of Europe and America. After World War I, it spread to the U.S.S.R. In the recent past, this kind of transformation has been experienced by the economies of Japan, South Korea and China. However, the Indian economy has yet to receive the gains from this kind of transformation.

It is quite an important historical fact that even before the birth of the Industrial Revolution, India produced around twenty-five per cent of globally traded manufactured goods. This too with the help of small household workshops, where craftsmen worked with hand tools. India experienced

de-industrialization after 1750. Since then, India has never been able to achieve the status of an important manufacturing nation of the world. This has happened, despite the fact, that it has a well-diversified manufacturing sector. The Indian economy has in fact deviated from the empirically accepted path of development, which has been established by several scholars. This historical paradox motivated me to explore the puzzle of how a country that produced high quality handicrafts, which were traded in exchange of bullion, lost the race of becoming an important manufacturing nation of the world. It was quite obvious to me that the roots of this paradox lie in the past.

The present work is an outcome of my intellectual journey, which I undertook to seek an answer to the problem. My journey was made quite comfortable by the path cleared by the scholars, who have made contribution in the areas of history, history of business, economic history, history of technology, sociology and economic theory. This scholar provided me with a well-laid path, with enough light to guide me to my destination.

However, so many times I felt I was walking alone in darkness. The isolation sometimes created doubt in my mind as to whether I was following a correct path or not. In such situations, to know the appropriateness of my path, I shared my ideas with other scholars by writing about my understanding about different issues in professional journals. In the course of writing the present work, I published three papers, which were based on certain portions of the chapters of the present book. These papers appeared in the *Journal of Management Research* and *Global Business Review*. The feedback that I received from fellow travellers gave me confidence that I am following the correct course.

I do not claim that I have created an original account of the story of Indian manufacturing. What I have attempted here is to place the facts about Indian manufacturing, which were spread across different disciplines of the social sciences, into one place, in a framework to develop the story of Indian manufacturing. Now the book is in your hands, and I hope you will enjoy reading it.

New Delhi, India

Vijay K. Seth

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I have been working on this book for almost seven years. In the course of writing the book, I have benefited immensely from the writings of some of the great scholars. Their writings have both stimulated new thoughts and understanding, and have provided a new direction to my work. Here, I would like to mention the writings of Professors E. J. Hobsbawn, David Landes, Maxine Berg, William Lazonick, C. F. Sabel, M. J. Priore and Andre Gunder Frank.

I will also like to place on record the contribution of my teachers at the Delhi School of Economics, Professors Dharma Kumar, J. Krishnamurthy and Om Prakash, whose writings and lectures on economic history have provided initial advantage to my exploration on the subject. I have also learnt a great deal from the writings of economic and business historians, who have made significant contributions to the literature on India. Writings of some of these scholars have impacted my study significantly. These scholars are Professors Burton Stein, C. A. Bayly, Morris David Morris, Irfan Habib, Sanjay Sumbramanyan, Rajat Kanta Ray, Trithankar Ray, Prasannan Parthasarathi and Dwizendra Tripathi.

The quality of the work improved substantially from my interactions with Professors K. L. Krishna, J. P. S. Ubroi, B. N. Goldar and Raghav Gaiha.

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I am also grateful to the librarians of the Ratan Tata Library of Delhi School of Economics; the Institute of Economic Growth, Delhi; Central Library of the University of Delhi; Jawaharlal Nehru University; Faculty of Management Studies, University of Delhi; and International Management Institute, New Delhi.

I am also indebted to my brother-in law, the late Prof B. B. L. Sharma who kept on motivating me to finish the book as soon as possible. Maybe he knew that due to delays in writing of this book, he might not have been able to read it before he went on his heavenly journey. I would also like to mention the contribution of my nephew Mr Pankaj Vianayak Sharma, who quietly listened to various facts that I have mentioned in the book regarding various aspects of the economy, society and polity of India.

I will fail in my duty if I do not mention the name of my doctoral students, Bharat Singh, Ritu Solanki, Lubina Zaidi and Prushottam Arya, who helped me in several ways.

Finally, I would like to mention that despite the availability of all aforementioned resources, this book would not have been completed without the quiet contribution made by my wife, Meera Seth. I am also equally grateful to my daughter, Arpita Seth, who not only brought immense happiness in my life, but also gave purpose to my existence. I am dedicating this book to her because it is only recently that I have begun to realize her importance in my life when she left my household to live with her husband Vishal Saxena.

Vijay K. Seth

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Introduction

Economists have divided all economic activities that take place in an economy into three broad categories. In the first category are included all those economic activities that human beings have been performing since the beginning of civilization. These activities are where persons work with different elements of nature viz. agriculture, animal husbandry, fishing, etc. and are called ‘primary activities’. In the second category are included those economic activities where human beings work with manmade elements, such as manufacturing and processing. Through these activities, workers add value to natural resources by processing them or by transforming intermediate inputs and components into finished goods. These activities are described as ‘secondary activities’. Along with these economic activities, there are others in which human beings make improvements to the state of products and persons through a variety of intangibles. These activities are categorized as ‘tertiary activities’ or ‘services’. In economic analysis, these broad categories of economic activities are described as the three sectors of the economy.

The relative importance of each sector or group of economic activities for an economy can be estimated by measuring its contribution to the national income or employment. Development economists have evolved certain stylized facts, based on their empirical research, regarding the relationship between inter-sectional trends in income and employment and the level of development of an economy.¹ These stylized facts are expressed in terms of relative importance of different sectors of an economy at different stages of development. These stages are also described as periods of structural

changes. Initially, structural change in terms of relative contribution to national income and employment occurs from primary to secondary sector and later to services. These inter-sectoral shifts have been described as three distinct phases of development experienced by economies during three distinct historical periods.

All developed economies were initially dominated by primary economic activities, when a substantial proportion of their working population was engaged in primary economic activities. The second phase began between 1760 and 1880, described as the post-agricultural period, during which these developed economies experienced (at varying dates) that the proportion of working population engaged in primary economic activity registered a marked decline and shifted to work in the manufacturing sector (i.e., secondary sector). This phase emerges as a consequence when an economy achieves industrial revolution. The third phase began after the 1960s, which is described as the post-industrial phase, when these economies experienced (at varying dates) decline in employment in the manufacturing sector and rise in the proportion of working population in services. The post-industrial phase of development is also described as the emergence of the 'service economy'². These inter-sectoral trends in employment are accompanied by similar trends in the contribution of different sectors to national income.

Contrary to these trends, in the case of Indian economy, it has been observed that services are emerging as an important contributor to its growth process. Since the 1980s, the service sector has been contributing more than 50 per cent to its domestic product. This fact has led to the belief, amongst observers, that the Indian economy has evolved its own new path of development in which the economy leapfrogs from being an economy dominated by primary economic activities directly to a stage of development where services occupy the dominant position. In this process of leapfrogging, the Indian economy has skipped the stage in its process of development where the manufacturing sector generally dominates. This has happened because the Indian economy has missed industrial revolution. This historical fact is quite puzzling, because according to my own understanding of history, India was once an important manufacturing nation, much before the advent of the Industrial Revolution in England. I have also read in historical writings that the manufactured products of India were globally traded in exchange of bullion, because at that time other economies had nothing to offer in exchange for them except bullion.

Skipping the stage in the process of development in which the manufacturing sector emerges as a dominant sector of the economy is

quite a significant loss. Historically speaking, in the literature on economic development, dominance of the manufacturing sector in the economy and economic development are considered synonymous. Only those economies that have undergone a manufacturing revolution have been able to achieve a long-term sustained process of development. It is the emergence of the manufacturing revolution that provided them with the possibility of continuous growth in the material wealth of the economy. The possibility of growth in the agrarian economies is constrained by the availability of fertile land, and even fertility of land is subject to diminishing returns.

Even Aristotle, while writing about sectoral composition of economic activities of an economy, suggested that primary activities are necessary for livelihood, but cannot become the source of unlimited wealth. He divided economic activities into two broad categories. The first category of economic activities consisted of activities that he termed as ‘natural art of acquisition’, and the other set of economic activities he defined as ‘man-made art of exchange’. The first category of economic activities included those activities that helped man to obtain livelihood from nature. Aristotle believed that Mother Nature has the capacity to provide for only bare subsistence, in the same way milk is provided for the young infant by the mother. Thus, activities that depend on nature, nature herself sets limitation.³

It is also an important historical fact that the efficiency and quality of products produced by other sectors of the economy largely depends on the existence of a well-developed manufacturing sector. The production of agricultural capital goods and inputs by the manufacturing sector, for example, tractor combine harvesters, fertilizers and water pumps, has transformed the agricultural sector. Similarly, production of varying means of transportation, communication and information by the manufacturing sector have altered the way business is conducted in modern economies, across all sectors. One cannot ignore the importance of modern equipment such as CT-scan, X-ray and ECG machines, and several pharmaceutical products produced by the manufacturing sector, which have improved efficiency, reliability and quality of the healthcare sector.

In view of these important contributions of the manufacturing sector in the process of development of an economy, it becomes a matter of great concern that an economy, which was once upon a time an important manufacturing nation of the world, is now known for its service sector. This historical puzzle needs an appropriate answer that will tell us how a major manufacturing nation has to skip that stage of development in which

the manufacturing sector makes significant contribution to income as well as employment. The historical puzzle motivated me to explore the story underlying this paradox in greater details. *A Story of Indian Manufacturing* is the outcome of my intellectual journey of exploration for finding an answer to this puzzle. I have followed a particular route for my intellectual journey. I do not claim that it was the best route to follow. I will welcome if scholars follow different routes to solve the puzzle from various perspectives to enrich our understanding. There are possibilities that different routes may lead to different destinations or may converge at the same point. It is due to this reason that the title of this book is *A Story of Indian Manufacturing* rather than *The Story of Indian Manufacturing*. My intellectual journey led me to the study of several writings of historians. This exposure has happened as a consequence of the nature of my exploration. I hope my historian friends will pardon me for intruding into their domain, which is almost like the entry of a mosquito into one's sacred space.

1.1 TRADITIONAL FLEXIBLE MANUFACTURING: BEGINNING THE STORY OF INDIAN MANUFACTURING

The roots of the word 'manufacture' are two Latin words', *manu* and *facer*s. Here, *manu* means 'hand' and *facer* means 'to make'. This signifies that manufacturing in earlier times was associated with handicrafts. This early form of manufacturing in India, in its embryonic stage, was carried out by artisans in the villages since ages. The process of social and economic division of labour created separation between craftsmen and farmers. Despite the separation of functions, for a considerable period of history, craftsmen remained an integral part of the agrarian economy. It is also an important fact that the separation of functions between craftsmen and the rest of the village economy was organized on caste lines. The social organization of production in the village economy did not facilitate the origin of market-mediated processes of exchange between craftsmen and other economic activities that were part of the village economy. This was happening because of the existence of a unique type of symbiotic relationship between artisans and other occupational groups in the villages. This symbiotic relationship was created by a distinct Indian social institution known as the '*fajmani system*'.⁴ Through this institution, society had evolved a 'gift exchange' relationship amongst different occupational groups to provide

the requisite supply of different kinds of manpower needed to run a village economy.

However, most of the economies of the world, especially of Europe and South and Southeast Asia, experienced the emergence of a peculiar form of manufacturing during the sixteenth, and in some cases during the seventeenth century, which has been variously described as the protean stage of industrialization,⁵ industry before industrialization,⁶ proto-factory,⁷ nascent capitalism,⁸ commercial manufacturing⁹ and proto-industry.¹⁰ Of all the terms used to describe this phenomenon, the term 'proto-industry' caught the attention of a large number of scholars. Initially, this term was used by Freudenberger and Redlick.¹¹ However, it received the attention that it deserved from the scholars after it was described in the writings of Mendles.¹² Proto-industry was used as one of the themes for discussion at the International Economic History Congress held in Budapest. The term *proto*, used as a prefix to the term proto-industry, belongs to the Greek language. It means embryonic, original, first time, earliest and primitive. In this sense, proto-industry stands for a stage of manufacturing that contained preconditions (i.e., seeds) for the emergence of modern manufacturing.

The proto-industry emerged as a culmination of a long, drawn-out process of evolution that began with Neolithic revolution.¹³ The Neolithic revolution began with the domestication of animals and plants.¹⁴ It brought together, at a higher level, two of the oldest economic activities of human societies: food gathering and hunting. The domestication of plants and animals created a process whereby human beings came to control, increase and improve the availability of food. During this stage of human existence, the easily available elements obtained from the exploitation of earth and nature were integrated into one operating system. The birth of these new economic activities led to the migration of human beings down from highlands and through valleys, on to vast alluvial plains. Along with the pattern of their migration, the nature of farming also underwent changes. It was, earlier, in the form of slash and burn, then bush fallowing, and subsequently short fallowing. When human beings began to occupy vast alluvial fertile river valleys, farming became a more organized annual single crop or multi-crop operation.¹⁵ The increasing importance of fertile land led to increasing attachment of human beings to land, which made them more and more immobile. This attachment to land made it inevitable for human beings to give up their nomadic existence and forced them to embrace settled life.

The settled life set in motion several kinds of forces, which completely transformed the life of human beings. It gave birth to social organizations, collective learnings and beliefs. These provided conditions that facilitated the discovery of new crops, methods of cultivation and improved quality of animals. The expanding knowledge about plants and animals created possibilities for the production of food far exceeding the producers' own requirement. This remarkable development entails the emergence of economic surplus, which could sustain several economic activities other than the production of food, like crafts, trade, art, music, etc. The availability of surplus of foods also resulted in the formation of towns and urban culture and handicrafts. The crafts provided preconditions for the origin of the stage that has been described here as proto-industry.

Proto-industrialization has been accepted by scholars of economic history as a stage that existed during the period between the emergence of the putting-out system and consolidation of factory form of production organization in manufacturing. Some of the scholars view proto-industrialization as a transitional stage from *Kaufsystem*, in which production was dominated by petty commodity production, to *verlag system*, which was based on a capital-intensive form of manufacturing.¹⁶ Proto-industry as a form of organization of production was characterized by dominance of a crafts-based method of production carried out in family-owned workshops. These household workshops were integrated into an operating system through the putting-out system organized by the merchants.

This form of organization of production required '*circulating capital*' rather than '*fixed capital*'. This distinction has emerged as a consequence of the use of simple tools and equipment by artisans, which they owned themselves. Therefore, there was no need to make large investments in fixed capital. The process of production was based on division of labour, where the production process was sub-divided into several specialized craft functions. These characteristics of proto-manufacturing provided it several kinds of flexibilities. These flexibilities got embedded into the organization of production. These same flexibilities are now built into the modern flexible production system.¹⁷ These flexibilities establish similarities between proto-industry and modern flexible manufacturing; the only thing that separates them from each other is the level of technology being used.

Most of the criticism against the concept of proto-industry pertains to describing it as a stage in the evolutionary process of manufacturing.¹⁸ I arrived at the term 'primitive flexible manufacturing' by combining the

dominant characteristic of proto-industry (i.e., flexibility), with one of the synonyms of the word proto (i.e., primitive).¹⁹ However, realizing that the word primitive connotes with primitive societies, I am using here the term ‘traditional flexible manufacturing’. This is being done not to describe it as a stage in the evolution of modern manufacturing, but as a method of organization of traditional crafts into a system of production. This system of organization of production in manufacturing developed the capacity to satisfy the needs of mass markets.

Traditional flexible manufacturing emerged as a consequence of the loss of independence of craftsmen to merchants who supplied them raw materials or working capital along with their subsistence needs to control the marketing of their final output for mass markets. The emerging bondage of independent craftsmen to merchants was part of market expansion, resulting from centralized authority of state, monetization of the economy and emergence of urban agglomerations, which were integrated with a global network of long-distance trade.

1.2 TRADITIONAL FLEXIBLE MANUFACTURING AND THE MUGHAL EMPIRE

Looking at the preconditions that were necessary for the successful growth of traditional flexible manufacturing, I am beginning the story of Indian manufacturing from c.1500 of the Christian Era (all subsequent dates are in Christian Era). The reason being that around this time two important historical events occurred that significantly influenced the course of Indian manufacturing. One was the entry of the European merchants through a sea route after the discovery of the sea route to India by Vasco da Gama in c.1498 CE, and the other was the beginning of the Mughal Empire in c.1526 CE with the entry of Mughals by land route. These two concurrent events provided necessary and sufficient conditions for the emergence of traditional flexible manufacturing in India. These were also two intertwined episodes of globalization, which performed a vital role in determining the pattern of growth of Indian manufacturing. The Mughal Empire created an integrated economy of continental size, and European trading companies expanded the commercial connectivity of the Indian economy to Europe and South and Southeast Asia.

Mughals were perhaps the first rulers of India who ruled over the land mass, which has been subsequently ruled by the East India Company (EIC),

the British Raj, and the governments of Independent India, respectively. The continuity of events associated with Indian manufacturing occurring in the same geographical space provides geographical continuity to the story. This makes it possible to show that the whole drama of Indian manufacturing has been played out on the same stage. Story without geography becomes mythology, and when a story is narrated in the context of geography, it becomes history. I read somewhere that ‘history without geography is a picture without a frame’. Moreover, India as we visualize it today took its shape during the Mughal Empire. Therefore, beginning the story of Indian manufacturing from c.1500 CE will help us to understand how it was conditioned by different political regimes that ruled the same geographical space at different points in time. This will make the story more interesting because it will be narrated in the context of the affairs of Indian manufacturing with different political regimes. Successful emulation of growth of manufacturing depends on the compatibility between technology, organization of production, and political environment emanating from the distribution of power amongst different strata of society. Political regimes have the capability to redistribute benefits in favour of the economic agent that can bring about higher rates of growth of manufacturing. The redistribution of power in favour of transformational economic agents is necessary because history tell us that, most frequently, political regimes are monopolized by those vested interests that obtain maximum gains from status quo.

Each society works according to its structure, which consists of institutions, rules, conventions and their enforcement. Therefore, it is the structure of the society that determines the rules and regulations that create the economic environment in which economic agents make decisions. The structure of the society also determines the kind of belief system that will be dominant for making decisions. Institutions constitute the structure that different political regimes impose on a geographical space, which create formal structure of incentives and disincentives. The created incentive structure influences the choices made by economic agents. Societies prosper when political regimes provide institutional support to those economic agents that are engaged in the economic activities that take the society to the next higher level of economic development. Societies may also experience decline and stagnation if the incentive structure promotes unproductive activities.²⁰ Keeping in my mind these lessons provided by institutional economies, and historical experience of social change, as recorded by economic historians, I am beginning to narrate the story of

Indian manufacturing as it has been conditioned by different political regimes that ruled in India since c.1500 CE. However, in the present book, I am focusing on the impact of only those political regimes that ruled India before its independence. Therefore, I am narrating the study of Indian manufacturing until c.1947 CE. I am writing a separate book to analyse the impact of those political regimes that Indian manufacturing experienced after independence.

In Chap. 2 of the present study, I describe the relationship that emerged between the economic environment created by the Mughal Empire and traditional flexible manufacturing. This is because during this period, traditional flexible manufacturing was emerging as an important form of organization of production in manufacturing. In this chapter, attempts have also been made to understand the impact of the socio-economic environment prevalent during the Mughal Empire and the composition of Indian manufacturing. The chapter also traces the sources of competitive advantage of traditional flexible manufacturing in supplying manufactured products to mass markets. It was due to the competitive advantage of this form of manufacturing that India emerged as an important producer as well as exporter of manufactured products during the Mughal Empire.

The Mughal Empire established a symbiotic relationship with traditional flexible manufacturing, known to the people living during this period as the *Dadni system*. The symbiosis between traditional flexible manufacturing and the Mughal Empire was so intense that the dawn of the latter determined the rise of the former. [The slow erosion in the authority of the Mughal state, after the death of Aurangzeb in c.1707 CE, until the Battle of Plassey (c.1757 CE, i.e., the beginning of the rule of the EIC) until the Mughal Empire lasted, fragmentation occurred in the polity of India.] There emerged different political entities, which redrew the political map of India. Some of these were large political entities like Mysore, Hyderabad, Bengal, Marathas and Sikhs, whereas some of them were small entities like Awadh, Ruhelas and Rajputana. The EIC remained primarily a trading company during this period. These five decades of political uncertainty were a mixed experience for Indian manufacturing. Handicrafts either registered a decline or reorganized themselves into different organizational structures at different locations depending on the size of the new political entity and attitude of the rulers towards merchants and craftsmen. This is because traditional flexible manufacturing was just one of the several modes in which handicraft manufacturing could be organized to supply products in

the mass market. Crafts-based production can be embedded into several kinds of organizational structures.

1.3 TRANSFORMATION OF TRADITIONAL FLEXIBLE MANUFACTURING INTO MODERN MANUFACTURING

It is a well-known historical fact that while traditional flexible manufacturing was experiencing slow and steady decline after the 1750s in India, the traditional flexible manufacturing of Britain was preparing to transform into modern manufacturing. It was in Britain, where in a short span of time, a series of inventions related to spinning and weaving of cotton sprang up simultaneously. These inventions, along with the invention of the steam engine, amongst many other technological changes, transformed the nature of manufacturing in Britain.²¹ Despite the existence of traditional flexible manufacturing simultaneously in several economies of the world, including India, transformation of traditional flexible manufacturing into modern manufacturing first occurred in Britain. This process has been described by historians as the Industrial Revolution.²²

Modern manufacturing is characterized by the replacement of human muscles by machines that are run with the help of inanimate powers. The integration of tools and inanimate powers gave rise to immense possibilities for the ever-changing unit of the manufacturing firm. However, to take advantage of these immense possibilities, merchants have to transform their circulating capital into fixed capital. The moment merchants did this they became slaves of their own investments. The use of machines also led to the concentration of various stages of production under one roof and, for the first time, craftsmen left their household workshops to work as workers in the *factory*. This new form of manufacturing organized into a centralized unit of production came to be known as '*factory*'. These factories were generally owner managed, which led to convergence between ownership and control. These changes altered the meaning of manufacturing from manu-facer (i.e., made of hand) to machino-facer (i.e., made of machines). This transformation explains how new techniques of production necessitated the emergence of a new form of organization of production in the form of factory or mill where owners of tools and equipment became industrialists and enjoyed control over production processes and management of the production unit.

Modern manufacturing created an economy that was a great departure from earlier agrarian economies. In predominantly agrarian economies, even if they had traditional flexible manufacturing, process of development was conditioned by constraints imposed by nature. These economies depended on organic materials for food, clothing, housing and fuel. The supply of these materials was fixed in the long run, due to the fixed factor—land. This also applied to the modes of transportation that were being used in these economies based on animal power. In such economies, once land available with them was exhausted, diminishing returns to land were inevitable; if one views the diminishing returns on land along with Malthusian understanding regarding trends in population, escape from poverty becomes extremely difficult. The only alternative available for them to escape from poverty was to practice ‘*Smithian division of labour*’.²³

When modern manufacturing emerged after the Industrial Revolution in Britain, it led to substitution of organic materials by mineral-based energy sources (i.e., the use of inanimate sources of energy to run machines). This new development resulted in the creation of a new world that no longer depended entirely on the vagaries of nature; it created a world in which possibilities of development did not depend entirely on land but on how the society itself managed its economy.²⁴ This departure signified a structural break from the past, by shifting its growth trajectory based on ‘*Smithian growth process*’ to ‘*Promethian growth process*’²⁵ or ‘*Schumpeterian growth process*’.²⁶ It is also an important historical fact that most economies that have been able to internalize modern manufacturing, have also become developed economies. Due to this reason, since the emergence of industrial revolution, dominance of the manufacturing industry in an economy and economic development have become coterminous. It has now become an important stylized fact that only those economies that have achieved manufacturing revolution have been able to experience long-term durable economic development.

In Chap. 3 of the book, the entire process of transformation of traditional flexible manufacturing into modern manufacturing, as it occurred in Britain, is described in detail. This chapter also analyses how British manufacturing, which had emerged from the transformation of traditional flexible manufacturing, retained some of its characteristics. As a consequence, British manufacturing remained primarily consisting of family-owned enterprises, generally small in size and engaged in specialized production processes. Due to these characteristics, it also retained built-in flexibilities that were attributes of traditional flexible manufacturing. The most

important reason for including this chapter in the book is to show how British industrial revolution conditioned the growth of manufacturing in other countries, especially in those countries that Britain had integrated as its colonies.

1.4 TRADITIONAL FLEXIBLE MANUFACTURING AND THE EAST INDIA COMPANY

As the British economy was experiencing transition from being an agrarian economy to an industrialized economy after industrial revolution, the East India Company was slowly becoming the ruler of the Indian sub-continent, after the Battle of Plassey in c.1757. The reincarnation of the East India Company into the ruler of the country altered the economic environment of the Indian economy as experienced by its traditional flexible manufacturing. The East India Company was established in the year c.1600, when Queen Elizabeth I of Britain signed the charter that granted to the company monopoly to trade with the East. The company started its first factory (i.e., a warehouse) at Surat in c.1608.^{27,28} In c.1640, it established its next factory at Madras, and in c.1667 at Calcutta. It also obtained territorial rights over Bombay, when the king of England married the princess of Spain, because Bombay was given to the king as dowry. In c.1717, the emperor Farrukhsiyar gave several concessions to the East India Company; the most important being the exemption from all levies on goods passing from one district to the other in Bengal. This concession was the major bone of contention between local rulers and traders with the East India Company.

The gradual decline in the authority of the Mughal emperors, after the death of Aurangzeb in c.1707, had increased the frequency of conflict between different regional powers. The increasing political risk forced the East India Company to protect its ships and offices of factors (agents). This necessity facilitated the process of transformation of factories into forts (like Fort William and Fort George) and raising its own private army. The emerging gaps in the structure of political power provided opportunities to the East India Company to develop territorial interests in the Indian sub-continent. In c.1757, with the Battle of Plassey, the process of territorial occupation of India began. In 1765, the East India Company obtained *Diwani rights* (i.e., right to collect land revenue) over Bengal from the Mughal emperor. After consolidating its power in Bengal, it slowly

expanded its political control on other important centres of traditional flexible manufacturing, viz. Bihar (1765), Eastern Uttar Pradesh (1775), Malabar Coast and Mysore (1792–1801), and Surat and Ahmedabad (1800–1803).²⁹

In new circumstances, the nature of interaction between the East India Company and the Indian economy qualitatively changed. Prior to c.1765, the East India Company had to pay in bullion for the purchases that it made for Indian manufactured items, which it traded globally. The company also depended on Indian merchants to procure these manufactured products from artisans. In the new dispensation, purchases of Indian manufactured products could be financed by the land revenue that the company collected from the Indian farmers; the other remaining part could be financed by the profits that it made from the selling of British machine-made goods, which it sold in India. The increasing political dominance of the East India Company provided support to the British merchants who slowly reduced the role of Indian merchants in different markets. They also started directly establishing relationships with Indian craftsmen, and in certain cases, they directly employed craftsmen in factories owned by the East India Company.³⁰ In these factories, Indian craftsmen were employed at very low wages, which the craftsmen had to accept because the company, from merely being a trading company, had now become the ruler. Through its policies, the East India Company marginalized the role of Indian merchants from the organization of production of traditional flexible manufacturing. This led to a disconnect between the Indian merchants and craftsmen, which provided precondition for the decline of traditional flexible manufacturing.

This period, which witnessed the rising dominance of the East India Company in the economic and political affairs of the Indian economy, was unfolding certain fundamental changes in the economy and polity of Britain—from being run by feudal lords and shopkeepers to an economy where manufacturers were dominating. This transformation created a new class of people known as industrialists, whose interests were quite at odds with the interests of the old order of merchants and landlords. The ideological premises of the new social order were articulated by Adam Smith in his famous books *The Wealth of Nations*, which appeared c. 1776. The new ideology systematically attacked the interests of merchants. Since the East India Company was a trading company and represented the interests of British traders, it also became an object of criticism in the new ideology. The most fundamental criticism of the East India Company is given by Adam Smith in

his book.³¹ However, in the conflict of interest between merchants and industrialists, the interest of industrialists prevailed.

The emerging dominance of the interest of industrialists in the economic and political life of Britain slowly created circumstances that led to erosion in the autonomy of the East India Company in managing the affairs in India. To protect the interest of the infant manufacturing sector in Britain, heavy tariffs and penalties were imposed on imports of Indian manufactured products. Eventually, c.1813, the monopoly of the East India Company to trade with the East ended. Finally, after the first war of independence (which is described in British historical writings as the Sepoy Mutiny) in 1857, the rule of the company also ended. After c.1857, the Indian economy became an integral part of the British Empire. This was the beginning of the '*British Raj*'.

The impact of the rule of the East India Company, which lasted for a century in India (1757–1857), on Indian traditional flexible manufacturing is discussed in detail in Chap. 4 of the book. The detailed analysis of the period amply demonstrates how the conflict between the interest of merchants and industrialists, which was becoming intense in Britain, negatively affected the traditional flexible manufacturing. This conflict, in fact, transformed the Indian economy from being an exporter of manufactured products to an exporter of raw materials for the British manufacturing industries. The traditional craftsmen and artisans lost their independence and their livelihood and had no choice but to go back to villages in search of their subsistence. Naturally, they were compelled to give up their traditional craft skills and embrace works related to agricultural activities. This process has been described by the nationalist and Marxian historians and economists of India as the process of '*de-industrialization*'.³² The issues related to the debates on de-industrialization are also discussed in Chap. 4 of the book. To understand the consequences of the rule of the East India Company on the traditional flexible manufacturing of the Indian sub-continent, it is essential to know how the company was organized. The East India Company was the first joint-stock company, and being so it experienced the consequences of separation between '*ownership*' and '*control*'. This separation provides opportunities, to the people who controlled the day-to-day functioning of the company, for opportunistic behaviour. To study the consequences of opportunistic behaviour of the managements of corporate entities, and methods to regulate their behaviour, in order to harmonize the interests of different stakeholders of the company, a new discipline has emerged known as '*corporate governance*'.

It has been observed that the organizational structure of the company was such that it provided ample opportunities for its management to indulge in opportunistic behaviour. The situation was more serious with respect to the managers who were working in the Indian sub-continent. Due to geographical distancing between the head office of the company and its operation in the Indian sub-continent, the chances of opportunistic behaviour on the part of the officials of the company working in India were much greater. Therefore, I discuss these problems in greater detail in Chap. 5. This chapter studies the East India Company purely as a corporate entity to illustrate how different the behaviour of the first joint-stock company was from the behaviour of other contemporary corporations.

1.5 SPATIAL SPREAD OF MODERN MANUFACTURING

Once modern manufacturing was firmly established in Britain, this powerful force began to spread to other European economies, and simultaneously to other distant economies where European settlers were dominating the polity and economy as well. In this sense spatial spread of modern manufacturing to the economies of America, Canada, Australia and India, was in a way an extension of modern manufacturing in the periphery of the European core region. Indian economy experienced the birth of modern manufacturing c.1854. The manufacturing enterprises that emerged at that time in India were in those lines of manufacturing where Indian manufacturers had a distinct cost-related competitive advantage over British manufacturing. These cost advantages in production were so substantial that they could also overcome the cost disadvantages created by discriminating tariff structures. Therefore, modern manufacturing began in India with the opening of enterprises in two textile industries—cotton and jute textiles. Both industries had a long tradition of being organized into handicrafts production and also had local availability of raw materials. Cowasjee Davar established the first cotton textile mill in July 1854 at Tardeo in Bombay,³³ and in the same year, George Auckland established a jute textile mill, Auckland Company, at Rishra in Seerampur in Bengal.³⁴

It is also an important historical fact that while modern manufacturing was finding its roots in India, the nature of modern manufacturing was changing globally. Due to these global changes, British manufacturing was slowly losing its status of being the ‘manufacturer of the world’. By the 1860s, a new industrializing economy, America, began to give stiff competition to British manufacturers. Its manufacturing firms were emerging as

global players. The competitive advantage of US manufacturing largely depended on the availability of raw materials and natural resources, accompanied by increasing inflow of an 'immigrant' workforce. The competitive advantage of US manufacturing was also enormously facilitated by the existence of railways, telegraph and telephone. US manufacturing could leverage the advantage of these innovations, because the United States started growing around the same time as these innovations were commercially exploited on a large scale. In fact, some of the development economists have established that the railway acted as '*leading sector*' of the economy.³⁵ In the case of Britain, these innovations came into being after a considerable lapse of time (around seven to eight decades) from the time modern manufacturing emerged there in the 1760s.³⁶ For instance, railways were developed in Britain around the 1830s, the telegraph around the 1840s,³⁷ and the global connectivity of the telegraph was established in the 1870s.³⁸ The US manufacturing enterprises received enormous benefits from these innovations because these innovations provided them logistic support to cater to large markets. These benefits were the same as provided by the introduction of information technology to contemporary manufacturers. This advantage was manifested in the emergence of large-scale enterprises. Early entrepreneurs in US manufacturing like Rockefeller, Morgan and Carnegie established large enterprises, which was also facilitated by the introduction of '*methods of mass production*'. The process began with the introduction of the assembly line in the Ford Motor Car Company c.1911, which led to the birth of Fordism. The existence of large-scale enterprises also provided objective conditions for the introduction of methods of 'scientific management', which were evolved by Frederick Winslow Taylor and are now described as *Taylorism*.³⁹

Firms in America experienced rapid expansion in their scale of operations, from being single-plant, single-product and single-location to multi-product, multi-plant and multi-national firms. Even increasing size of the enterprise necessitated the dependence of firms on savings of persons other than the promoters of the firm. This led to the birth of joint-stock companies, making a divorce between 'ownership' and 'control' inevitable. In new circumstances, ownership rested with the stockholders, whereas control was in the hands of professional managers. This phenomenon has been described as '*managerial revolution*'.⁴⁰ These three interrelated innovations in the method of production and its organization provided distinct identity to the American manufacturing enterprises. These three innovations affected the nature of manufacturing very significantly. The use of the

assembly line increased the size of the enterprises due to economies of scale and bulk production. The methods of Taylorism pushed the extent of division of labour at the shop floor to the minutest conceivable task. The separation between ownership and control gave birth to managerial hierarchies, which removed the managerial constraint, which kept the size of family firms very small in Britain.

These three unique characteristics of US manufacturing have given support to the view that technological changes are generally path-determined, and they follow a path determined by socio-economic and political environment of the economy, collectively reflected in the institutional setting in which manufacturing enterprises grow. Since the emergence of these two, and subsequently several distinct patterns of growth of manufacturing, scholars are trying to find the answer to a most pertinent question regarding global spread of modern manufacturing. The question is whether manufacturing will retain its structural uniformity in all economies where it is internalized, or will assume different forms or characteristics emanating from the temporal and spatial variations in the history, culture, factor endowments and institutions of different economies.

The former alternative view is based on the premise that temporal and spatial variations in the forces that have bearing on the process of development of modern manufacturing do not really matter, because it is an autonomous scalar process independent of socio-political and economic systems. The alternative strand of thought highlights the differences in the nature of innovations and variety of forms that manufacturing can assume in the organization of production over time and space. Therefore, this view emphasizes the uniqueness in the pattern of growth of manufacturing at different points in time and space. The uniqueness emerges because the growth of manufacturing is embedded in different institutional settings in different economies at a point in time, and in the same economy over a period of time. Hence, according to this strand of thought, one of the important tasks of the scholar, under these circumstances, is to identify the unique attributes of country-specific manufacturing and explain how these attributes have determined the unique path or trajectory of development of modern manufacturing.

After accepting these historical facts about modern manufacturing enterprises, economists have evolved the term '*long waves*' rather than stages to describe paradigm shifts in manufacturing activities. This term was initially used by a Russian economist, Nikolai Kondratieff⁴¹ and further evolved by Joseph Schumpeter.⁴² The term 'long wave' rests on the premise that each

long wave is associated with certain activities, which provide it distinguishing characteristics. Schumpeter identified that underlying each long wave is a '*clustering of innovations*', which provides each wave a distinct identity. This suggests that innovations in manufacturing are not isolated events but rather part of an interrelated technological system. The wave may consist of new products, new processes or new organizational structures because the ones already in use by leading enterprises get diffused very fast and become almost like a paradigm. Each wave in manufacturing embodies a distinct combination of products, processes and organizational forms, which also collectively influence the other parts of economy.⁴³ Therefore, each wave may result in deep-rooted qualitative changes in the economy also. These qualitative changes are necessitated by a need for realignment of policy regime with new economy, which is being evolved as a consequence of a new wave. Sometimes these waves become all-pervasive and alter the fundamental relationship between technological change, political change and social change.⁴⁴ The new waves may emerge in the same economy at different points in time or in different economies at a single point in time.

The important facts regarding the characteristics of modern manufacturing that are country-specific or unique facilitated the birth of the '*national system of innovation*'. The historical origins of this concept can be traced back to the writings of Friedrich List (1841). However, he uses the term '*National System of Production*'. The National System of Production includes manufacturing, national institutions (including institutions that create and diffuse knowledge and skills), infrastructure and networks of transportation and communication for transporting people, ideas and goods. List gave overriding importance to building national infrastructure and institutions that are engaged in the creation and accumulation of '*mental capital*' (human capital). He also gave equal importance to processes that facilitate proper utilization of mental capital in initiating the process of economic development through state intervention. He had no confidence in the '*invisible hand of the market*' to do the magic as envisaged by Adam Smith.^{45,46}

In its cotemporary form, the concept of a national system of innovation emerged in an unpublished paper written by Christopher Freeman, which he had prepared for the Organisation for Economic Co-operation and Development (OECD) expert group on science, technology and competitiveness. In this paper, he argues that short-term strategies that are used by economies, by manipulating factor prices and exchange rates, play only a marginal role in increasing the competitiveness of the manufacturing sector of an economy. He emphasized that competitive advantage of the

manufacturing sector of any economy depends on how efficiently it assimilates new technological systems and how far the new technological systems match or mismatch with the institutions prevalent in the economy. An economy that might have been growing faster with one form of dominant technological paradigm may suddenly experience stagnation, or down turn, if its institutions are not able to respond to the new emerging technological paradigm.

Several scholars subsequently contributed to the expansion and refinement of the concept of a national system of innovation.⁴⁷ The process of enrichment of the concept led to numerous variants of the concept viz. '*social system of innovation*',⁴⁸ or '*national business system*'.⁴⁹ Despite the fact that there exist several competing formulations regarding this concept, contemporaneously, there are certain basic or core characteristics of all the variants of the concepts that are common. The first common characteristic, which is similar in all the formulations of the concept of a national system of innovation, is that each national system differs in terms of the area of its specialization, which is determined by its knowledge base.⁵⁰ The second common characteristic is that the knowledge base of the economy is a more important determinant of the performance of the national system. The third common characteristic is that the knowledge base of the national system of innovation is more localized and it does not move from one location to another rapidly. This is because knowledge is embedded in the institutions and routines in the firms. The knowledge base is localized because it is different from information.

All formulations regarding the global spread of manufacturing activities amply suggest that the initial evolution of modern manufacturing might be a spontaneous historical event, but its subsequent spread was not possible without the active role of the state, both in terms of nurturing modern manufacturing and of creating national systems of innovation. Another lesson we have learnt from the experience of global spread of manufacturing is that when modern manufacturing spreads into economies that had well-developed traditional manufacturing, the result was almost always to create a hybrid structure. One part of the hybrid structure consisted of manufacturing working on capitalist lines, using modern technology, with large-scale enterprises, and another part consisted of working on non-capitalist social formations using traditional technology on a small scale. The structure of manufacturing that existed in India, at the time of independence, manifested this phenomenon of dualistic structure.

1.6 ALTERNATIVE PATHS TO DEVELOP MODERN MANUFACTURING

The theoretical constructs, mentioned previously, regarding global spread of manufacturing, amply suggest that the story of Indian manufacturing ought to be different from the story of manufacturing of other economies. The difference emanates from the fact that these formulations are based on the premise that the economy is governed by the national state that acts as a facilitator of modern manufacturing. This basic premise was missing in the case of India during the British Raj. The British Raj was a unique experience for Indian manufacturing because unlike the earlier rulers (the Mughals), who had accepted India as the land of their destiny, the Raj never thought of India as their promised land. In fact, they believed that they were on a civilizing mission to the land of barbarians. Therefore, at that stage of history, when the country needed the existence of a nation state, it was ruled by an imperialist state. For the first time in Indian history, the processes regarding policy and decision making remained outside its territories, and decision makers remained strangers and alien to Indians.

During the rule of the East India Company, the power elites of Britain had transient interest in the affairs of the Indian economy. The beginning of the Raj brought India to centre stage because it emerged as an important jewel in the British crown. The centrality of India in the British Empire was conceived differently by different constituents of the power elite of British power structure. Marx has very appropriately described the vested interests of these various segments of British power structure in his famous article, which he penned for the *New York Daily Tribune* dated 8 August c.1853. He writes—‘British aristocracy wanted to conquer it, the moneyocracy to plunder it, and millioocracy to under sell it’.⁵¹ Amongst all these vested interests, the interests of British aristocracy and moneyocracy were already fulfilled during the rule of the East India Company. During British Raj, there emerged paramountcy of the interests of British millioocracy. The hegemony of the millioocracy began with the removal of monopoly power of the East India Company to trade with India c.1813, and was completed with the end of the rule of the East India Company c.1857.

British aristocrats and merchants used protectionist policies to protect their vested interest. In the early days of the birth of British modern manufacturing, it also helped the British millioocracy to protect their infant manufacturing sector. To lay the foundation of modern manufacturing in Britain, tariffs were continuously imposed since c.1813. However, by the

1850s, Britain had emerged as an undisputed 'Workshop of the World' and its manufacturers did not require protection. Protected trade essentially protected the interests of landlords and merchants and harmed the interest of industrialists. By imposing tariffs on imported raw materials from other countries, including India, costs of raw materials increased for industrialists. Similarly, by taxing imports of food items, government increased the cost of living, which necessitated the payment of higher wages to the working classes. Millioocracy of Britain had absolute advantage in the production of machine-made goods. These new factors helped in articulating the policy of free trade by the British manufacturers. Keeping in mind the interests of British manufacturers, British government strictly followed the policy of free trade. It was at this stage, when there was need to protect infant modern manufacturing in India, that Indian manufacturers were experiencing a political regime that was religiously following the policy of free trade articulated by Adam Smith and David Ricardo.⁵² The political regime was totally indifferent to the needs and inspirations of the Indian manufacturers.

It is obvious that during the same period, all other economies that were governed by nation states imposed tariffs to protect and promote their infant modern manufacturing. Bismarck raised tariffs in Germany in c.1875, and tariffs were raised in France in c.1881, Russia in c.1882, America in c.1890 (McKinley Tariffs) and Canada in c.1897 (Dingley Tariffs).⁵³ By following the policy of free trade under the guise of Smithian and Ricardian arguments in support of free trade, British government served the interest of British millioocracy. This policy had very obvious consequences for the Indian manufacturers. It led to decline of traditional crafts-based manufacturing in India because these small household workshops could not compete with British machine-made goods. This policy also helped 'simultaneously' in postponing the emergence of modern manufacturing because it needed protection at the stage of infancy. Hence, these policies, on the one hand, created conditions for the decline of traditional handicrafts, and, on the other hand, arrested the growth of modern manufacturing. In this way, the free trade policy transformed a manufacturing nation into a supplier of raw materials.

In order to increase the availability of Indian raw materials to British manufacturing industries, the British Raj invested lots of resources for the construction of railways in India. The process of expansion of railways began in India in c.1853 when railway connectivity was created between Bombay and Thane. The objective for constructing railways was essentially to connect centres of production of raw materials with ports. Due to the very

objective of its creation, railways did not emerge as a leading sector of the Indian economy, as it emerged in the case of the United States.⁵⁴ However, it shifted the cropping pattern, from subsistence food crops, in favour of cash crops. This shift further increased the supply of raw materials.

Manufacturing enterprises of most economies also received support from the government in terms of government purchases. Governments are very large buyers of manufactured products. By buying these products locally, governments create additional demand for manufacturers. However, in India, since its inception, the British Raj followed the policy of buying stores from England. This policy of government purchases, on the one hand, provided support to British manufactures, and, on the other hand, led to a substantial increase in sterling payment. Despite several suggestions made by persons from the establishment of the Raj, Indian manufacturers had to wait for a substantial period to take the advantage of government purchases. Buying of stores from India became inevitable during World War I and World War II when trade between Britain and India was suspended due to lack of safety of sea routes. Wars provided unintended protection to the Indian manufacturing sector and also compelled the British government to source its requirements from Indian manufacturers.

One of the unique innovations in the organization of production, which was predominantly used by the Indian manufacturing enterprises, was the managing agency system. This system of organization of business emerged in response to the prevailing circumstances experienced by the promoters of manufacturing enterprises during the British Raj. The managing agency system grew after the formulation of the Companies Act 1850, which permitted the formation of joint-stock companies in India. The promotion of modern manufacturing, in joint-stock form, needed the availability of managerial skills and large volumes of capital. In the absence of a well-developed capital market and shortage of managerial skills, British agency houses, which were conducting business in India as agents of British companies, provided managerial skills as well as capital. These agency houses promoted joint-stock companies to enter into manufacturing businesses and appointed themselves as managing agents of the companies, in place of an elected board of directors. Following this form of business organization, they created a situation where private agency houses began to manage public capital. Later on, the same business model was used by Indian promoters of modern manufacturing like Tata Sons, Birla Brother and Nauroji Wadia & Co.

It is significant to note that, despite having to cope with a hostile and generally indifferent political regime during the British Raj, due to its certain inherent competitive advantages in some of the manufacturing products, modern manufacturing enterprises began to spring up in India. The historical circumstances that emerged after the birth of the British Raj ensured the availability of all important prerequisites that are necessary for the growth of modern manufacturing. The Indian sub-continent always had a substantial supply of entrepreneurs by way of several communities of merchants operating in different parts of the economy. These merchants had accumulated financial resources from long-distance trade in commodities like cotton, jute and opium, and several manufactured products produced by the traditional flexible manufacturing. These communities of merchants established several modern manufacturing enterprises. The process began with two textile industries, followed by iron and steel, sugar, tea, cement, general engineering, chemical and processing of tobacco and indigo. It is also important to note that by the time India achieved independence, its manufacturing sector had already almost completed the stage of *primary import substitution*.⁵⁵

Chapter 6 of the book deals with the consequences of the British Raj on the Indian manufacturing sector. This chapter discusses the importance of endogenous factors as well as the role of the British Raj in influencing the nature, structure and extent of growth of manufacturing in the Indian sub-continent. The existence of small and fragmented markets for manufactured products due to the small size of the middle classes, differentiated along religion, regional and cast lines in terms of tastes and needs, created a narrow market for standardized products produced by modern large-scale manufacturing enterprises. These conditions provided opportunities for the continuity of traditional manufacturing, as well as for the birth of modern flexible manufacturing. Therefore, this chapter explains how the circumstances created by the colonial administration, factor endowment and market conditions created a complex form of manufacturing enterprises, which India inherited at the time of independence. This form of manufacturing sector posed many challenges for the governments that were elected in India after independence. How the political regimes formed by the governments of independent India addressed these challenges is the subject matter of another book, which I am writing separately.

Finally, in Chap. 7, I provide the summary of the main components of the story of Indian manufacturing and the lessons that we learnt from the this book.

NOTES

1. These empirical investigations have been conducted by Clark (1940), Chenery (1960) and Kuznets (1966).
2. To know the process of transition of developed economies into three different phases see Fuchs (1968), Bell (1973), Castells (1996), Aoyama and Castells (2002) and Seth (2006).
3. See Aristotle (2001), pp. 936–940.
4. For a comprehensive understanding on jajmani system see Wilson (1970), Fukazawa (1972), Commander (1983), Fuller (1989), Mayer (1993) and Guha (2004).
5. The term protean stage of industrialization was used by noted economic historian Hobsbawm (1954).
6. See for this term Tilly and Tilly (1971).
7. This term was used by Mendels (1972).
8. The term nascent stage of capitalism has been used in Levine (1977).
9. Perlin (1983) used the term to describe a transition from subsistence manufacturing to commercial manufacturing.
10. Term proto-industry was used by Freudenberger and Redlick (1964).
11. See for details Freudenberger and Redlick (1964).
12. See Mendels (1972, 1982).
13. The anthropologists describe the cultures that include the knowledge of crops and animals as Neolithic cultures, see Daniel (1943).
14. These facts have been obtained from Singer et al. (1958) and Victor (1888).
15. For the understanding of the process of transformation of societies to different types of farming see Boserup (1965).
16. For the appropriate meaning of *kauf* and *verlag* system, see Kriedte et al. (1981).
17. For comprehensive understanding of the modern flexible manufacturing system see Kenny and Florida (1993), Knudsen (1996), William et al. (1987) Womack et al. (1990), and Womack and Jones (1996).
18. To know about the criticism of the term proto-industrialization being used as stage in the evolution of modern manufacturing see Freudenberger and Redlick (1964).
19. I have used this term earlier in my papers Seth (2002, 2003, 2008).
20. These ideas have been evolved by the scholars who have enriched the literature on Institutional Economics. To understand the arguments of institutional economist see North (1990, 2006).
21. To know the emergence of several technological innovations, which changed the character of British manufacturing, see Singer et al. (1958), Vol. III and Ashton (1948).
22. For the description of the idea of Industrial Revolution see Toynbee (1958), Ashton (1948), Hobsbawm (1968a, b) and Neff (1943).

23. For the understanding of Smithian formulation of division of labour see Chap. 4 of the book and Smith (1776 [2003]).
24. For this idea see, Wrigley (1988), pp. 4–7.
25. For the understanding of Smithian Process of Growth and Premethien Process of Growth see Wrigley (1988).
26. The concept of Schumpeterian Growth Process has been discussed in detail in Parker (1982).
27. For the fact given here regarding the East India Company see Gardner (1971). Factory at that time was referred to the office of the factor, i.e., agent of the company along with a warehouse, which was used to keep merchandise purchased from Indian sources to be shipped to England.
28. The incident has been narrated in greater detail in Malabari (1910).
29. These facts have been obtained from Powell (1892).
30. For the working of factories owned by the East India Company see Hussain (1958).
31. See for the ideas of Adam Smith, on East India Company, in Smith (1776 [2003]) Vol. I, p. 426 and Winch (1978).
32. The concept of de-industrialization has been used to describe the experience of Indian manufacturing. Contrary to British experience where industrial revolution occurred through the process of transformation of traditional flexible manufacturing into modern industry. In India the traditional flexible manufacturing experienced decline which led to the shifting of craftsmen to agricultural activities. This movement of work force from manufacturing to agriculture is described as de-Industrialization, see. Thorner and Thorner (1962) and Morris (1987).
33. The name of the mill established by Cowasjee Davar was Bombay Weaving and Spinning Company. Before the birth of cotton textile mills in Bombay, cotton manufacturing was experimented in Calcutta by Bereath Cotton Mills and also at Pondicherry, but both the cotton mills could not succeed see Gandhi (1930), p. 52 and Mehta (1954).
34. George Aukland was a Scot, who was an ex-officer of the British Navy and had experience of running coffee plantations in Ceylon (Sri Lanka), see Buchanan (1966).
35. Economists like Rostow evolved the concept of leading sector, leading sector is that part of the industrial economy of an economy which while growing also affect, the growth of other economic activates through technological linkages. See Rostow (1957) and Rostow (1963). Later on it was observed that the railways acted as a leading sector in the development of the American economy see Fogel (1964).
36. However there exists a long debate amongst the economic historian regarding the exact dating of the British industrial revolution. But some of the

- historians believe that the industrial revolution in England began in 1760. For details regarding this debate see Chap. 3 of the present book.
37. American, Samuel Morse had made a perfect electric telegraph along with the codes in 1838. It was introduced along the stretch of railway out of London in 1839 see Cairncross (2001), p. 23.
 38. In 1858 it took forty days for news of Indian Mutiny to reach London, by 1870 after the establishment of several telegraphic lines which connected India to London, the messages from India to England could be sent in hours, see Solymar (1999), p. 3.
 39. The founding father of scientific management Fredrick Winslow Taylor took the of idea division labour to its logically stretchable level. He believed that complex manual operations could be divided into simple routine operations and furthers these divided tasks can be done scientifically by precise measurement of every movement involved and thus eliminating all inessential movement; see Taylor (1919, 1885), Nockolds (1959) and Seth (2000), pp. 70–71.
 40. With the separation between ownership and control in large American enterprises, there emerged a class of professional managers who managed the enterprises. This phenomenon has been described as managerial revolution; see Marris (1964). It was observed by some of the scholars that the Visible Hand of the management has been replaced by the invisible hand of the market process, see Chandler (1977).
 41. See Kondratieff (1979), pp. 519–562.
 42. For the ideas of Schumpeter, see Schumpeter (1934, 1939).
 43. For detailed analysis of the concept of long-waves and clustering of innovations and their different forums see Freeman (1995), Freeman and Louca (2001) and Louca (2007).
 44. There are several examples in history to substantiate this point that sometimes new waves alter the course of polity as well as society. For instance the debates regarding Corn Laws in England during 1830–1840, and spread of Luddism during industrial revolution in England to arrest the decline of old occupations (like the occupation of handloom weavers) from the emergences of machines.
 45. See List (1841).
 46. See Freeman (1981).
 47. Several scholars have contributed to the literature on national system of innovation; see Freeman (1995), Dosi (1999) and Lundvall (2007).
 48. For the concept “Social System of Innovation”.
 49. See Lundvall and Pyka (ed) (2007), pp. 872–881.
 50. See Lundvall and Pyka (ed) (2007), pp. 882–895.
 51. See Marx (1853a, b, c).

52. The justification for the policy of free trade was provided by Adam Smith in his theory of absolute advantage and by Ricardo in the theory of comparative advantage. Their theories are part of all important text books on Trade Theories.
53. These facts have been taken from New Cambridge Modern History of Vol. IX pp. 56–57.
54. For the understanding of the objectives of development of railways in India see Macpherson (1955), Thorner (1950) and Astha (1976).
55. The stage of primary import substitution refers to that particular stage in the process of growth of manufacturing of a country, when it starts processing raw materials produced by its primary sector, and develops capability when there is no need to import such products.

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Traditional Flexible Manufacturing and the Mughal Empire

For a considerable period, manufacturing activities, in their embryonic form, were carried out by artisans in villages. Prior to the Industrial Revolution, which gave birth to machine-based modern manufacturing, many economies of the world had become manufacturing economies with the help of crafts-based manufacturing. Scholars believe that this phase of manufacturing, which depended on traditional technology organized in craft-based small workshops, contained the seeds for the birth of modern machine-based manufacturing. As mentioned, some economies, especially those of Europe and South and Southeast Asia, experienced this form of manufacturing during the fifteenth and, in some cases, the sixteenth century. This phase of manufacturing has been variously described by different scholars, as discussed in the introduction of the book, as the ‘*protean stage of industrialization*’,¹ ‘*industry before industrialization*’,² ‘*proto-factory*’,³ ‘*nascent capitalism*’⁴ and ‘*proto-industry*’^{5,6} (a concept quite popular amongst scholars.) This phase of manufacturing has been described in the present study as ‘*traditional flexible manufacturing*’.

The renaming of the term has been done, because, unlike other studies that consider proto-industry as a stage in the development of modern manufacturing, we are putting more stress on the way proto-industry was organized. Because of its unique organizational structure, it enjoyed several kinds of flexibilities. Since it used traditional technology and enjoyed several kinds of flexibilities, it has been described in the present study as traditional flexible manufacturing. It emerged as a result of loss of independence of craftsmen to merchants. The latter supplied the former with working capital

and met their subsistence requirements to control the marketing of the final product. It was the merchant who supplied the final product to meet the needs of mass markets. The emerging bondage of craftsmen to merchants was a product of market expansion, arising as a consequence of centralized authority of state, and emergence of urban centres and towns, which were integrated with global networks of long-distance trade.

Looking at the preconditions that are necessary for the successful growth of traditional flexible manufacturing, one has to start the story of Indian manufacturing from c.1500. At this point in time, the polity of the Indian sub-continent was totally fragmented because its geographical spaces were ruled by different kingdoms. The fragmented polity had given rise to several regional economies. Each regional economy contained vast tracts of fertile land, which were irrigated by several perennial rivers. These fertile tracts of land provided preconditions for growing a variety of crops, fruits and spices. These regional economies also had a long tradition of production of hand-crafts, which satisfied the needs of not only the common man but also the luxury needs of kings and their courtiers.

Most of these regional economies were connected, through maritime trading, by land and seas with other regions and with the rest of the world. The Indian sub-continent had several port cities bordering the Arabian Sea, the Indian Ocean and the Bay of Bengal. The southern part of the sub-continent was integrated through trading with the economies of the Gulf and Southeast Asia, including China. The Western and Eastern parts of the sub-continent also had long-standing trading relationships with the economies of Gulf and South-east Asia. The northern part of the sub-continent was connected through trading by land routes with the economies of Central Asia, China and Europe. European economies were also an integral part of the trading network of the Indian sub-continent by land routes. The land routes existed because of the existence of contiguous land mass, which facilitated the movement of caravans of traders from Venice, Italy to China.

In this kind of polity and economy that existed in the Indian sub-continent around c.1500, two important historical events occurred that altered the course of the story of Indian manufacturing. One was the entry of European merchants through sea route after the discovery of the route to India by Vasco da Gama in c.1498. The other was the beginning of the Mughal Empire in c.1526, with the entry of Mughals through land route. These two concurrent events set the stage for the emergence and spread of traditional flexible manufacturing in India. If historical importance of this period is viewed in the context of the global economy, the year

c.1500 stands at the cusp in the history of Indian manufacturing. These two distinct forces of globalization of Indian economy were the Empire buildings by Mughals and the arrival of the trading companies from Europe. Here, the process of globalization has been viewed as a historical process of integration of fragmented spatial units, which facilitates political, economic, technological and cultural inter-connectivity amongst these integrated spatial units. The inter-connectivity achieved with the help of these diverse processes creates de-spatialization, which makes a unit of space totally transformed by compression of space. Once connectivity occurs between fragmented spaces, individual units of space did not remain the same; they became transformed and reinvented.

Empire building in this sense is also an important process of globalization, which creates connectivity between isolated political, economic and cultural regions through trade and commerce, transportation, language, knowledge and technology. Empires created connectivity across territories that may otherwise have remained isolated from each other.⁷ Therefore, unlike the contemporary phase of globalization, globalization at this stage of human history could be understood as a consequence of some military or political event.

During the first century of the Christian Era, a major part of the global economy was ruled by four mighty empires—the Roman Empire (based around the Mediterranean region), the Parthian Empire (covering land of two rivers along Iran), the Kushan Empire (which at Pamirs spread along the western most outpost of China), and the empire established by the Han Dynasty of China. The peaceful existence between these four empires lasted more than a century, which created connectivity as well as inter-dependency between these contiguous empires. These stable and peaceful empires provided opportunities to risk-taking merchants to engage in trade beyond their borders. To meet the needs of Rome's rich nobility's ultimate desire for silk, a trading route emerged, starting from Rome to Chang'an, the capital of the Han Dynasty of China. For the first time in human history, a trade route was named after the commodity of ultimate conspicuous consumption—the *Silk Route*.⁸ Subsequently, Genghis Khan's Mongol Empire restored peace and tranquility along the Silk Route, which facilitated European trade by defending and protecting it.

Merchants and markets existed much earlier than the emergence of empires, but frequent extortion of wealth of merchants by predatory warlords added to the uncertainties associated with risk-taking behaviour. Good empires created a legal administrative framework, which was

necessary to protect private property and for enforcement of contracts.⁹ Wherever these peculiar needs of merchants and entrepreneurs were met by the political regime, the development process became faster. Empires provided these essential pre-requisites of development of manufacturing. Most of the legal and administrative infrastructure, which is needed for supporting economic activities in market economies, emerged during the super empire created by Pope Gregory VII in c.1075. This empire emerged when supremacy of the Roman church was established above the European states, by declaring—‘let the territorial kingdoms serve or be the slave of celestial state’.^{8,10} After this declaration, for the first time, merchants and entrepreneurs did not depend on the patronage and mercy of predatory rulers or warlords. The impact of this transformation was experienced by the entire Christian Europe.

Most of the empires were created by the use of horses in wars. The use of horses facilitated the emergence of bigger empires.¹¹ However, with the use of gunboats, the British established an empire where the sun never set. This empire imposed the philosophy of free trade across South and Southeast Asia and Africa. Therefore, it will not be inappropriate to state that at this stage of human history that the process of globalization spread across different countries and continents as a consequence of ‘barrel of maximum gun’, gun powder, and the ferocity of nomadic horsemen.¹² It will not be incorrect to say that, in the modern context, due to the absence of empires, there has emerged a need to invent new international organizations to provide some of the public goods that empires provided in the past. Some examples of public goods are global peace, uniform laws and free flow of goods and services, on which the forces of globalization rest. The formation of the European Union and other regional trading blocs and economic unions, such as the U.N.O (United Nation Organization), World Bank, International Monetary Fund (IMF) and World Trade Organization (WTO).

The second powerful force of globalization was initiated by Vasco da Gama, who discovered the sea route to India, when he reached Calicut coast in c.1498. His voyage was linked to the age of discovery, when attempts were being made to extend the commercial interaction of Europe across oceans of Africa, Asia, North and South America. The discovery of a sea route to India paved the way for establishing links with different European economies and facilitated its participation in an emerging rudimentary global economy, evolved by European trading companies.

These two inter-connected episodes of globalization performed a very vital role in conditioning the composition, pattern and growth of Indian

manufacturing. The first episode created an integrated economy of continental size, and the second episode expanded the commercial horizon of the Indian economy to European economies also. The European trading companies, including the East India Company of England, until the Battle of Plassey c.1757, maintained a cordial relationship with the Mughals for conducting their trading activities in coastal areas because they were aware that the authority and military might of the Mughal Empire were too strong to be tested in the battlefield. Therefore, until c.1757, the Mughal Empire determined the socio-economic and political environment that influenced Indian manufacturing. Due to these obvious reasons, in the sections that follow, I attempt to explain the relationship between the economic environment created by the Mughal Empire and the traditional flexible manufacturing, which was emerging as a dominant form of organization of production in Indian manufacturing.

The rest of the chapter has been organized into four sections. In Sect. 2.1, I describe the socio-political and economic environment created by the Mughal Empire; Sect. 2.2 deals with the impact of environment created by the Mughal Empire on the composition of Indian manufacturing. Finally, in Sect. 2.3, I provide an economic analysis of the traditional flexible manufacturing as an organization of production.

2.1 ECONOMIC ENVIRONMENT OF MANUFACTURING DURING THE MUGHAL EMPIRE

The Mughal Empire, like many other empires of Central, West and South Asia, grew as a fragment of Genghis Khan dispensation. The Mongol Empire created by Genghis Khan was geographically most expanded, and was chronologically the most stable empire that the world ever witnessed. The empire established an important contact between Asia and Eurasia.¹³ Babur Mirza laid the foundation of the Mughal Empire in India after defeating Sultan Ibrahim Lodhi in the Battle of Panipat in c.1526. Babur Mirza was the son of Umar Shaikh Mirza, a great grandson of Timur, the ruler of the Ferghana Valley. Babur's mother was Qutlugh Nigar Khanum, who was the daughter of Yunus Khan. Yunus Khan was from the lineage of Chagatai Khan, the second son of Genghis Khan.¹⁴ Mughals were perhaps the first to rule over an area that almost covered the geographical space later known as British India and afterwards became independent India.

The Mughal Empire provided an important public good—law and order—which is an important precondition for the growth of manufacturing. This important aspect of the Mughal Empire has been appropriately described by Abul Fazl Allami, a friend, philosopher and guide of the Mughal emperor Akbar. He writes—‘A king is the origin of stability and possession. If royalty does not exist, the storm of strife would never subside nor do selfish ambitions disappear. Mankind, under the burden of lawlessness and lust, would sink into the pit of destruction; the world, the great market place, would lose its perspective and the whole earth would become barren waste’.¹⁵

Mughals believed in the divine theory of monarchy, which emphasized that kings are descendants of God, and they have been chosen by God to rule on lesser beings. To establish divine descent, the lineage of Mughal emperors begins with Adam followed by five biblical prophets before reaching Ikhnus (also known as Hermes), followed by Joseph and his son Turk, ruler of Turkistan. Thus, shifting from biblical to first Turko-Mongol figure. After discontinuity of several generations, the most important divine event occurred when Alanquwa (Alan-quwa), a Mughal princess married to Zubin Biyan, the king of Mughalistan, became a childless widow. But Alanquwa was a woman of high morality and spirituality. Once, while sleeping in her tent at night, a ray of light miraculously entered her body and impregnated her. The progeny from this conception were triplets, three brothers, who were collectively known as *Nairum* (i.e., light produced). From the eldest of the three brothers, who possessed the greater proportion of illumination of his mother, the hidden light passed through several generations until *shahenshab* of mankind, Akbar, was born.¹⁶

However, as long as the Mughal lived in their native land, the main source of revenue was essentially earned from ‘*plundering thy neighbor*’. When Mughal’s established their empire in India, the king had the right to appropriate surplus. One of the Sanskrit words for the king is *shastpada* or the owner of the sixth share of produce. Manu, however, permits one-fourth of the produce as a share of the king.¹⁷ Therefore, in India, when Mughal emperors created a hierarchy of *mansabdars*, they were given the right only to appropriate surplus. Hence, wars in India were primarily not to capture land but to appropriate surplus.¹⁸ The Hindu view of social order was based on self-sufficient villages, or *autarkic villages*, organized into numerous endogamous hierarchically ranked occupational casts, and sub-casts, segmented into four broad *varnas* (castes). At the top of the social hierarchy were *brahmins* (priests), followed by *kshatriyas* (warriors), *vaishyas*

(traders and merchant) and *sudras* (workers and ordinary peasants). The caste system played an important role in making available a constant labour supply for labour-intensive agriculture. However, the views held by Mughals were at variance with the Hindu worldview. Mughals derived their views on social order from *Naqshbandi* and *Chisti* order of *Sufism* and Islam. Abul Fazl Allami described this worldview in *Ain-i-Akbari*. He divides social order into four broad categories; he does not rank them in any hierarchical order. According to his interpretation, all societies for their existence need people belonging to these four categories. However, the order in which he describes them may provide implicit ranking, in terms of their relative ranking in the social order.

Fazl starts his description with '*warriors*'. According to him, *warriors* in political body have the nature of '*fire*'. Their flames, directed by understanding, consume the straw and rubbish (i.e., rebellion and strife), but kindle the lamp of the rest in a world of disturbances. By first giving the description of warriors, perhaps he is signifying the importance of this class in expanding and maintaining a vast empire. This might also be due to the fact that the Mughal's shared their lineage with warriors like Genghis Khan and Timur. Description of warrior class is followed by the class of *artificers* and *merchants*. In Fazl's worldview, a person belonging to this category holds the place in the society like '*air*', because from their labour and travels, God's gifts become available and the breeze of contentment nourishes the rose tree of life. Fazl then talks about the class of the '*learned*' who, according to him, resemble '*water*'. From their pen and their wisdom, a river rises into draught of the world and garden of creation receives from their irrigation power of peculiar freshness. Finally, he mentions '*husband-men*', whom he compares with '*earth*'. It is because by their exertions, the staple of life is brought to perfection and strength and happiness flow from their work.¹⁹

Before the Mughal Empire, in the social order in India, crafts were still an integral part of agriculture and were not distinct from the rural economy. The social division of labour based on caste lines was extended to include artisans also. Certain crafts became caste specific and these were prohibited from cultivation. Instead of creating a separation between craftsmen and cultivators, and creating a market-mediated process of exchange between craftsmen and cultivators, a new kind of symbiotic relationship was created between artisans and cultivators by introducing a distinct institution known as the *Jajmani system*. This institution was evolved by creating unique *gift-exchange* relationships amongst different occupational groups to provide the

availability of different kinds of labour needed in the village economy. The gift-exchange relationship eliminated the market-mediated exchange and thus postponed the emergence of markets in the rural economy. The system was evolved primarily as a customary system of distribution of village produce amongst different sections of the village community and not as a system of production for exchange.²⁰

The *Jajmani system* evolved as a social organization from symbiotic relations among patron households and different occupational groups, like barbers, laundrymen, carpenters, blacksmiths, masons, watchmen, folk artists, domestic servants and priests.

In this system, different occupational groups received share from the village produce based on customary payment, in lieu of market-determined rewards. The customary payments were made on occasions like harvest, birth, marriage, death and on important festivals. This system took the form of the *baluta system* in western India (especially Maharashtra). In the *baluta system*, hierarchy of functionaries in villages supplied services to all other members of the village community in exchange for equally specific payments in kind, but sometimes accompanied by a certain amount of cash.²¹ The *Jajmani system* in Punjab was known as *vand*.²²

Hegel described the *Jajmani system* as ‘the most degrading spiritual serfdom’ because it organized village society in such a way that it suffered from numerous rigidities based on religious beliefs. He observed that this system has created a social order, where ‘the arrangement is fixed and immutable, which is subject to no one’s will. All political revolutions, therefore, are matter of indifference to common Hindu, for his lot is unchanged’.²³ This formulation of Hegel provided basis for the concept of ‘*Asiatic Mode of Production*’ evolved by Karl Marx.²⁴ This conceptualization was used by Marx to explain why Asian economies will remain stagnant unless and until they experience a strong exogenous force, which takes them out of this stagnation. He did not realize that the premises on which he was building his concept had been significantly altered by strong exogenous forces created by the Mughal Empire.

The village autonomy created by the *Jajmani system* and its various forms in different parts of India registered a decline during the Mughal Empire. The decline occurred due to monetization of the village economy, created by collection of land revenue in cash. The system also lost grip on social order because of migration of several artisans to emerging urban areas to pursue their vocations. It has been observed by historians that during the Mughal reign, the entire production of manufactured items meant for

long-distance and medium-distance trade was carried out by artisans who were fully weaned away from the *Jajmani system*.²⁵ This suggests that the weakening of the *Jajmani system* increased the mobility of artisans, which increased the availability of artisans to participate in traditional flexible manufacturing.

The Mughal Empire also helped in increasing the size of the market, which is an important precondition for the existence of traditional flexible manufacturing. The size of the market increased due to integration of several fragmented markets into a single political unit and by eliminating trade barriers amongst them. Mughal rule also included an interregnum of seven years (c.1538–c.1545) when Sher Shah Suri ruled India while Mughal emperor Humayun was in exile in Iran. He developed a network of roads, including the major road that is now popularly known as Grand Trunk Road (National Highway No. 1). He constructed roads that connected Punjab to the town of Sonargaon, near the Bay of Bengal (*daraya-i-shor*), Agra to Burhanpur, Agra to Jodhpur and Chittor, and Agra to Lahore. Subsequently, under the Mughal rule, these roads were further extended to Cambay, Surat, Ahmedabad and Multan.²⁶ These roads intensified the connectivity between different markets and facilitated the movement of goods across different parts of India.

The administration of the sprawling Mughal Empire was based on extraction of surplus from agriculture to maintain the vast army of the empire. To appropriate agricultural surplus, a military administrative hierarchy of functionaries was evolved based on a Mongolian system of organization of army and administration. These functionaries were called *mansabdars*. The rank of each official was described numerically, which determined pay as well as rank in administration. For *mansabdars* who were performing military functions, their ranks were also specified numerically into trooper (*suwar*) ranks. The hierarchy followed in ranking *mansabdars* reflected the prevailing social hierarchy. Similar to the ranks of officials of the administration in the Mongol Empire, and in the Mughal Empire also, at the top were generally persons belonging to the royal family called *Tuman Begi* (i.e., ten thousands), followed by close relatives and nobles, *Ming Begi* (i.e., thousands) and captains, *Yug Begi* (hundreds). The *mansabdars* with *suwar* ranks were required to retain fully equipped cavalymen equivalent to their numerical rank, which were made available to the emperor at the time of war.²⁷ Along with *mansabdars*, the Mughal Empire also created a skilled lower middle-level bureaucracy to look after imperial administrative machinery, consisting of trained persons in bookkeeping,

auditing, correspondence, procurement and supply, record keeping and maintenance of stores. The formation of this politico-military administration created aristocracy and nobility, which generated demand for manufactured goods.

To meet the financial needs of the vast Mughal royalty, aristocracy, nobility and army, exorbitant land revenue rates were levied on peasantry by the Mughal Empire. These high rates of land revenue were paid by farmers in cash. The payments of land revenue in cash needed the introduction of official currency. Mughals created a centrally controlled network of imperial mints. The coins were made of gold (*muhar*), silver (*rupia*) and copper (*dam*). Most of these metals were obtained through trade of Indian products in foreign markets and also from local mines. When massive new supplies of silver and gold emerged from America and Japan, which were used to buy Indian goods, India became the 'ultimate sink of these metals'.^{28,29,30} The trimetallic currency system of gold, silver and copper was originally based on copper *dam*. However, the Mughal monetary system maintained silver, *rupia*, as its principal coin. The Mughal silver rupee coin was eleven grams in weight and was stamped from meticulously engraved imperial dyes.

According to historical records of early c.1600, Akbar's treasure hoard, calculated on the basis of information obtained from two different sources—the *Ain-i-Akbari* and *Tabaqat-i-Akbari*—consisted of slightly less than seven million gold *muhar* (weight 76 metric tons), seventy-two hundred million silver rupees (minimum 802 metric tons). Moreover, the Mughal emperor retained a surplus income over expenses between 3.9 million silver coins equivalent in cash each year, which was divided into three important heads; (i) salaries of mansabdars; (ii) military expenses and (iii) expenses on imperial household. These items of expenses also generated additional demand for manufactured goods. Monetization of the economy and expanding size of the market led to extensive trading, and created historical premises for the formation of a class of merchants, traders and moneylenders. Each region gave birth to certain trading communities, which subsequently developed a network of artisan's workshops to evolve traditional flexible manufacturing and later on became entrepreneurs when the process of modern manufacturing began in India. Communities like *marwaris*, *jains* and *baniyas* became important in Rajasthan; *khattris*, *aroras* and *baniyas* in Punjab; Tamil-speaking *chettians* and Telugu-speaking *komatis* in South India; and *parsees*, *gujaratis*, *bohras*, *khojas* and *bhatias* in Western India dominated trading activities.³¹

These trading communities were involved in commodity trading, usually financing the working capital needs of artisans through the putting-out system (i.e., traditional flexible manufacturing), and providing supply to the army. Some of the big traders and moneylenders formed big banking firms that were engaged in transfer of large volumes of money from one place to another, and through a wide variety of financial instruments and transactions. The house of Jagat Seth was founded by *marwari* merchants Manikchand and Fatehchand belonging to the Oswal community of *marwaris*. One of the important financial instruments that was extensively used during the Mughal Empire was *hundi*. This instrument was used by the communities of merchants as a letter of credit and promissory note. This instrument helped merchants in transactions meant for long-distance trade and travel, when travelling, carrying and transferring of cash was risky. The *hundis* were issued by reputed merchant banking firms and their acceptability amongst merchants depended on the reputation of the issuing banking firm.³² The use of *hundi* as a financial instrument can be traced back to the remote past. Legend tells us that it was the *hundi* issued by the banking firm of the *nagarseth* of Ahmedabad to Vastupal Tejpal that helped in financing the construction of the Dilwara Temple, located at Mount Abu.³³

The widespread use of *hundi* as a financial instrument emerged during the Mughal rule, when it played an important role in facilitating the transfer of cash across different *subas* of the empire, and as cash used for long distances. Traded *hundies* were generally of two types: (i) *Darshani hundi*, which was treated like a bearer cheque, where payments were made immediately at the time it was presented and (ii) *Muddati hundi* or *Miadi hundi*, which involved deferred payment, after a stipulated time period, mentioned in the *hundi*.³⁴ It is paradoxical that the financial instrument that was associated with reputation and honour of the person who issued the *hundi* during the Mughal rule is currently associated with transactions made by the underworld and an illegal economy. It is now popularly known as *hawala*.³⁵

These big banking firms had branches in different parts of the country. The Mughal state depended on them for procuring commodities, as well as cash and credit on a regular basis, because the main source of revenue during the Mughal rule was land revenue. This source was seasonal and was also affected by the vagaries of nature. The monetization of the economy and system of credit in Mughal India made it essential to evolve alliance with large trading banking firms. The house of Jagat Seth was transferring the annual collection of the Nawab of Murshidabad (Bengal

suba) in advance to the Mughal emperor at Delhi. The annual values of remittance were more than ten million rupees.³⁶ Mughal emperor Aurangzeb had personally honoured the head of the firm, Mr Manekchand, for his timely loan of a large amount of money to the emperor with title of *Jagatseth*. Similarly, the richest *sheroff* of Gujarat, Shantidas, received the title of *Nagarseth* from Jahangir. The Mughal treasury accepted all his *hundis*.³⁷ Similar influence on local authorities was exercised by merchants like Krishna Arjunj Nathji and Jagannath Laldas Parekh in Surat, Gopaldas Manohardas in Benaras, and Lala Kashmiri Mal in Awadh.³⁸

Increased reliance on a network of banking firms to transfer revenue from provinces to the capital city of the Mughal Empire adulterated the fiscal mechanism. The reliance on bankers was accompanied by direct involvement of the Mughal emperor, princes, his relatives and nobility in foreign trade. These conditions suggest that at that time, a sort of state mercantilism was emulated by the Mughal state in India. This has emerged as a consequence of combining *imarat* and *tijarat*. By combining these characteristics, the Mughal state developed state mercantilism and was committed to increasing the production of manufacturing by protecting employment of artisans.³⁹ The increasing appropriation of agricultural surplus facilitated the growth of urban agglomerations, which could be compared in size with any big city of the world. These cities were either administrative cities like Delhi, Agra and Lahore, or centres of production of luxury handicrafts, following the traditional flexible manufacturing system of organization of production like Patna, Banaras, Murshidabad, Dacca, Rajmahal and Surat. Some of the cities of the Mughal Empire were located on trade routes evolved by imperial highways or navigable rivers. The textile industries of Patna and Banaras had reaped immense advantage from possibilities of transporting their products through the Ganga river to the European trading centre at Hugli. These networks of cities and urban centres provided appropriate economic conditions for the growth of inland and overseas trade in manufactured goods, and agricultural commodities. The Mughal economy was organized around a network of market towns. In this network, commodities flowed from rural areas to urban centres, accompanied by a return flow of cash and currency to villages, to facilitate the payments of land revenue in cash by farmers.⁴⁰

Urbanization increased during the Mughal Empire due to migration of artisans from villages to cities and urban centres of handicrafts. Urbanization also increased due to migration of landless workers to urban areas, who took advantage of employment opportunities in low end service

occupations. According to available evidence, India at the time of Akbar had 120 large and small cities, 3200 *qasbas* (small towns) and 40,000 villages. During this time, 15 per cent of the total estimated population between 107 and 115 million lived in urban areas.⁴¹

The ruling class of the Mughal nobility had an extravagant lifestyle; their need for luxurious goods was satisfied by artisans manufacturing luxury handicrafts like high-quality cotton (Dacca muslin), jewellery (gold as well as silver), cutlery, decorative swords and weapons. The nobles maintained households with large numbers of wives, concubines, slaves and domestic servants. The Mughal emperor's own *harem* consisted of 5000 females, divided into two categories: (i) *mahin-bano* (i.e., high-ranking women), totalling 300 and (ii) *parastaran-i-huzur* (under the protection of the king or concubines). The total value of cloth consumed by the household of the emperor was valued at 1.6 million dams, and total value of gold pots, silverwares, dishes, cutlery, figurines, chandeliers, bedsteads, copper wares and porcelain crockery was 1.49 million dams according to *Ain-i-Akbari*.⁴² If we add to this amount the consumption of thousands of nobles and *mansabdars* of the Mughal state, the total domestic demand for luxury handicrafts will be quite substantial.⁴³

The expenditure pattern of Mughal nobility created urban culture and the pattern of their demand manifested into an occupational pattern, where a large proportion of the working population was engaged in the manufacturing of handicrafts and providing services to the elite. It has been estimated that the village economy gave employment to 72 per cent of the total working population and contributed 45 per cent of the national income. The non-village economy provided employment to 18 per cent of the population, while contributing 52 per cent of the national income. The non-village economy of the Mughal empire consisted of the Mughal emperor, court, *mansabdars*, *jagirdars*, native princes and hereditary *zamindars*, merchants, bankers, shopkeepers, traditional professionals, soldiers, urban artisans, construction workers and domestic helpers.⁴⁴

To maintain regular supply of commodities and manufactured goods among different towns and cities during the Mughal Empire, the entire supply chain was managed by the community of *banjaras*. They were a migratory community and owned large stock of bullocks and bullock carts, wagons and packs of horses, and had intimate knowledge about the routes to different places in the country. It is speculated that the word *banjara* is derived from the Sanskrit word *vanij*, which also lies in the root of Sanskrit word *vanijaya* (i.e., *business*).⁴⁵ Apart from *banjaras*, *komati* and *khoja*

communities were also performing the same function in Southern and Western India, respectively. It has been recorded that during the seventeenth century *banjaras* alone transported, on average, 821 million ton miles a year. Conversely, in 1882, the entire Indian railway network transported only 2500 ton miles.⁴⁶ There are also records regarding caravans consisting of Oxen numbering 40,000, where each oxen carried between 100 and 150 kilogram of merchandise.⁴⁷ There existed caravan *sarai* at a days' distance from each other on the trade routes, which could accommodate thousands of traders and their animals.⁴⁸

Mughal India emerged as a nodal centre of a dynamic world trading system with various levels of commercial interactions and interdependencies between urbanized and commercial locations spread along the Indian Ocean (China, Central Asia), Middle East (Iran, Iraq, Afghanistan) and Europe (England, France, Spain, Portugal). Apart from sea routes, trade also occurred through land routes. Since overland routes passing through India—Persia up to the Ottoman Empire—were stable and relatively safe for trade, they provided ample opportunities for creating wealth by traders from India, Baghdad, Mosul and Damascus. A great deal of trade occurred between India and Central Asia through pastoral nomads, who extensively travelled territories between Indus and Oxus rivers. These trading nomads were known as *powindas*, the word is derived from the word *pawwal* from Pastho language (spoken in Afghanistan), or the word *pyudian* of Persian language (spoken in Iran). These words mean 'to graze and roam'. The *powinda* traders carried with them merchandise loaded on thousands of camels annually. Similar routes were followed by the nomadic communities of *qazags* and *kalmuk* of South Russian steppes and the *bhotiya* tribe of the Western Himalayas.⁴⁹

There were several port cites located along the vast coastline of the Indian economy. These port cities connected it with different economies through trade and commerce and created additional demand for Indian manufactured goods. Trade was dominated by traders from Central Asia and Arabia, but subsequent to the discovery of the sea route by Vasco da Gama, trading links were established by Portuguese, Dutch, French and British trading companies. Due to their trading and military rivalries, the Indian ports were monopolized by different European nations from time to time. Due to these reasons, India had become a theatre of battles for market shares amongst rival European trading nations. This has been described by scholars as 'globalization with gun boats'.⁵⁰

The expansion in the domestic market and integration of the Indian economy in the global trading system provided positive preconditions for the growth of manufacturing. Looking at the size of the economy of Mughal India, it is believed that the ‘Mughal empire was a wealthy empire, which dwarfed European states. In c.1700 population of India was twenty times that of United Kingdom. India’s share in total world output at that time has been estimated at 24 per cent, while Britain’s share was just 3 per cent’.⁵¹

The analysis given previously clearly establishes that during the Mughal rule, the prevalence of law and order and absence of regional trade barriers led to the integration of markets. This period also witnessed the process of growth of urbanization leading to growth in towns and cities. These towns and cities were inhabited by the elites and nobles, who were used to higher standards of living and conspicuous consumption. These developments had significant impact on Indian manufacturing. The increases in the extent of monetization of the economy, on the one hand, reduced the magnitude of customary mode of exchange based on the *Jajmani system* and intensified the market-mediated exchange relationship. On the other hand, it helped in the creation of a new class of traders and merchants. The emergence of this class was an important condition for the birth of traditional flexible manufacturing. In the section that follows, I focus on the consequences of these developments in determining the composition of Indian manufacturing.

2.2 COMPOSITION OF MANUFACTURING DURING THE MUGHAL EMPIRE

During Mughal rule, India emerged as an important manufacturer of some agro and metal-based products. The most important industry, which experienced high growth rates, was the textile industry. Indian textiles were first reported in the *Perilus Maris of Erytherien Sea*, written by an unknown Greek writer. It is believed that wild cotton (Arabic quotton) was harnessed by the Indians living in the Indus river valley around 2000 BC. The cultivation of cotton, along with skills sharpened over centuries by Indian artisans in weaving, dying and printing of textiles, provided Indian cloth a distinct competitive advantage. Indian cotton and silk textiles were traded along most of the port cities located in the Indian Ocean, Arabian Sea and Red Sea, and through caravan routes to Central Asia. During Mughal rule,

manufacturing of textiles received a big push and its production spread to different parts of India. Each region produced a distinct and specialized variety of textiles. These regional centres of textile manufacturing were interconnected through trade routes to cover domestic as well as foreign markets. In western India, Gujarat, Sindh and Rajasthan were centres of textile production. In south India, these centres were concentrated around the Malabar Coast, whereas in eastern India, centres of textile manufacturing were located at Banaras, Bengal, Orissa and Assam. North Indian towns like Agra, Lucknow and Amritsar were also important centres of textile manufacturing.

Muslin of Dacca, known as *malmal-khas*, was the finest muslin in the world. An expert spinner of muslin in Dacca could spin an even thread upward of four miles in length from *sicca* (rupee) weight of cotton. Watson had found that in comparison to muslin produced in England and France, Dacca muslin was of exceptional quality. Muslin in Dacca was available in different varieties; the most celebrated variety was *jamdani*, which derived its name from the Persian language—*jam* (flower) and *dani* (pot) (i.e., flower pots). Apart from *jamdani* the other varieties that were produced in Dacca were *tanjib*, *abroan*, *albalee*, *sarbate junglee*, *eshac* and *dorea*. Weavers in south India were also producing very fine muslin, which was comparable in quality with Dacca muslin, known as *Arni muslin*.⁵² Muslin was also produced in Seerampore and Bankibazar areas of Bengal. These areas were also famous for the manufacture of cotton-stuff or *Calicoe*, Lucknow was famous for *chintzs*, and Ahmedabad was known for *dhotis* and *dupattas*. The towns of Nagpur, Umaer and Pooni were specializing in silk-bordered cotton textiles, which were dyed with popular dyestuff called *chay*.⁵³ Textile producers of the Coromandel Coast produced sailcloth, bedcovers, pillowcases, handkerchiefs and mattresses. Sindh in particular was renowned for embroidered quilts.

Manufacturing of silk textiles also spread to different regions, and each region specialized in the production of a specialized variety of silk. Surat was known for *Patola silk*, whereas *choppahas*, *bandena* and *corah* silk were produced at Murshidabad, Malda, Seerampore and Bankibazar areas of Bengal. These areas were also important centres of manufacturing velvet, satin, taffetas and tasar. *Mugga* silk was produced in Assam. Cities like Banaras and Ahmedabad specialized in silk brocade work. Kashmir, Amritsar and Ludhiana were important centres for the production of *shawls* and woollens.⁵⁰ Indian weavers were using a variety of looms to weave different kinds of textiles. *Vertical looms* were used to manufacture carpets. Fancy

pattern cloth was manufactured with the help of *drawlooms*. Weavers who were mobile used *pit looms*, which were light in weight and could be assembled, disassembled and transported easily.⁵⁴

An important and distinct characteristic of Indian textile manufacturing during Mughal rule was that some of the processes that are an integral part of textile production emerged as separate specialized industries, like printing, painting, bleaching, dying of textiles, production of dyestuffs and indigo. India had mastered the art of making vegetable dyes. Each region had evolved its own dyestuff, which was derived from local plants and flowers. Indigo manufacturing was localized at Bayana, Sarkhej, Jaipur, Bulandshahr and Khandesh. However, indigo produced at Bayana was considered the best.

Production of textiles was totally embedded in the social structure of the period, because division of labour practiced in the production of textiles was organized on caste lines. Here, processes involving the production of textiles were allocated to different castes, depending on their place in the caste hierarchy. The characteristics embodied in textiles in terms of '*purity*' and '*pollution*', and '*sacred*' and '*profane*', determined not only the status of the persons who were involved in its production, but also the social status of the person who consumed it. Therefore, ritualistic status of weaver, spinner, dyer, printer, tailor and washerman depended on the ritualistic quality of cloth that he produced.⁵⁵

In market economies, the process of commoditization of products results in their alienation from social existence, which makes them an impersonal object of consumption. In India, production as well as consumption of textiles was embedded in the social framework of the existing social order, which was based on caste lines. It was not only the texture of the textile, or the type of fibre being used in its production that determined its consumption by different castes; even colours were caste specific. In this kind of social order, persons copied the pattern of consumption dictated by their caste affiliations or by their ancestors. This process was quite at variance to the consumption pattern observed in market economies, which is guided by individual choices, imitation of strangers, and current trends in fashion.

Mughal rule played a significant role in diminishing caste-based consumption of textiles. It was the duty of the Mughal emperor to consume the textiles and other commodities produced by their subjects. This role of Mughal king led to the diversity in the consumption pattern of textiles. The same role was played by the local administration of the Mughal Empire (*mansabdars* and *jagirdars*). The consumption pattern of textiles by

emperor and nobility transformed the textiles from being social products to impersonal commodities.⁵⁶

The other major change, which emerged during the Mughal Empire, in the consumption of textiles, was the changes in the attitude of orthodox Hindus regarding the use of stitched cloth. Since stitched cloth can be made only after cutting the textiles, it was considered ritualistically impure or profane by orthodox Hindus. Therefore, use of stitched cloth was not permitted in Hindu rituals. On the contrary, Islamic values based on the *Koran* required that a woman's entire body be fully covered by cloth. To have such a garment, cutting of cloth and tailoring was inevitable. Hence, in orthodox Islam, unstitched clothes are viewed as primitive and barbaric. Due to these divergent attitudes towards stitched clothes, Hindu women believed the *sari* to be the ultimate form of female garment and Muslims considered 'sari as an unstitched garment and relic of primitive time'.⁵⁷ However, the attitude of Hindus towards stitched cloth also changed because of social necessity, and even Hindu women began to cover their entire bodies.

The process of de-castification of textiles by the Mughal Empire, and the use of stitched cloth, led to the evolution of fashion. This became possible because under the changed circumstances, an individual need not copy the dress code dictated by caste affiliation or by his ancestors; he could make individual choices regarding texture, type of fabric, colour of textile and style of stitching. These changes helped in integrating segmented markets of textiles based on caste lines into a mass market. During this period, in Deccani Muslim states, new variety of textiles were created to satisfy the desire of Indian Muslims who wanted to use silk textiles. Since Islam forbids the use of silk, a new variety of textile evolved, which used cotton as well as silk fibres. These varieties were known as *mashroo* and *himroo*. These textiles were in great demand amongst Mughal nobility as well as in European markets.⁵⁸ Amongst the craftsmen involved in the production of textiles, as new specialized skills emerged with expanding market and variations in consumer preferences, new castes and sub-castes were created. Weavers known as *caingaloom* and *mambaloom* are such examples. Caingaloom weavers were those who were making textiles that were traded in the Malay Archipelago. The word *kain* or *cain* means cloth in Malay. Similarly, *mambaloons* were specialized in making painted chintz. *Mooree* weavers produced cloth that formed the base for producing chintz.⁵⁹

During the Mughal period, demand for textiles grew significantly in foreign markets also. India contributed 25 per cent of the world's total

output of textiles. When English merchants began to buy Indian cloth to sell it in England, the result was nothing less than a ‘national makeover’. While describing the extent of this makeover of the British lifestyle, Daniel Defoe wrote in 1708 that ‘Indian textiles crept into our houses, our closets, own bedchambers, curtains, cushions, chairs and at beds themselves, were nothing but calicoes or Indian stuff’.⁶⁰ English traders purchased huge quantities of Indian textiles that were largely used in England, and a portion of this was re-exported to different European countries. At that time, English traders had nothing to offer in exchange for Indian textiles, apart from bullion earned from their trade with rest of the world or brought from America.

English traders were earning bullion by entering into multiple markets simultaneously by arbitrage—the differences in the exchange rates between gold and silver—by placing themselves as middlemen in different trading locations.⁶¹ The importance of bullion brought from America to buy Indian textiles has been very appropriately described by Andre Gunder Frank, when he mentions that ‘Europe used American money to buy itself a ticket on Asian train’.⁶² Apart from the British, the Dutch were also exporting a special indigo-dyed blue colour cloth from India to Africa to buy and clothe slaves. This cloth has been very aptly described as the ‘cloth of sorrow’.⁶³

The art of smelting iron was known to Indians since ages. It is said that India was the original producer of carbon steel (wootz iron).⁶⁴ The most important physical manifestation of the skills of the iron makers of India is the iron pillar located near Qutub Minar in Delhi.⁶⁵ There are historical records to substantiate the fact that the best steel used in Greek and Hellenistic monarchies was imported from India. Idris-ul-Mushtaq mentions that Indian iron makers were using compounds while making iron.⁶⁶ Marco Polo mentions the *ondanique* (Indian iron), which was imported in Kirman to make several metallic products like swords, bows and quivers.⁶⁷

During the Mughal rule, demand for iron for making weapons, armours and other household products increased substantially. Therefore, this industry also experienced higher rates of growth. Mughal India was known for making steel that enjoyed worldwide repute. Iron produced in Kutch was used for making the famous *Korij* swords. Iron smelting was widespread in Monghyr and Birbhum in Bihar, Satghud and Rajahmundry areas bordering Andhra Pradesh, and Gwalior in Madhya Pradesh. The Chota Nagpur Plateau was popularly known as *Loharmahal* (i.e., palace of iron). Here, low-caste Hindus and the tribal population were involved in mineral

production. These communities were *Pharias*, *Santhals*, *Agerias* and *Kola*.⁶⁸ Indelwai was an important centre for making swords, daggers and lances. These products were made from the iron mined in Kalaghat Hills.

Abul Fazl Allami mentions that in the royal *karkhanas* (workshops) of the Mughal king, several kinds of weapons were made for the royal army. He mentions that guns were made in these *karkhanas* of such sizes that a ball used in these guns weighed 12 *mans* (one *man* is equal to approximately 40 kilograms). Such guns were transported to the battlefield with the help of several cattle and elephants. These *karkhanas* were also making guns that could be taken in separate pieces to the battlefield, and were easily reassembled for use. He also mentions guns that could be carried by a single elephant, known as *Gajnals*, and guns that could be carried by a single soldier, known as *narnals*. These *karkhanas* were also making matchlocks of several types, like the one designed by Ustad Kabir and Husayn known as *damanak*. Fazl in his *Ain-i-Akbari* mentions names of several kinds of swords with different sizes and shapes (like *Khasa*, *kotal*, *jamadhar*, *yakbandi* and *khapwas*). He also describes different kinds of daggers, spears and lances that were made in the royal *karkhanas*. In these *karkhanas*, several kinds of armours were also made to protect soldiers, horses and elephants during war. In *Ain-i-Akbari*, it has been recorded that 69 such items were manufactured in these *karkhanas*. Looking at the size of the private armies maintained by several *mansabdars* of different ranks during this period, it appears that there might have been enormous demand for this defence equipment. If we add to this the demand for these defence products in foreign markets, one can imagine the size of this manufacturing. The Mughal emperors who have evolved hierarchy of *mansabdars* also provided scope for the existence of hierarchy of *karkhanas* owned by high-ranking *mansabdars*. These *karkhanas*, to some extent, reduced the role of market-mediated exchange in the products produced by these *karkhanas*. This happened because their products were largely consumed by families of nobles.⁶⁹

Apart from weapons, several other products, household utensils, equestrian equipment (horseshoes, stirrups, curb bits, etc.) and farm equipment were also made from iron. Manufacturers produced several other iron products that were used in construction, shipbuilding, shoe making, clamps, door knockers, rings and needles, and so on. Apart from iron, products made from other metals like brass, copper and bell metals were also manufactured. Units manufacturing different metal products were spread

in places like Poona, Nasik, Banaras, Hyderabad, Tanjore, Moradabad and Aligarh.

India is considered to be the house of sugarcane (*saacharun*). Indian stories are full of myths, which also gives us the idea of the sugarcane origin in our country. Due to abundant availability of cane, sugar manufacturing also has a long history in India. It becomes obvious when we notice that the words that are used to describe sugar in different languages are quite close to the word '*shakkar*' used in India for sugar in common language. Sugar is called *schkar* in Persian language, *sukkar* in Arabic, *seachrum* in *Latin*, and *sucré* in French.⁷⁰ During the Mughal rule, manufacturing of sugar experienced significant expansion due to its increased domestic as well as foreign demand. During this period, sugar was traded through the famous caravan routes of Khaiber and the Bolān Pass, and through sea routes to Europe and other countries located on the coasts of the Indian and Arabian Oceans. Manufacturing of sugar was widely spread, and followed the geographical spread of cane cultivation. It was highly concentrated in Gangetic India, Burdwan, Murshidabad and Gorakhpur, and in certain parts of southern India. Sugar during this period was sold in different forms—*jaggrey* and *gur*.⁷¹

During the reign of the Mughals, demand for vegetable oils increased substantially because these oils had become important items of consumption amongst the elite and urban consumers. The increased demand led to the spread of the oil milling industry across different regions in India, and led to the mushrooming of regions that specialized in the production of certain kinds of vegetable oils. The regional specialization was based on the availability of a particular oilseed crop for processing. The major varieties of vegetable oils produced in India were mustard oil (produced in north India), groundnut oil (western India), coconut oil (southern India) and linseed oil (southern India). Along with these oil mills, there were also manufacturers of aromatic oils, which were used in making traditional medicines, perfumes and *itra*.

Saltpetre was another important mineral product manufactured in India during Mughal rule. It was processed from nitrogenous organic matter and potassium nitrate deposits found on the surface of the soil. Those who were engaged in the manufacture of saltpetre scrapped the upper crust of the salt earth. Saltpetre was used in the production of gunpowder; also, the urban rich used it for cooling drinking water during long summers. Saltpetre was manufactured around Agra (Shergough, Kagarol, and Sadbad), Ahmedabad, Orissa, Bihar and Bengal. The saltpetre produced around Agra was used for

preparing gunpowder for the royal army, whereas saltpetre produced in other parts of the country was meeting export demand of French, Dutch and English trading companies.⁷²

Apart from these major industries, there were some other industries that existed during Mughal rule and provided income and employment to thousands of households. For instance, opium was grown and processed in the towns of Malwa and Bihar. This assumed importance during the rule of the East India Company when it became an important item of exchange for Chinese tea. Tobacco was also processed for oral consumption. Alcoholic drinks were also prepared from local produce like palm and mahua fruits, and from molasses in sugar-growing areas. The manufacture of shoes and footwear was also widespread due to the availability of leather in most areas in India because of the existence of large population of domesticated animals. Leather was also used in making saddles. Good quality shoes were made at Lahore, Sindh, Agra, Multan, Kolhapur and Jaipur.⁷³

2.3 TRADITIONAL FLEXIBLE MANUFACTURING DURING THE MUGHAL EMPIRE

The Mughal Empire had inherited a long tradition of craft-based systems of petty production, where manufacturing was organized in artisanal household workshops. This system of production was not suited to the needs of consumers during the Mughal period. The integration of markets had created a substantial increase in the demand for products of manufacturers. The growing size of the market was accompanied by a growing demand of Indian manufactured goods in foreign markets. To meet the needs of such a growing market, the scale of production had to be increased. Since artisans, during this period, did not have resources to increase the scale of operation, the growing market needs could not be solely met by them. The objective conditions prevailing at this time, therefore, necessitated structural transformation in the organization of production in manufacturing. This transformation was initiated by traders who had a substantial amount of financial resources in their hand, whereas scattered, small craft producers did not have enough capital to expand the scale of operation to meet growing demand for manufactured goods. To meet the growing demand, merchants evolved a network of artisanal household workshops through the putting-out system. This system facilitated in meeting the capital requirements for production as well as the selling of products in the market.

In this kind of system of production, technology and scale of production did not change at all, but isolated units of small producers were made part of networks evolved by merchants who provided to small household producers, working capital or raw materials, as well as means of their subsistence, in lieu of commitment by the artisans that they will supply the final products to the merchants. In this way, large-scale marketing networks, created by merchants, roped in the small producers to supply products for mass markets. Since traders purchased raw materials in bulk to supply to artisans who were a part of their networks, they saved costs due to the advantages of '*economies of bulk purchase*'. They also sold final products in bulk quantities in mass markets, making substantial profits.

In this form of organization of production, small artisanal workshops became dependent on traders. This was because merchants had achieved the advantage of large-scale marketing networks over scattered petty-production units. This stage of production of manufactured products has been defined as '*proto-industry*' by economic historians. However, we are using here the term traditional flexible manufacturing to describe it as a method of organization of production. During the Mughal period, this system of organization of production was known as the *dadni* system (system of advance). This system created a particular kind of relationship between merchants and artisans. It was based on an agreement between the two, which specified terms regarding quantity, quality, price and date of delivery of output. It also specified the amount of advance given by the merchant. The agreement was compatible with the law of *sillim* (sales), which derived its jurisdiction from Quran. Here it means delivery on stipulated date.⁷⁴ Perhaps in the absence of law of contracts, the law of *sillim* provided religious legitimacy to contracts between artisans and merchants. The traders, who were participating in the *dadni* system, were assisted by *paikars* (travelling representatives of the traders for giving advances), and *mukeems* (merchandisers), who helped them by inspecting the quality of the final product supplied by the artisans.

In the *dadni* system, when a merchant entered in a relationship with artisan household workshops through the putting-out system and appropriated final output to sell in the market, it created preconditions for the emergence of modern industry. In this relationship, the producer (i.e., artisan) did not sell the final output directly in the market but produced it for the merchants, which conformed to the specifications specified by the merchants regarding quality and quantity. This suggests that the merchant purchased the work effort, skill and services of equipment owned by the

artisans in lieu of working capital or materials and their subsistence needs. Thus, in a way, merchants provided employment to the artisans. In the modern factory system, the owners of factories provide equipment, materials and wages to the workers and control the selling and marketing of the product. Therefore, the difference between organization of production of the putting-out system and the modern factory form of production of manufacturing is quite different. In the modern factory, the ownership of equipment, process of production and marketing are the responsibilities of the owner of the factory; whereas in the putting-out system, the small producer still controlled the production process, and instead of working in the factory, he worked at his household production unit with equipment owned by him. Tchitchirov, in his book, has recorded several instances of such relationships between artisans and merchants across different industries and regions, for example, in the production of chintz in Patna, pig iron in Bihar, amongst the weavers of the Coromandel Coast, Bengal and Gujarat, and in the oil pressing industry at Shahabad.⁷⁵

In the new form of organization of production, merchants knew about market fluctuations, consumer preferences, and controlled the decision regarding expansion or reduction in the capacity of the network to produce. Merchants, through this process, made use of supply of cheap labour from the countryside. People were shifting from villages to city because of higher rate of land revenue imposed by the Mughal Empire and monetization of the rural economy had reduced returns on smallholdings. Therefore, small peasants with smallholdings had to make a choice between *land-intensive* farming and *labour-intensive* craft production. Hence, traditional flexible manufacturing can be viewed as a first historical experience of using an unlimited supply of labour for the growth of manufacturing.⁷⁶

The economic implications of this system were increased division of labour and accumulation of capital. The significant advantage of the traditional flexible method of organization over other kinds of methods of production of handicrafts had been division of labour and specialization. The extent of division of labour depended on the expansion of the market. Perhaps after observing these traditional flexible manufacturing workshops of Kirkcaldy in Scotland, Adam Smith developed the axiom that the division of labour is limited by the size of the market.⁷⁷ In this form of organization of production, there occurred division of control on two important strategic managerial decisions. The decisions regarding '*what to produce*' were made by merchants due to their better understanding about market and customer preferences. Therefore, they significantly influenced the process of *product development* in

terms of quality, characteristics and design of the product. Decisions regarding '*how to produce*' remained with the artisans. Since merchants had control over final product and its marketing, accumulation occurred outside the unit of production, in the hands of merchants. The consequence of this division of decision making was that artisans remained poor and individual production units remained small; whereas merchants became more resourceful.⁷⁸

In the pre-machine age of manufacturing, productivity and efficiency depended on the extent of division of labour. In Indian traditional flexible manufacturing, production was organized in such a manner that involved several intermediate stages in the production of a product. The decomposition of product into several intermediate stages was also possible due to the existence of division of labour based on, not only technological factors, but also on social factors like caste.

The separation of functions between craftsmen and merchants provided opportunities to the merchants to take advantage of several kinds of flexibilities that were inherent in the system. While merchants were divorced from risks and problems associated with the organization of production, they enjoyed the flexibility of expanding and contracting the level of output in response to market fluctuations. They could adjust their network according to market fluctuation by including or excluding craftsmen in their network, without incurring costs of lay-off and retrenchment, if these artisans had been working in their factories. This system also provided to the merchants flexibility to supply a variety of products (i.e., *economies of scope*) customized according to the needs and requirements of different set of customers. This could be achieved just by adding to the network additional artisans to produce products with varied specifications. The system also provided opportunities to the merchants to take advantage of *economies of scale*. The scale of operation of each merchant depended on the amount of capital employed in stocks of raw materials, finished products and number of artisan households that were part of his network. The sum of capital employed by some of the merchants in their network was much larger than employed in fixed assets by early modern factories.⁷⁹

One trader, Kasi Viranna of South India, had created a network of around 2200 of the best weavers around Jahanabad. He controlled the entire network of weavers, and settlements, which were part of his network, called viranna villages. He, along with his family members, controlled a substantial share of purchases made by the East India Company.⁸⁰ It has been recorded that in Bayana in the 1620s, two local traders, Mirza Sadiq and Ghazi Fazil, had established a monopoly in the indigo trade. Another

wealthy trader, Khemchand, had established his monopoly in the textile trade in Sohroha near Balasore in Orissa. Similarly, Gurivi Setti and Kunigiri Setti had emerged as dominant traders of textiles in Vijaynagar.⁸¹ There were perhaps many other big traders who operated their networks of artisans in different parts of India, but their names have not been recorded in historical documents.

Separation of functions also proved to be advantageous to producer-artisan households because they did not have to bear the risk of market fluctuations. They were making the products according to the orders placed and materials supplied by the traders. The system also provided *pace flexibility* to the artisans because they worked in their own household workshops, which provided them freedom from discipline and freedom to change pace and rhythm of work. Artisans could follow work stoppages for rest as and when they liked. Craftsmen generally followed a leisurely pace during weekdays and worked harder during weekends to make deliveries of their final output, so that they could collect working capital necessary for the next cycle of production.⁸²

The traditional flexible manufacturing system of production created a household workshop economy based on vertically disintegrated inter-industry and intra-industry, specialized and dispersed production units, localized in clusters in specific areas. These production units produced specific products with close networking amongst these units. Such clusters had emerged in different parts of India during Mughal rule, specializing in the manufacture of certain products at diverse locations. Such clusters existed at Dacca, Patna, Murshidabad, Kasimbazar, Sonargaon, Banaras, Balasore and Assam in Eastern India; Surat, Baroda, Ahmedabad and Jaipur in Western India; Agra, Aligarh, Gwalior, Moradabad in Central India; Amritsar and Ludhiana in North India; and the Coromandel and Malabar coasts in Southern India. Such organization of production has been conceptualized as *flexible specialization*.⁸³ These clusters of units organized into the traditional flexible manufacturing system of production are historical roots of the contemporary just-in-time production complexes that have emerged as a consequence of *modern flexible* manufacturing. Locations like Route 128 in Massachusetts and the Silicon Valley and Los Angeles basin of California in the United States; the M5 between London and Oxford in England; Baden Wurthernberg in Germany; Toulouse in France; and Emilia-Romagna in Italy are examples of cluster of production units, organized into modern flexible production. Both sets of cluster of units, based on either the traditional flexible manufacturing system of

organization production or the modern flexible system of production, have a commonality that they achieve competitive advantage by reducing overhead and inventory costs and receive '*external economies*' from the cluster, sufficient enough to compensate for '*internal economies*', which are advantageous for vertically integrated large production units.

One of the most important characteristics of the Indian traditional flexible manufacturing was that it neither registered any change in the size of production units nor did it experience technological change. One important reason for the absence of changing scale of operation and technological change was that its organization of production was such that the craftsmen never had sufficient resources that they could use to increase the scale of operation or improve technology. Accumulation in this form of manufacturing occurred outside the production unit, in the hands of merchants. Even merchants were not interested in bringing about technological change because they had ability to expand output by increasing the network of artisans, without investing resources in technological change. Despite the absence of technological change, Indian craftsmen made wonderful, manufactured items with simple tools and equipment. For instance, Marx provides the example of Dacca muslin, which, according to him, was woven 'without capital, machinery, division of labour' and states sarcastically—'it is only the special skills accumulated from generation to generation and transmitted from father to *son that gives to the Hindoo, as it does to spider this proficiency*'.⁸⁴ By equating skills of Indian craftsmen with that of spiders, he has downgraded the dexterity of Indian craftsmen, which was based on improvement of skills and knowledge of crafts. He equates this acquired knowledge to the genetically transmitted skill of a spider that helps it weave its web, or weaver bird to weave its nest. This view is held by several scholars who have similarly described the craftsmanship of the Indian artisans in their writings. Since knowledge of skills remained within the community of artisans, the knowledge evolved in complete isolation. Therefore, it was believed that 'India affords evidence for the theory of genetic transmissibility of acquired characteristics amongst humans'.⁸⁵

Some other scholars believe that it was the absence of accumulation of capital that discouraged the process of innovation and technological change in the process of production during the Mughal period. This view is advanced by those scholars who do not understand the role that capital plays in the process of production. The importance of capital emerges when expansion in production is constrained by the supply of factors of production (i.e., land, labour). Supply-side constraints imposed by any factor that is

limited in supply in the production process, compels the producers to improve efficiency of that limiting factor through technological changes. Use of capital facilitates in improving the efficiency of the limiting factor. 'During Mughal Empire, land and labour were abundant, therefore there was no need for capital'.⁸⁶ Some historians attribute the absence of technological change in traditional flexible manufacturing, during Mughal rule, to the phenomenon called 'high-quality trap'. According to this view, the high-quality trap emerged in Indian manufacturing because specialization had gone to such an extent that 'it would have required great incentive to induce these craftsmen to change their methods of production and habits drastically'.⁸⁷

Despite the fact that the Indian economy did not have basic institutional infrastructure to provide conditions for the efficient working of the market, like property rights, business laws and modern banking institutions, it evolved into a vibrant commercial and manufacturing nation during the Mughal rule. The success story of Indian traditional flexible manufacturing depended on the pattern of organization of two important communities—the community of merchants and community of craftsmen. The merchants and traditional banking family firms not only possessed but also protected their capital as well as trade-related intellectual capital accumulated over generations. Communities of merchants also developed rules regarding its smooth transfer within the boundaries of the sub-continent, as well as to the next generation. The membership of the community provided these merchants a code of conduct and institutional support for resolving interpersonal conflicts through community *panchayats* (councils). Therefore, unlike the risk-taking entrepreneurs of the Western societies, the entrepreneurs engaged in the production of traditional flexible manufacturing were members of the 'risk reducing community'.⁸⁸ The membership to the community provided the Indian merchants much needed protection of their capital and intellectual capital, availability of cheap credit, common community-specific rules and regulations, as well as protection against entry of merchants who did not belong to the community.

Similarly, craftsmen and artisans belonging to different crafts were members of caste-based communities, which helped in accumulation of skill-specific knowledge and practices. These communities also facilitated in the transfer of craft-specific knowledge and skill to the next generation by giving craft training to the new members of the community, and helped in protecting skill-specific intellectual capital by denying its spread to the persons belonging to other castes. Therefore, in the Indian subcontinent,

division of labour was not dependent on the size of the market as envisaged by Adam Smith, but on the organization of crafts into specialized and dedicated caste-based communities.

The system of community-based specialization of merchants and craftsmen, and their community-specific rules and regulations, acted as substitutes for the role of state to legislate property rights and commercial and business laws. This happened because the Mughal state accepted the supremacy of communities forming their own laws and governing conduct of their members. The Mughal state intervened only in instances when there emerged inter-community conflicts. Due to this reason, the Mughal Empire did not evolve elaborate legal structure.

Despite the fact that communities have played a significant role in different societies, mainstream economics associates them with several kinds of distortions in the efficient working of markets. Its dislike for communities emanates from the fact that existence of communities creates different kinds of market imperfections, which affect the optimum or desirable outcome of market-mediated decisions made by different economic agents. This happens because membership of a community distorts preference of economic agents; it results in the principal-agent problem and dichotomy between insider and outsider. Communities also affect social mobility, occupational mobility and regional mobility of their members. Due to these reasons, it is believed that the existence of communities creates several types of market imperfections.⁸⁹

Contrary to their dislike for communities, economists prefer institutions. This is based on the premise that institutions define the context in which the market operates; they also determine the rules of the game, which have to be observed by the economic agents while participating in the market. Moreover, good institutions protect individuals from the interference of communities and make markets efficient. This suggests that institutions help in creating order as well as stability in the market.

In the literature on *'social capital'*, communities are valued because the bonds between individuals that emerge as a consequence of being members of a community, based on trust and reciprocity, create positive impact on development.⁹⁰ The role of communities has been rehabilitated in the social sciences by concepts like *'communities of practice'*.⁹¹ This is defined as 'a group of people bound together by their interest in common working practice'.⁹² The literature on communities of practice has identified several such communities; task-based communities are distinguished on the bases of particular art facts, tools and work environment. These communities are

also studied in the context of awareness acquired through mastery of certain tasks in shared division of labour.⁹³ The caste-based task communities have another important characteristic in addition to non-caste communities that they make membership totally exclusive with strict entry barriers.

Historical facts suggest that the organization of production based on traditional flexible manufacturing led to the birth of the Industrial Revolution in Britain by creating in the society two distinct classes that are necessary to achieve successful transformation of an economy into a modern industrial nation. One, it provided historical conditions for the accumulation of capital in the hands of merchants, who assumed the role of entrepreneurs or capitalists. Two, it helped in skill formation amongst large masses in the absence of any organized institution dedicated to the formation of skills. These skilled workers consisted of that segment of the society that was totally divorced from agriculture and fully committed to manufacturing. These fully committed craftsmen could not protect their household workshop against the capital-intensive, energy-driven modern factories. These craftsmen committed to traditional manufacturing, supplied working classes for modern factories after losing their household workshops. This is how, in Britain, craftsmen transformed from being *price workers* to *wage workers*.

It is speculated that traditional flexible manufacturing, which flowered during the Mughal rule and developed capacity of the system to supply Indian manufactured products throughout the world, as an irony of history, experienced systematic decline with the slow and systematic decline of the Mughal Empire. While this was happening in India, traditional flexible manufacturing in Britain was transforming into modern manufacturing. Indian traditional manufacturing, despite having qualitatively better potentialities than the British traditional manufacturing, experienced decline.

The Mughal state had created preconditions for the birth of traditional flexible manufacturing; it is suggested that these conditions slowly disappeared with gradual erosion in the authority of the Mughal state. After the death of Aurangzeb, gradually, one region after another declared autonomy from the Mughal Empire. The fragmentation of the Mughal state into several new political entities intensified military conflict, plunder, banditry, and decline in trade and commerce and financial infrastructure. Markets fragmented due to the emergence of barriers on inter-regional trade and multiple currencies issued by new political dispensations. The need to finance frequent wars increased conflict between rulers and big financial firms with the new ruling elite. Raids on merchants' wealth by local

rulers had become quite frequent. During Mughal rule, merchants depended on local rulers and nobles for the protection of their property and businesses.

Travellers who have left written records of their travels during the Mughal Empire state that there were tensions between merchants and local rulers. It is mentioned that since merchants' 'wealth consisted of cash and jewels....they preserved it as close private as they can, lest Mughal exchequer should be made their treasury'. It has been mentioned in historical records of the Mughal period that when Sultan Parviz was appointed the governor of Patna, there was so much panic amongst merchants of Patna that no one wanted to appear to have wealth. This caused massive disappearance of trading activities. Historical records also tell us that when Akbar died, his death caused so much panic and insecurity amongst merchants that it became almost difficult to distinguish between high and low and rich and poor.⁹⁴ The biography of Banarsidas (*Ardhakathanak*) mentions how the local governor of Jaunpur, Nawab Qilich, arrested all the rich merchants of the area to take away their wealth. He also mentions another incident that occurred during the rule of Jahangir, when one of the *Umrao*, Agha Noor, imprisoned several merchants.⁹⁵ Under the new circumstances, when the Mughal Empire had been fragmented into several different political entities, new rulers and nobles wanted financial support from the merchants not only for maintaining their territories but also, if possible, to expand it. Since a strong centralized state was now missing, conflicts between new political dispensations were inevitable.⁹⁶ There are recorded instances when local rulers confiscated properties of big merchants because they wanted financial support without honouring their contracts, by refusing to pay back loans and payments of interest.⁹⁷ The property of Banarsidas, one of the wealthy merchants of the time, was confiscated by local rulers.⁹⁸ The example of Jagat Seth is also quite relevant to understand the condition of merchants in the new political scenario. Jagat Seth had played a key role in the Battle of Plassey, and he eventually lost his life.⁹⁹

It is a historical fact that when the state is incapable of providing protection to private property and lacks legal strength to enforce contracts, it creates circumstances that discourage merchants from using their resources and entrepreneurial skills to create more wealth. The insecurity regarding private property rights created by deteriorating law and order, and rise in banditry, put the wealth of merchants into a bottomless pit. In such circumstances, the merchant class withdrew from productive activities like financing of networks of craftsmen. Therefore, some scholars suggest the

emergence of disconnect between merchants and craftsmen led to disconnect between craftsmen and mass markets. This facilitated the slow and systematic decline of traditional flexible manufacturing. Therefore, these scholars evolved a stylized historical fact that the decline of the Mughal Empire led to the decline of traditional flexible manufacturing.

The decline in traditional flexible manufacturing is considered the beginning of the process of de-industrialization that was experienced by Indian manufacturing. This also meant that the large proportion of population that was engaged in the production of handicrafts lost its occupation and went back to work in the villages to follow occupations that are associated with primary activities.¹⁰⁰ However, it should be noted that traditional flexible manufacturing is just one of the several modes of organization of production of handicrafts to cater to mass markets. History gives us several possibilities in which production of handicrafts could be embedded. Scholars who have been writing about the process of de-industrialization have been laying stress on the process of decline of handicrafts.

Several studies conducted by scholars on different regions that assumed autonomy from the Mughal Empire, amply suggest that the aforementioned stylized fact is not tenable. This is because, in certain regions, the preconditions that are necessary for the continuity of traditional flexible manufacturing continued to exist. In some regions, dependence of local rulers on merchants increased substantially. In fact, local rulers began to share revenue and earned from new territories they acquired through war with the merchants who financed their war effort. They even promoted trades and crafts to increase revenue.

Therefore, continuity of preconditions, which are necessary for the existence of traditional flexible manufacturing, arrested its decline. These regional studies establish that the decline in the authority of the Mughal state led to a variety of regional experiences with varying repercussions for the survival of traditional flexible manufacturing. The emergence of successor states of the Mughal Empire in Awadh, Hyderabad, Maharashtra, Punjab, Rajasthan, Mysore and Kashmir, provided necessary conditions for continued existence of traditional flexible manufacturing.¹⁰¹ Hence, scholars who associate the process of de-industrialization with the decline of the Mughal Empire are operating on slippery ground. This is because they ignore that the decline of the Mughal Empire created political space for the ascendancy of the rule of the East India Company. Scholars have not given due recognition to the economic forces that prevailed between the period subsequent to the death of Aurangzeb in c.1707 and the end of the

Mughal Empire in c.1857. This is an important historical period, when the authority of the Mughal state slowly eroded and led to conditions that facilitated the process of ascendancy of the rule of the East India Company. Therefore, there is need to assess the role of the East India Company in influencing traditional flexible manufacturing. This is the subject matter of the chapter that follows.

NOTES

1. This term has been used by Hobsbawm (1954).
2. To understand this term see Tilly and Tilly (1971).
3. Mendels (1972) has used this term in his studies.
4. For the concept of nascent capitalism see Levine (1977).
5. Freudenberger and Redlick (1964) have used the term proto-industrialization, initially in their study.
6. For the concept of primitive flexible manufacturing, see Seth (2002, 2003, 2008).
7. To understand the economic consequences of empire building, see Anthony (2001), Furguson (2002, 2004) and Lal (2004).
8. For the historical importance of the Silk Route, see Frank and Brownstone (1986) and Liu (1996).
9. For this idea, see Hicks (1969).
10. For the knowledge regarding the creation of legal and administrative framework evolved by Pope Gregory VII, see Berman (1983) and Lal (2006).
11. With the use of horses in the war, the size of empire grew from 0.6 megametres (1 megametre is equal to one lack square metres) under Saragon of Akkad, to less than 3 megametres under Maurya's in India, 4 megametres under the Roman Empire, 6 megametres under the Han Dynasty of China, and 25 megametres was the size of the Mongol empire; see for details Christian (2004), pp. 316–317.
12. To understand the process of globalization initiated by empire building, see Mc Neill (1989) and Findley and O'Rourke (2008).
13. For detailed understanding of Mongol Empire, see Brent (1976), Kahn (1984), Juvaini (1997) and Weatherford (2004). To know the role of Mongol Empire in the process of globalization, see Findley and Laundahl (2006).
14. For the biographical details of Babur Mirza, see Zahiruddin Muhammad Babur's *Baburnama* p. 8.
15. See of this Abul Fazle Allami (1927), p. 2.

16. For the genealogy of Mughal emperors, see Allami (1956) and Richards (1976), pp. 262–263.
17. For understanding the role of king in Hindu society, see Walker (1968) and Bhatia (1974).
18. For details regarding this idea, see Shelvankar (1940), pp. 96–102, 139–143.
19. For the knowledge regarding this worldview, see Allami (1927), p. 4.
20. For details regarding Hindu *Jajmani system*, see Wiser (1969).
21. Hindu *Jajmani system* and its various variants, practiced in different parts of India, have been studied in detail in the writings of Fukazawa (1972), Commander (1983), Fuller (1989), Mayer (1993) and Guha (2004).
22. For the practice of *Vand* in Punja, see Punjab, District Gazetteer (1904).
23. See Hegel (1959), p. 154.
24. For Marx's ideas on India's social system, see Hussain (ed.) (2006), p. XXXI.
25. See the work of Raychaudhuri (1982).
26. For the details regarding construction of network of roads during Mughal Empire, see Sarwani (1974) and Alam and Subrahmanyam (eds.) (1998).
27. For details regarding Mughal administration and organization of army, see Moorland (1923, 1962) and Metcalf (1993).
28. To know the details regarding Mughal monetary system, see Richard (1983), p. 26.
29. For understanding the trimetallic currency system followed by Mughal rulers, see Habib (1987).
30. For details regarding these facts, see Moosavi (1987).
31. To know in detail the activities of different merchant communities, which were important in indifferent parts of India, see Darling (1926), Pillai (1930), Pavlov (1964), Mishra (1965) and Levkovsky (1965).
32. For historical facts regarding the house of Jagat Seth, see Little (1920), Hunter (1888, 1974) and Karen (1998).
33. See Jain (1929) and Habib (1963).
34. See Jain (1929), Subramaniam (1987), Siddiqi (1995) and Markovits (2000a, b).
35. See Martin (2009).
36. For these facts, see Pavlov (1964).
37. For details regarding these business houses, see Tripathi (1991), Das Gupta (1994), and Subramaniam (1996, 2012).
38. To obtain understanding regarding trade and commerce in India during Mughal Empire, see Habib (1963), and Hambly (1982).
39. For this aspect of Mughal Empire, see Subhramanyan (1995) and Alam and Subramanya (1998).
40. These estimates have been taken from the work of Habib (1982).

41. For these facts, see Abul Fazl Allami's *AIn-i-Akbari* pp. 45 and 59–100.
42. For greater details, see Moosavi (1987).
43. For details regarding the occupational pattern of the working population and composition of the national income of India, during Mughal Empire, see Maddison (1971) and Maddison (2003), p. 110.
44. For details regarding the community of *Banjaras*, see Naqvi (1986).
45. To know about the role of *Komati and Khoja* communities in facilitating the domestic trade in India, see Tchitchirov (1965).
46. These facts are given in Habib (1990).
47. For the importance of caravan trade in the Indian economy, see Burton (1993) and Brenning (1990).
48. These facts are given in Burton (1993).
49. For details regarding the extent of trade through caravan routes to different countries, see Rizvi (2000).
50. For idea of globalization with gunboats, see Furguson (2004).
51. These facts are given in Maddison (2003) and Furguson (2004).
52. For details regarding Dacca muslin, see Watson (1879) and for Arni silk, see Parthasarathi (2001), p. 11.
53. For the use of dyestuff known as *chay*.
54. For learning about regional specialization in the manufacturing of textiles, see Gadgil (1924), Pavlov (1976) and Raychaudhuri (1982).
55. For knowledge regarding the social context in which textiles were produced in India, see Bayley (1986).
56. For these ideas, see Bayley (1986), p. 298.
57. This statement is attributed to a writer from Lucknow, Mr. Abdul Halim Sherer, who is quoted in Bayley (1986), p. 296.
58. Statement of Daniel Defoe. This appeared in the Weekly Review of Jan 31, 1708 and reported in Furguson (2004), pp. 16–17.
59. See Ramaswamy (2008), p. 277.
60. See Ramaswamy (1980, 2008), p. 283.
61. For understanding the business practices used by Europeans to earn bullion, see Frank (1998), p. 177.
62. See Frank (1998), who has used these statements while negating the notion 'that Europe built a World around itself', preface, pages XXIV and XXV.
63. For this quotation, see Chaudhuri (1990).
64. For details regarding practices of making iron and steel in India, see Heath (1839).
65. See Bell (1881).
66. For these facts, see Idrish-a-shariff (1960).
67. For this, see Marco Polo (1998).
68. For historical facts regarding iron mining in the Chota Nagpur and Birbhum area, see Sanyal (1968) and Gupta (1980).

69. These facts have been reported from Allami's *Ain-i-Akbari*, p. 120.
70. This information has been mentioned in Noiel (1949, 1958) and Mintz (1986).
71. For the history of sugar manufacturing in India, see Khan (1923) and Gandhi (1934).
72. For the manufacturing of saltpetre, see Allami (1927), Gadgil (1924), Habib (1982) and Trivedi (1998).
73. See Gadgil (1924), Pavlov (1964) and Tchitchirov (1965).
74. For details regarding *dadni* system, see Chaudhury (1972 1979).
75. These facts are reported in Tchitchirov (1965).
76. Lewis (1954) evolved a model of development that suggested how developing economies can use unlimited supply of surplus labour for accumulation.
77. See Smith (1776, 2003).
78. See Freudenberger and Redlick (1964).
79. For comparing these circumstances with European economies, see Pollard (1968).
80. See Tchitchirov (1965) for these facts.
81. For these facts see, Tchitchirov (1965).
82. Similar facts have been observed by Landes (1998) regarding British experience.
83. The term flexible specialization has been evolved by Piore and Sabel (1984).
84. Marx (1867, 1978), vol. I p. 340.
85. See Dietman (1988), pp. 3–11, Derett (1976) and Roy (2010).
86. See Chaudhri (1972, 1978), p. 274.
87. See Roy (2010).
88. See Roy (2010), p. 1.
89. See Storper (2008) for understanding the attitude of economists regarding communities.
90. For the literature on social capital based conceptualization of communities, see Olson (1965) and Putnam (2000). Social scientists now distinguish between Olson-defined communities and Putnam-defined communities.
91. For the concept of community of practice, see Wenger (1998) and Amin and Roberts (2008).
92. See Dugrid (2008), p. 1.
93. See Amin and Roberts (2008), p. 17.
94. See for details Banarsidas's *Ardhakathanaka*, its translated version from Braj Bhasa by Banarasidas (2009), *Chaupai* No. 110–114, pp. 49–50.
95. See for this Banarasidas (2009) *Chaupai* No. 467–469, pp. 195–1975.
96. For elaborate description of the working of this system, see Weber (1929), Tamilson (1993), Stein and Subramanyan (1996) and Lal (2007).

97. Ovington (1689, 1929) mentions the conditions of merchants as prevalent in c.1689.
98. This incident has been recorded by Thevenot, a traveller, who was present in India during 1665–1667; see Thevenot (1949).
99. For details regarding the house of Jagat Seth, see Little (1920, 1921), Hunter (1974), Devera (1987) and Karem (1998).
100. For details regarding the phenomenon called de-industrialization, see Thorner and Thorner (1962), Morris (1975) and the Chap. 3 of the book.
101. For regional studies on Awadh, see Alam (1986), Cole (1988) and Mourad (2012); for Hyderabad, see Richard (1975); for Bengal, see Om Prakash (1998) and Chaudhry (1995); and for Punjab, see Singh (1991); Banga (1978), and Grewal (1995).

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The Process of Transformation of Traditional Flexible Manufacturing into Industrial Revolution in Britain

It is an important historical fact that while traditional flexible manufacturing was experiencing a crisis, after the gradual erosion in the authority of the Mughal Empire in India, this form of manufacturing was not only thriving, but also being systematically transformed into modern manufacturing in Britain. This process of transformation of traditional flexible manufacturing into modern manufacturing has been described as the Industrial Revolution. The understanding of this process of transformation is quite relevant to have greater insight into the story of Indian manufacturing as it will provide answers to several pertinent questions that are being raised by inquisitive minds. To satisfy the needs of such inquisitive minds, we have to visit Britain to understand how the process of transformation of traditional flexible manufacturing into modern manufacturing occurred during the same period.

We are conscious that it will be quite a substantial digression for the readers who want to remain focused on the story of Indian manufacturing. However, this digression is quite relevant because there exists a strong inter-relationship and inter-dependence between the story of Indian manufacturing and the Industrial Revolution of Britain. The relationship between the two is so intimate that it was the British Industrial Revolution that largely conditioned the story of Indian manufacturing. We are quite certain that the reader will find this digression worthwhile.

As has been described earlier, some of the economies of the world, especially those of Europe and South and Southeast Asia, experienced the birth of a particular kind of manufacturing that has been variously

conceptualized by different scholars.¹ This form of manufacturing has been described in the present study as traditional flexible manufacturing. Despite the fact that there existed this form of organization of production simultaneously in several economies, only in Britain did its transformation to modern manufacturing occur for the first time in human history. Since industrial revolution of Britain was first of its kind, it retained some of the characteristics of traditional flexible manufacturing. These characteristics remained embedded in British manufacturing even after the Industrial Revolution. This has happened because there existed continuity in the process of transformation from traditional flexible manufacturing to modern manufacturing. The British experience of industrial revolution thus provides a unique example for historical analysis. For the purposes of analysis, this chapter has been divided into two broad sections. Section 3.1 describes traditional flexible manufacturing of Britain, and Sect. 3.2 deals with the process of transformation of traditional flexible manufacturing of Britain into modern manufacturing.

3.1 TRADITIONAL FLEXIBLE MANUFACTURING OF BRITAIN

The adoption of traditional craft skills by a growing number of rural households for producing products, either for self-consumption or for the market, using traditional organizational patterns, emerged in several forms in England. These several forms existed much before the advent of industrial revolution in Britain. Several forms in which crafts-based methods were organized were (i) peasant manufacturing for household consumption; (ii) village and local specialized manufacturing; (iii) urban crafts-based manufacturing, organized into craft guilds; (iv) material-oriented manufacturing, located near sources of materials; and (v) merchant-organized manufacturing.² However, due to several socio-economic and technological changes occurring after the fifteenth and sixteenth centuries, there emerged institutions based on private property rights, and expansion in the size of the market due to emergence of towns and large urban agglomerations. The consolidation of centralized authority of state vested in the hand of the prime minister, rather than the Crown, after the glorious revolution of c.1688.³ These changes affected diverse forms of manufacturing differently.

Britain, at that time, was enjoying the benefits of demographic dividend, which resulted from rapid population growth. This happened as a result of lowering of the age of marriage and an increase in the rate of marriages, in

both rural and urban areas.⁴ The demographic dividend provided to the British economy a classical precondition that is necessary for the emergence of traditional flexible manufacturing. The existence of widespread open and disguised unemployment made available workers at zero opportunity cost. In an economy where there are shortages of labour, attracting labour to work in manufacturing necessitates the payment of higher wages, which also provide compensation for their opportunity cost. The existence of surplus labour provided objective conditions for the growth of traditional flexible manufacturing.⁵ By the year c.1707, Britain had become an important member of the common market consisting of Ireland, Britain, and British colonies in America. The existence of this common market removed demand-side constraints also, by providing to the traditional flexible manufacturing of Britain access to markets, without having to pay for entry barriers, like tariffs.⁶

At the same time, inspired by the ideas of Martin Luther and John Calvin, which were transforming the way of thinking amongst Europeans in general and the British in particular, a new attitude was emerging towards earning profit. The new wisdom suggested that the time spent in the pursuit of profession is equivalent to time spent in the prayer of God. 'Work' therefore became a form of worship. Hence, profit and accumulation of wealth that emerged as a consequence of work was accepted as an answer to worship. These ideas were articulated in the famous poem written by Bernard Mandeville, which appeared in c.1714, entitled, *The Fable of Bees*.⁷

In the new circumstances, village manufacturing registered a decline whereas urban workshops, mines and smelting works, prospered and strengthened. The erstwhile independent craft shops lost their independence to merchants who supplied them with raw materials, working capital and their subsistence. In lieu of all these services given to the craft workshops, they took away their final products to sell them to distant markets. The emerging bondage between independent craftsmen and merchants was a product of expansion of the market. Independent artisans earlier sold their product to local customers whom they knew personally.

As markets expanded, craftsmen did not have investable funds to expand the size of their operations; in these circumstances, merchants formed networks of craftsmen, from whom they collected products to sell in distant markets. This process created disconnect between producer (the artisan) and consumer, because as markets expanded, customers became more distant and stranger to the craftsmen. This led to dependence of craftsmen on merchants, who were in direct contact with the customers, for obtaining

useful knowledge about customers' tastes and preferences. Moreover, as markets expanded, they became more volatile and less predictable, which further increased their dependence on merchants. Once craftsmen entered into a relationship of dependence on merchants, they were continuously under debt, for not only working capital needs but also for subsistence. Due to their increased indebtedness, their output was already mortgaged to the merchants. Therefore, the craftsman 'was in fact, if not in principle, a proletarian selling not commodities but labour'.⁸ The increasing dependence of craftsmen on merchants for meeting their various needs led to the birth of traditional flexible manufacturing.

At the stage of traditional flexible manufacturing, there was dominance of craft-based methods of production, and importance of circulating capital instead of fixed capital due to simplicity of tools and lower costs of equipment used by artisans. There also existed sub-division of tasks amongst craftsmen along different lines of specialized jobs. These characteristics of the traditional flexible manufacturing provided it with several kinds of flexibilities. This has already been explained in Chap. 2 of the present study.

In the new circumstances, only the merchant knew about market fluctuations and changes that were occurring in consumers' tastes and preferences. He also had the capacity to adjust the supply of product in response to market fluctuations by altering the size of the network of craftsmen that he had organized in the putting-out system. By using the organization of production based on traditional flexible manufacturing, merchants were able to use the supply of cheap labour from the countryside, which were free from guilds. This process was facilitated by demographic growth amongst rural households. The increasing specialization practiced by rural households created a new class of underemployed workers, consisting of marginal and landless workers. Declining returns on small holdings left small peasants and landless workers with only one choice—to shift from *land-intensive farming* to *labour-intensive craft-based production*. The transition of small peasant households to rural manufacturing occurred at a critical phase in which they could not earn even their subsistence needs from agricultural operations.

The process of integration of small peasants and underemployed workers of rural areas into the networks developed by merchants, to produce products on a mass scale to cater to the needs of distant markets, was spread over a very long historical period. However, the transition occurred faster after the emergence of the age of discovery and establishment of global markets

by trading companies like the East India Company. The integration of rural artisanal households through the putting-out system in the network of merchants created an organizational structure of production that developed capability to produce products on a large scale to cater to mass markets.⁹

This process of production can also be viewed as the first historical experience of using an unlimited supply of underemployed workers for growth and accumulation.¹⁰ The traditional flexible manufacturing system can be described as that form of organization of production in manufacturing in which manufacturing was based on close cooperation between household production and circulating capital of merchants. The integration between these two established linkages between crafts-based household production with market through organized trade and the putting-out system helped in evolving this new way of organizing production. The economic consequences of this form of organization production were increased division of labour and accumulation of capital.

The most important peculiarity of this system of organization of production in manufacturing was that the *'seller'* was divorced from production, and the *'producer'* from selling and marketing of the product. However, due to their better understanding of markets and customers, merchants (sellers) exercised significant control on quality, characteristics and design of the products. The increasing influence of merchants on products shifted the control on product development from craftsmen to merchants. However, in this form of organization of production, artisans retained their control on production process and know-how. Therefore, this system of production facilitated the emergence of division of sphere of control on two important strategic managerial decisions, which are essential for the proper running of the business of manufacturing. The division in the sphere of control occurred between merchants and craftsmen. In this division of the decision-making process, decisions regarding *'what to produce'* were appropriated by the merchants, while decisions regarding *'how to produce'* remained with artisans. The emerging separation between spheres of decision making on questions like 'how to produce' and 'what to produce' resulted in alienation of producers from their ultimate consumers. Since, in this form of organization of production, it was the merchant who controlled the final product as well as markets, accumulation occurred outside the unit of production, in the hands of merchant out-putter. Hence, this form of organization of production did not affect the unit of production, but provided more resources to merchants to expand level of output by

expanding their network of craftsmen households, without causing any change in the size of unit of production or level of technology being used.¹¹

The separation of functions between craftsmen and merchants provided ample scope for different kinds of operational flexibilities to the craftsmen as well as to the merchants. In this form of organization of manufacturing, producer did not bear the risk of market fluctuations, because he was making products according to the orders placed and the quantity of raw materials or working capital provided to him by the merchants. On the other hand, merchant did not experience the problems of management associated with the organization of productions. The putting-out merchant enjoyed the flexibility in expanding or contracting the level of output by including, or excluding, craftsmen's households from his network. This form of organization of production provided flexibility to the merchant to adjust the level of output in response to market conditions. It also provided possibilities of '*economies of scope*', because it provided scope of producing a variety of products, customized according to the preferences of different sets of customers. This opportunity was possible by including in the network additional artisans to produce products with varied specifications.

Organization of production of manufacturing in the traditional flexible mode also provided several kinds of flexibilities to the producers (i.e., to the craftsmen). It provided '*pace-flexibility*' as well as '*time-flexibility*' to the craftsman's household production unit by giving it freedom to vary pace and rhythm of work. These flexibilities were available to craftsmen because they worked in their household workshops, where they had freedom to follow their own work stoppages for rest, as and when they needed.¹² As described in Chap. 2, the traditional flexible manufacturing form of organization of production also provided several other opportunities to save costs. For instance, merchants were taking the advantage of *economies of bulk purchase*, because they were buying raw materials in bulk quantities, which they supplied to several artisans. This helped them in negotiating lower prices with material suppliers. This form of organization production provided possibilities for *economies of scale*. The scale of operation of each merchant consisted of the amount of capital employed in stocks of raw materials, finished goods and number of craftsmen employed in his network. The sum of capital employed by British merchants in traditional flexible manufacturing was larger by any standards. It was in fact much larger than employed in fixed assets in early centralized factories that emerged during the Industrial Revolution.¹³ In hosiery, worsted, woollen, flannel, silk, cotton and woollen blanket manufacturing, an average British

merchant employed around 300 weavers. One of the merchants, James Key Burry, employed between 2500 and 3000 weavers. In Warrington, England a company of merchants dealing in shoes had around 400 artisans employed in its network.¹⁴

Traditional flexible manufacturing helped in creating a network of vertically disintegrated household workshops on the bases of inter-industry and intra-industry specializations. These workshops produced specific products or components of a product, based on division of tasks, with very close networking amongst units located in specific locations. These vertically disintegrated networks of units of production, integrated through the putting-out merchant, helped in reducing '*overhead costs*', '*inventory costs*' and generated '*external economies*' through '*economies of agglomeration*'.¹⁵ All these economies in costs were sufficient enough to compensate for '*internal economies*', which are enjoyed by the vertically integrated large production units. This suggests that at that time, in Britain, traditional flexible manufacturing was providing advantage to smaller units of production with several kinds of economies. It also suggests that the organization of production in the manufacturing sector was very close to the organization of production described by the term '*flexible specialization*'.¹⁶

During the period when traditional flexible manufacturing was the dominant form of organization of production in Britain, its expansion was constrained by the availability of circulating capital. The nature of this form of capital is that its gestation period is the same as that of the production cycle. Scholars have identified that the basic differentiating factor that separated modern manufacturing from traditional flexible manufacturing was the distinction between the natures of capital—in the latter, it was the circulating capital, whereas in the former, it is the use of *fixed capital*.¹⁷ This suggests that during the traditional flexible manufacturing phase, growth occurred in each period of the production cycle from the *wage fund*, which was available with the merchants from the previous production cycle's net output. Therefore, it is worth emphasizing that the wage fund theory of wages, which was evolved by classical economists, was more relevant during the period when manufacturing was organized into traditional flexible form.

On the contrary, in the case of modern manufacturing, which needs substantial investments in fixed assets for buying plant, machinery and equipment, life of capital goods is spread over several production periods. The availability of capital with production units at a point in time results from past decisions on investments, and for subsequent periods, it depends

on expected rate of return on capital, over its future lifespan. Therefore, differences between the nature of capital being used in traditional flexible manufacturing and modern manufacturing can be explained by the differences in the nature of capital implicit in the Smith–Ricardo and Harrod–Domar models of growth. In the Smith–Ricardo model, equilibrium always occurs between supply and demand, at a point in time, depending upon productivity, wages and wastage of funds into unproductive uses. Whereas, in the Harrod–Domar model, there exists only one possible rate of growth, which equates demand with supply, where stock of capital is fully utilized and expectations of investors are also fully realized.¹⁸

A significant advantage created by the traditional flexible method of production of manufacturing over earlier forms of handicraft-based systems of manufacturing had been the division of labour and specialization, which resulted in increasing its efficiency and the possibilities of innovations in the methods of production. The division of labour increased with the expansion of the market. Perhaps, after observing the workshops organized in the traditional flexible manufacturing format, Adam Smith concluded that the ‘division of labour is limited by the size of the market’. In fact, Smith believed that division of labour was not the product of any great wisdom; it emerged as a consequence of human propensity to truck, barter and exchange. Exchange relationships give occasion to the division of labour. It is through exchange relationships that human beings get what they want from others, in exchange for what they can offer to others. The absence of an exchange relationship in other species also results in absence of division of labour. Smith states, ‘nobody ever saw a dog make a fair and deliberate exchange of bone with another dog’. ‘A *mastiff* is quite different from *greyhound*, a *greyhound* from *spaniel* and *spaniel* from *shepherd* dogs. The strength of *mastiff* is not supported by the sagacity of *spaniel* and docility of *shepherd* dog. The effect of these differences, in geniuses and talents, for want of power of disposition to barter and exchange, cannot be brought in common stock’.¹⁹

Smith’s knowledge regarding the advantages of division of labour came from his observations of pin manufacturing workshops in Kirkcaldy, Scotland. These workshops were using division of labour to manufacture pins with the help of simple tools.¹⁹ It will not be inappropriate to describe that his ideas on division of labour pertain to pin-making workshops, when its manufacturing was organized in the traditional flexible mode of manufacturing. This becomes obvious from the fact that his pin-making workshops represent an organizational form where they are using better

organization of production, without any fundamental changes in the level of technology.²⁰ Despite the fact that the master craftsman could perform all the functions and jobs that were necessary to manufacture a product, no master craftsman would perform all the jobs, especially those that required simple operations and lower level of skills, because that would result in waste of his skills, experience and time. Not only this, unless and until the job required the strength of an adult male worker, women and children were used to perform those jobs. This kind of division of labour was guaranteed by the household production, because traditional flexible manufacturing units were household workshops.

It is also important to mention that the division of labour and specialization, which was embedded in traditional flexible manufacturing, was not only necessary for achieving efficiency in the process of production, but was also used as an instrument for providing instructions and training to apprentices. Through division of labour, the master craftsman also divided skills and knowledge required to produce a product into several stages. The young apprentices acquired skills by using these stages. In this scheme, each successive stage of division of task improved his knowledge and skills. New entrants were initiated in a trade by being asked to perform simple functions and rough jobs. As they reached different stages of operations, they graduated to perform more complex and difficult tasks. Unlike the craft guild system, where new entrants to the craft training were drawn essentially from the family, the traditional flexible manufacturing necessitated the recruitment of apprentices from outside the family. Hence, traditional flexible manufacturing helped in skill formation in the absence of any organized institution for skill formation.²¹

The meaning and advantages of division of labour changed with the introduction of machines during the phase of modern manufacturing. Machines are tools that are run with the help of inanimate sources of power. The division of labour embedded in machine based-manufacturing makes workers simply an appendage of machines, and their use in the process of production eliminates the influence of division of labour on dexterity and learning.²² It is because of this reason that the concept of division of labour, as evolved by Adam Smith, ceases to be compatible with modern manufacturing.

The economic implications of division of labour that are compatible with machine-based process of manufacturing have been analysed in greater detail by Babbage.²³ Babbage's main contribution to the body of knowledge was to identify principles that determine the use of machines. He

observed that division of labour in the process of production was facilitated by the emergence of large-scale enterprises. This led him to believe that extent of division of labour in an enterprise was related to scale of its operations. This idea is quite at variance with the idea of Smith who believed that the extent of division of labour is determined by the size of the market. Babbage has explained the logic underlying his observations regarding the relationship between scale of operation of an enterprise and the division of labour in one of the chapters of his book titled *Causes and Consequences of Large Factories*.²⁴ He established a principle that states that in order to minimize costs, it will be inevitable to increase the size of the firm, by some multiple, where value of the multiple will be determined by the division of labour. He suggested that 'when number of processes, in to which, it is most advantageous to divide it, and number of individuals to be employed by it are ascertained, then all factories, which do not employ a direct multiple of this latter number will produce the article at a greater cost'.²⁵

The idea of division of labour, as evolved by Babbage, also differs from its conceptualization by Smith, in terms of its consequences. Smith explained that the division of labour facilitates in dividing tasks into specialized jobs, which increases the learning and dexterity of workers. This learning helps in the process of innovation. Babbage, on the other hand, explains that the master manufacturer, by dividing the work to be executed into different processes, each requiring different degree of skills or force, can purchase exactly the precise quantity of both necessary for each process. Whereas, if the whole work were executed by one workman, that person must possess sufficient skills to perform most difficult, and sufficient strength to execute most labourious of operations, into which the work is divided'.²⁶

However, when machines are employed in the process of production, the worker is deprived of making even part of a pin or a head of a nail, because machinery makes it possible to transform a coil of wire into millions of pins. Under these circumstances, one can realize that Smith's concept of division of labour becomes totally irrelevant.²⁷ It is also interesting to note that it was the steam engine, invented by James Watt, which helped in converting tools into machines. The steam engine was invented in the same year in which *Smith's Wealth of Nations* was published. Ironically, it was Watt's engine that made the concept of division of labour evolved by Smith totally irrelevant. The other interesting historical fact that needs to be mentioned is that both James Watt and Adam Smith were fellow Glaswegians.²⁸

The principle established by Babbage, clearly shows that the use of machines makes it inevitable to invest in significantly higher fixed capital

that can be recovered only through large volume of output. This formulation of the manufacturing process is quite at variance with the concept of traditional flexible manufacturing. In a production unit, organized in the traditional flexible manufacturing mode, the production process was based on specialization, where each task was broken down into a series of discontinuous steps, and each step was assigned to a separate worker. Therefore, the Smithian concept of division of labour pertains to this form of manufacturing process. In this form of manufacturing, output could be expanded only by increasing workers, their skills and capabilities. Hence, to increase output, it was necessary to increase human resources. However, in the formulation evolved by Babbage, machines have the capability to replace not only workmen, but also jobs. Hence, technology is capable of providing indefinite possibilities. Therefore, in machine-based manufacturing, expansion in output can be achieved with, or without, additional units of labour.²⁹ This suggests that in modern machine-based manufacturing, machines can replace some tasks performed by workers. This differentiation makes it quite obvious that Smith was describing division of labour, which was embedded in traditional flexible manufacturing. He is not mentioning, anywhere, whether he is referring to workshops, wherein workers use simple tools, or large manufacturing units that use machines driven by inanimate sources of power.³⁰

Similarly, it seems that the theory of profit, developed by classical political economists, also pertains to historical reality, which existed at the time of traditional flexible manufacturing. The basic premise on which the classical economists' profit theory is based, is that there exists an inverse relationship between profit and wages. This inverse relationship is valid only under the putting-out system. The prime function of a merchant in traditional flexible manufacturing was to bridge the gap between the start of the production process and its end, by giving advances of materials and subsistence of artisans for the production cycle. Under these conditions, profits emerge as a return paid for the use of stocks. Therefore, in traditional flexible manufacturing, where merchants only collected final output to sell in the market against advances, they did not direct the process of production from the beginning to its successful completion. Due to these reasons, classical economists could not derive the theory of profit, either from productivity of capital (because at that stage, production was financed by circulating capital) or from element of risk borne by entrepreneur.³¹ This formulation of profit, which established an inverse relationship between wages and profit,

opened the possibilities for the emergence of exploitation theory of profit, described by Schumpeter as '*depredation theory*'.³²

There also exists another important theoretical construct in the writing of Adam Smith that lends support to the fact that he evolved his understanding regarding this construct also from the organization of production in manufacturing that was prevalent in Britain during the traditional flexible manufacturing era. This construct was the shiftability of business endeavours from industry to industry in response to changes in profitability across industries. This shiftability of investments from one industry to another is possible only when capital is in the form of circulating capital. As the proportion of fixed capital increases in the process of production, it becomes difficult to shift business endeavours from one line of production to another, because fixed capital is invested in specific plants and equipment dedicated to the production of a product. This also suggests that Smith's theory regarding shiftability of capital pertains to the historical period when traditional flexible manufacturing was prevalent in Britain. Economic theory emerged with the writings of Ricardo, which he wrote when full-fledged modern factories were in existence in Britain. Even Ricardo added a chapter on machinery (chapter 32) in the third edition of his book, which appeared in c.1821.³³

It is also an important historical fact that the traditional flexible manufacturing system of organization of production derived its sustenance from the nature of pre-Industrial Revolution household and family. Some of the scholars have tried to explain the symbiotic relationship that existed between traditional flexible manufacturing and nature of pre-industrial household. To explain how each one helped in sustaining the other, they have relied on some of the important characteristics of observed behaviour of pre-industrial household production units. These characteristics have been systematically analysed by Chenov.³⁴ Some other scholars have extended his analysis regarding pre-industrial peasant household to explain the nature of household production associated with traditional flexible manufacturing.³⁵

According to this strand of thought, the central feature of a craftsman's household, during the period of traditional flexible manufacturing, was that its economic behaviour was not guided by objectives of profit maximization or accumulation, but to secure subsistence for the family. Therefore, each family will not supply work effort beyond the point where possible increase in output outweighed the disutility of work. This suggests that each family tried to achieve balance between its subsistence needs and subjective dislike

for manual work (i.e., disutility of work). This behavioural pattern has been described as '*labour consumption balance*' (i.e., balance between family subsistence needs and expenditure of family labour).³⁶ This kind of behavioural pattern existed in the family economy due to lack of alternatives, which also made the opportunity cost of labour zero as the family's subsistence needs were not guaranteed. Therefore, opportunity cost of additional unit of labour increased only after subsistence needs of the family were achieved. This suggests that when return on family economy increased due to favourable conditions, the family had no compulsion to increase work efforts. Hence, during better and favourable times, family, instead of increasing work effort to maximize return on family labour, increased consumption and leisure. Similarly, in an event when return on family economy declined, the artisan's family increased its expenditure of work effort, even beyond the amount that is expected in an economic system, which depends on the wage-labour relationship. This behaviour pattern of household family workshops during the period of traditional flexible manufacturing gave birth to the famous '*backward sloping*' supply curve of labour.

The behavioural characteristics of the pre-industrial household became embedded in traditional flexible manufacturing. The self-regulating mechanism of the family economy provided institutional support to the family of craftsmen during bad periods to fall back on self-exploitation. The self-exploitation was inevitable when it was necessary to guarantee subsistence of the family. Willingness of artisans to supply work effort, even at below subsistence level, provided built-in flexibility to traditional flexible manufacturing to realize higher rates of profits during bad periods. This kind of flexibility could not be achieved in market-mediated wage-labour relationships. The emergence of symbiosis between pre-industrial household workshop and traditional flexible manufacturing created objective conditions where 'Lilliputian cottage industry choked-off large industry, preventing its emergence as a dominant form of production'.³⁷

3.2 PROCESS OF TRANSFORMATION OF TRADITIONAL FLEXIBLE MANUFACTURING INTO MODERN MANUFACTURING

Despite the fact that the traditional flexible system of manufacturing enjoyed continued existence for a considerable historical time, it contained within itself the seeds of its own transformation into modern manufacturing. To

describe alternatively, the traditional flexible manufacturing contained the preconditions that were necessary for the birth of the Industrial Revolution. Traditional flexible manufacturing facilitated the birth of modern manufacturing by creating in the society two distinct classes, which are required for achieving successful transformation of the manufacturing. These classes were a class of workers and a class of owners of capital. The expansion of market brought more and more rural households in the networks created by putting-out merchants. On the one hand, it helped in the formation of skills amongst large masses in the absence of any organized institution engaged in the process of skill formation. On the other hand, it also created circumstances that slowly divorced these skilled craftsmen from the agricultural sector. Hence, it facilitated the creation of a class of artisans that was fully committed to manufacturing. It was this segment of the working population that provided the supply of workers for factories during industrial revolution in Britain.

The traditional flexible system of manufacturing simultaneously helped in the accumulation of capital in the hands of merchants. As mentioned earlier, the capital employed by merchants in developing their networks of artisans was quite large. This capital accumulated by merchants was waiting for necessary conditions to be transformed from circulating capital into fixed capital.³⁸ Merchants had not only accumulated capital during the prevalence of traditional flexible manufacturing, but had also utilized opportunities to acquire sufficient knowledge about production processes as a consequence of their interaction with craftsmen. Merchants had also developed the knowledge about markets, and intricacies of inter-regional and international trade. These advantages collectively equipped them to become entrepreneurs to provide leadership during industrial revolution in Britain.³⁹

There were also certain other factors that contributed towards hastening the process of transformation of traditional flexible manufacturing into modern manufacturing. As described earlier, the traditional flexible production system of manufacturing worked through the network of household workshops organized by merchants. However, this form of organization did not provide them power to supervise the working of the individual unit of production. Despite the fact that the merchants had employed large volume of their resources as circulating capital to maintain their networks, they had no control on the quality of the product, efficiency of the production unit and work schedules followed by each individual household workshop. These conditions of helplessness of merchants were bound to change the

system. Merchants were seeking to evolve a new method that would use their managerial capabilities and provide them control, along with ownership of assets, so that they could protect their interests and minimize risk.

To explain how the convergence between ownership and control occurred, historical experience provides two different paths. To understand these alternative paths, one needs to distinguish between '*capital extensive*' and '*capital intensive*' manufacturing industries.⁴⁰ Let us first understand extensive manufacturing industries. As traditional flexible manufacturing system of production expanded, it led to geographical spread of networks created by merchants. The spatial spread of production units made it difficult for merchants to keep time schedules of deliveries of products, and also gave them less control over wastage of raw materials. This happened because the owners of household workshops had conflicting interests with the merchant out-putter; the former had custody of raw materials that were supplied by the latter. They converted these materials into final products at their own pace and in their own place of work.

This created a kind of principal-agent problem between craftsmen and merchants. Due to the agency problem, bonds between merchants and craftsmen were quite loose and uncertain. Craftsmen always tried to cheat merchants vis a vis raw materials. Such embezzlement of materials was usually at the cost of quality of products.⁴¹ To control this embezzlement, the merchants tried to put in place legislation through their influence on British Crown and Parliament. They succeeded in enacting several legislations, some of which covered all the manufacturing industries (e.g., the legislations of c.1749, c.1774 and c.1777), whereas some others were specific to a particular manufacturing industry (e.g., for worsted in c.1777, and for silk manufacturing in c.1774). Merchants were also slowly realizing that if they intended to minimize embezzlement of materials and regulate the pace of work, they'd have to shift artisans to a building where they could work under merchants' close supervision.⁴²

To shift craftsmen from their household workshops to work in centralized workshops was not so simple, because merchants had to motivate them to come out of their cottages to work in factories. To an artisan, who was enjoying several kinds of flexibilities that gave him freedom, working in a mill amounted to the loss of freedom. To artisans, these mills symbolized prisons. These negative consequences, on craftsmen if they worked in factories, could be overcome only by giving them higher wages. These higher costs of skilled labour made factories non-competitive in comparison to the workshops of traditional flexible manufacturing.

To increase the competitiveness of their centralized workshops, merchants were expected to invest in better tools and equipment. In heat-using technology, like brewing, glass making, iron making and metal smelting, there were enormous savings of fuel costs due to the emergence of centralized factories. These savings more than compensated the higher costs of capital equipment and higher wages. In other manufacturing industries, emergence of centralized factory had to wait until the availability of power-driven machines, which could make it possible to undersell the products produced by traditional flexible manufacturing. Wherever the process of adoption of new techniques and use of power-driven machines was slow, factories used cheap labour of children and women to obtain cost advantages. Hence, to make modern factories more competitive than household workshops, investment in capital goods became inevitable. The necessity to invest in fixed capital facilitated the process of transformation of circulating capital into fixed capital. As the proportion of fixed capital in the production process increased, the control of owners of capital on the production process increased. This is how '*convergence*' occurred between '*ownership*' and '*control*'. Through this process, the owner of the capital appropriated control over the production process. Therefore, the system of production, which was based on centrality of capital and was managed by the owners of capital, was defined by political economists as the '*capitalist system*'.

In the case of capital-intensive manufacturing, convergence between ownership and control occurred much faster. As these manufacturing units needed large investments in equipment (viz. in metal processing, paper, glass and printing), investments needed to buy land and buildings, and power-supplying equipment to run the machines, household workshops became totally uncompetitive. Innovations like the blast furnace for smelting ore and use of porters in the brewing industry substantially increased the magnitude of investment in fixed capital. The proportion in which the need for fixed capital increased in these manufacturing industries, was the same proportion in which, simultaneously, traditional flexible manufacturing lost its competitive advantage. Hence, in capital-intensive manufacturing industries, centralized modern factories emerged much earlier than other manufacturing industries, because in these industries the circulating capital of merchants used in the putting-out system was transformed into fixed capital much earlier.⁴³

In Britain, most mining districts were located in remote mountainous or hilly regions, where households generally practiced pastoral farming along

with mining. In these areas, it was difficult for the household to rely on agriculture alone for their subsistence. Therefore, the extractive industries were carried on in conjunction with farming. Historians have observed that mining and farming were ancient bedfellows, and in most places, it is difficult to state whether the beginning of settled farming preceded or followed mining of tin, lead, copper, iron and stone-chalk.⁴⁴ The symbiosis between mining and farming was so intimate that it described in *Snow White and the Seven Dwarfs* as the dwarfs' occupation of raising '*their own food and operating their own independent shallow mine in the middle of the forest*'.⁴⁵

However, from seventeenth century onwards, widely dispersed small-scale shallow surface deposits were approaching exhaustion. This necessitated digging to greater depths for the survival of the mining industry. This could not be achieved with the help of simple tools, which were being used by small mining units. Therefore, most people associated with the mining industry realized the need for investment in better equipment. This necessity resulted in the mechanization of the mining industry, through the use of water power pumping technology, gunpowder blasting and use of atmospheric pumping engines. These technologies transformed mining into a large-scale production.

These two aforementioned intertwined processes led to convergence between ownership and control in the hands of merchants, both in the capital-extensive and capital-intensive manufacturing industries. These symbiotic processes transformed the traditional flexible network of workshops into centralized factories. In the new circumstances, merchants assumed control over production processes as well. Due to this process of transformation, master craftsmen who looked after their own production unit, lost control over the production process and joined as foremen in centralized factories. The artisans who worked in his workshops became workers. What this means is that towards the end of the era of traditional flexible manufacturing, the merchant out-putter who had lost control over fragmented units of household workshops that were part of his network assumed total control over production units by integrating fragmented units of production in the modern factory form of organization.

Alternatively, the process of transformation of traditional flexible manufacturing into modern manufacturing can be explained with the help of a scheme evolved by Chayanov. His scheme is based on the understanding of the behaviour of households that were engaged in traditional flexible manufacturing. As described earlier, the family-based production units of craftsmen were not working with the motive of accumulating wealth but to

achieve labour–consumption–balance; their behaviour was not compatible with the emerging market economy. This incompatibility was reflected when return on family production increased with expansion of market and favourable economic conditions. In such a situation, when market forces necessitated the increase of supply of work effort by the craftsmen, the family economy motivated them to increase leisure and consumption. Hence, precisely when profit-making opportunities were greater, merchants observed with great frustration the unreasonable inversion of sensible economic behaviour—the supply of work effort declined when returns increased.⁴⁶ The household economy associated with traditional flexible manufacturing made the organization of production downward flexible (i.e., supply of work effort increased during adverse economic conditions) and upward rigid (i.e., supply of work effort declined during better economic conditions). This behaviour of household workshops made it difficult to expand output during a boom. The only possible alternative available to the merchants was to extend the network of artisans. This process expanded the traditional flexible production system to all possible geographical areas ‘like liquid seeking its level in this case the lowest possible wage rate’.⁴⁷ However, while expanding the network to all possible locations, merchants realized the shortcomings and limitations inherent in the organization of manufacturing into traditional flexible manufacturing.

To overcome the built-in weaknesses of the traditional flexible manufacturing process, merchants had to evolve a new method of organization of production that had the capability to out-compete the low-wage household economy. The textile manufacturing industry of Britain evolved this kind of advantage much earlier than any other industry. This advantage occurred when there sprang up, within a short period of time, a series of inventions regarding processing of cotton. These inventions, along with the invention of the steam engine, provided opportunity to create a competitive advantage for modern manufacturing. This happened when inanimate power, which was harnessed by James Watt, was used to run the ‘*spinning Frame*’ designed by Ark Wright. This was the first instance when integration was achieved between tools and inanimate sources of power, and it gave birth to machines. This integration changed the meaning of manufacturing from ‘made of hand’ to ‘made of machines’. This transformation that the ‘shuttle dropped from the fingers of the weaver and fell into iron fingers’⁴⁸ can be accepted as the beginning of modern manufacturing, which is also described as the beginning of the Industrial Revolution.

In c.1712, Thomas Newcomen's steam engine was used for the first time in the process of production. Far-reaching changes were also occurring in the manufacturing of textiles. The process of technological change in manufacturing of cotton textiles began with the invention of the '*flying shuttle*', invented by John Kay in c.1733. This invention made it possible to weave cloth larger than arm's length. This machine also increased the speed of weaving quite substantially. The increase in the speed of weaving created structural imbalance in the manufacturing of cotton textiles. This mismatch between the speed of weaving and spinning of yarn put pressure on innovators to develop better spinning machines with better speed. Richard Arkwright invented the '*spinning frame*' in c.1764, which patented in c.1769. It was also known as the '*water frame*' because it used the water-wheel. However, after the invention of the steam engine by James Watt and Hargreev's '*spinning jenny*' in c.1769, cotton textile manufacturing became more productive in comparison to handicraft-based manufacturing of cotton textiles. The invention of the power loom in c.1784 by Edmund Cartwright completely transformed British cotton textile manufacturing.

The first modern cotton textile factory was established by Richard Arkwright for making cotton hosiery products at Cramford in Derbyshire in c.1771. In c.1793, Arkwright, along with two other partners, floated the first cotton textile mill to produce calicoes, which were imitations of calicoes produced in India. He also established other cotton textile mills in other locations in Britain, for instance, Chorley in Lancashire, which employed around 500 workers, and another mill at Manchester, which employed around 600 workers.

To transform the traditional flexible manufacturing of Britain into modern manufacturing, technological changes also occurred in other complementary manufacturing industries such as iron and steel and mining of coal. Coal was emerging as a prime mover of modern manufacturing and steel was emerging as a metal for developing modern machines and equipment. Later on, expansion of railways depended on the availability of steel. Abraham Darby evolved a process to convert coal into coke, which reduced most of its impurities. Coke also helped the iron master to attain much higher levels of temperature for smelting iron. He used this technique in his iron work at Coalbrookdale. In c.1760, the steam engine was used, at first, in the coal mine for pumping out ground water, which facilitated the digging of coal from deeper underground. Manufacturing of steel also experienced technological changes during the same period. Benjamin Huntsman invented cast iron in c.1740. Attempts were also made by innovators to

reduce high silicon from coal-pig iron. For this purpose, brothers Charles and John Wood developed the ‘stamping and polling’ process in c.1761, which was rapidly adopted by the iron and steel industry in most parts of Britain by c.1770. The most important technological change, which completely transformed the manufacturing of steel, was the invention of the Bessemer converter by Henry Bessemer.⁴⁹ Before the invention of the Bessemer converter, steel was produced by mixing wrought iron with carbon. This process required continuous processing for weeks, using vast amounts of fuel. Instead, Bessemer used pig iron, which was developed by smelting iron ore, which already had carbon content. The steel produced with the help of the Bessemer converter could be used in construction for making machines and bridges.

These revolutionary technological changes that occurred in the British manufacturing industries are collectively described as the Industrial Revolution. This revolution helped in shifting the location of cotton textile manufacturing from the Indian sub-continent to Britain. This shift establishes links between the story of Indian manufacturing and the Industrial Revolution of Britain, as it created a process by which the key manufacturing industry of the Indian sub-continent experienced decline, while it experienced rapid growth in Britain. The process of relocation of cotton textile manufacturing gave birth to a ‘trajectory of divergence’ between the Indian sub-continent and Britain. It was this divergence that led to riches in Britain and underdevelopment in India.⁵⁰

The process of divergence began as a consequence of adoption of cotton textile by consumers in most European economies. At that point in time, European consumers were shifting their preference from textiles made of other materials like wool, flax and hemp, in favour of cotton textiles. Availability of cotton textiles in different qualities, varieties and in different prices, in comparison to local woollen textiles, facilitated the process of adoption of consumption of cotton textiles by different strata of British society. Indian cotton textiles had certain qualities that were not present in the woollen textiles produced in Britain, such as fast colours and light and washable fabrics. These characteristics were compatible with the notion of cleanliness.⁵¹ Moreover, demand for cotton textiles was global in nature. Due to these obvious reasons, manufacturers of Britain undertook a demand-led process of import substitution. The increased demand for cotton textiles created objective conditions for the mechanization of different processes, like spinning, weaving and finishing of textiles.

The manufacturing of cotton textiles in Britain began as import substitution with the production of *fustians*. Fustians was developed as a form of cotton textile, which was evolved from the mixing of linen and cotton.⁵² Its production spread quite fast in the East Anglia and Lancashire regions of Britain. This kind of import substitution was based on understanding of market rather than improvement in technology as Britain was still at the stage of traditional flexible manufacturing (proto-industrialization).⁵³ The success of fustians signalled to the British manufacturers that any improvement in technology would further increase the demand for British cotton textiles. This realization motivated British manufacturing to evolve perfect substitutes for Indian cotton textiles.⁵⁴

The process of import substitution of cotton textiles in Britain was also facilitated by the availability of cheap raw cotton from cotton plantations, which British expatriate entrepreneurs had established in the Caribbean, Virginia, Georgia and the Carolinas. In these plantations, cotton was cultivated with the help of African slaves. These plantations provided supply-side support to the efforts of British textile manufacturers to initiate the process of import-substitution.⁵⁵ Taking advantage of these supply- and demand-side factors, British cotton textile manufacturers transformed the oriental luxury product (the Indian cotton textiles) into a product of mass consumption, which could be consumed by consumers belonging to different strata of British society. This process led to the transformation of 'luxury product' into 'fashionable product' and became the new incentive for technological change.⁵⁶ Luxury products are *exclusive* by nature; the process of transformation made them more *inclusive*. Thus, what was a source of '*pleasure for few*' became '*pleasure for many*', through technological change.⁵⁷

The process of import substitution of Indian cotton textiles by British cotton textiles was supported by the British government, as well as by prevailing circumstances in Europe. The ideological premises for protecting the emerging infant modern cotton textile manufacturing industry from foreign competition was articulated in the work of John Pollexfen, *England and India: Inconsistent in their Manufacturers*, which was published in c.1697. In this text, it was argued how imports of cotton textiles from the Indian sub-continent were acting as impediments to the growth of the British cotton textile industry. In c.1700, the British government began to discourage the imports of foreign-produced cotton textiles in Britain. During the rule of William IV, British Parliament enacted laws that prohibited the wearing of silk and cotton textiles manufactured in other countries by British citizens. A penalty of £200 was imposed on persons

having or selling imported textiles. These laws were made more stringent during the rule of George I, II and III.

British manufacturers of cotton textiles also received protection from foreign competition when Napoleon imposed the continental system to limit European trade with Britain in c.1806. This ban continued until Napoleonic war came to an end at the Battle of Waterloo in c.1815. Despite the fact that the Napoleonic war was protecting British cotton textile manufacturing, British government continued to provide protection to it. In c.1813, the government imposed duty on calicoes at the rate of £3, 6 s, 8d per cent upon importation, and if the merchandise was meant for domestic consumption, there was further duty of £6, 6 s, 8d per cent. On muslin, the duty on imports was £10 per cent and if it was meant for domestic selling, it was £27, 6 s, 8d per cent.⁵⁸ The emergence of cotton textile manufacturing created objective conditions for the growth of other complementary manufacturing industries because modern cotton textile manufacturing assumed the role of leading sector.⁵⁹ This led to a series of technological changes in the other related manufacturing industries.⁶⁰

There are differences amongst scholars regarding the exact dating of the Industrial Revolution as they have approached it differently. Some scholars view industrial revolution as revolutionary changes in the manufacturing of products, whereas others interpret it as a process of economic development. Scholars who lay emphasis on the former accept it as a period of discontinuity. They explain the phenomenon by listing technological innovations that transformed the methods of manufacturing that manifested in quantitative changes in the rate of growth of output in the manufacturing sector. On the contrary, scholars who view it as a process of transformation of the aggregate economy explain it with the help of qualitative changes that occurred in the British economy.⁶¹ Since we are more concerned with the emergence of modern manufacturing sector in Britain rather than with the transformation of the economy, we can accept c.1760 as the turning point in the manufacturing sector of Britain.⁶² The new technological possibilities provided new opportunities to the merchants to become industrialists. However, to take advantage of new possibilities, merchants had to convert their circulating capital into fixed capital. This is because in new circumstances, they had to invest substantial resources on buying of new machines and equipment.

For the first time in human history, there emerged specialized manufacturers of machines and equipment who were designing them for use by others. This trend was revolutionary in nature because prior to this time,

craftsmen used to make their own tools. The emergence of patent laws, which provided return on intellectual capital of craftsmen who designed new machines and equipment, encouraged some of the master craftsmen to devote their time and energy to develop these machines. Thus, new manufacturers of capital goods who developed machines that could be used across several manufacturing industries sprang up in the British manufacturing sector. In new circumstances, merchants could buy these new machines and equipment to establish new enterprises. Hence, ownership of capital became quite crucial. Since new entrepreneurs required substantial ownership of capital to float new factories, political economists began to call them '*capitalist*'. However, the transformation of merchant into manufacturer made him 'prisoner of his investment'.⁶³ Some of the new industrialists also came from the ranks of equipment manufacturers.

In traditional flexible manufacturing, most of the investment made by the merchants was in the form of circulating capital (i.e., variable costs). The nature of his capital provided the merchant several kinds of advantages. He had freedom to enter and exit from the market. He also had flexibility to alter the level of output in response to market conditions. Moreover, he could also shift his investment from one line of operation to another. Despite these advantages, merchants transformed themselves into manufacturers to become prisoners of their investment. They made this choice because new techniques of production, accompanied by a new form of organization of production in the form of factory or mill, gave him immense power due to convergence of '*ownership* and *control*'. This new format gave merchants the opportunity to undersell and outcompete small household workshops.

The convergence between ownership and control also altered the social reality for the craftsman. The new circumstances were a great departure from the past. The introduction of machines took away his autonomy on the production process. For the first time in history, artisans had to come out from their household workshops to work in the factories. In altered circumstances, the factory became a '*place of work*' and household became a '*place of consumption*'. In the new dispensation, instead of the craftsman employing their own tools and equipment, now tools and equipment owned by entrepreneurs began to give him employment. Therefore, in the organization of production, craftsmen lost their autonomy on work schedules and work stoppages. Instead, machines now determined the place of work and work stoppages. In the factories, new craftsmen were working in teams, following similar time schedules, determined by machines. For

each craftsman, work began and stopped simultaneously. Moreover, craftsmen, for the first time, had to work under the watchful eye of the supervisor's foreman, or overseer. It has been very appropriately described by one of the leading economic historians of the Industrial Revolution, that in the new situation for workers, 'factory was a new prison, the clock new kind of a jailor'.⁶⁴ The process described clearly shows how the centralized factory in the '*embryonic stage*' was growing in the womb of traditional flexible manufacturing.

The process of mechanization varied across different manufacturing industries and across different processes in each manufacturing industry. Therefore, mixed-firms or mixed-industry or what is described as '*technological dualism*' continued to persist for a much longer period. The uneven spread of machines provided unique characteristic of flexibility to British manufacturing. For instance, in some industries like clothing, cabinet making, cutlery, gun making and shoe making, small producers remained dominant for a considerable period. Historical evidence suggests that use of machines in the process of production in British manufacturing enterprises was a long, drawn-out process rather than a distinct event. This process was neither linear nor continuous. In reality, it was constrained by complex historical forces including the anti-machinery '*Luddite Movement*'.⁶⁵ Mechanization in some manufacturing industries was the result of growing demand, which necessitated the use of machines to achieve mass production. In some other manufacturing industries, it was emerging as a consequence of contradiction between owners of factories and working classes. In such instances, mechanization empowered owners against working-class resistance.⁶⁶

The extent of mechanization in British manufacturing enterprises was largely guided by the interest of mill owners. In some mills, production was carried out without sourcing of certain jobs to household workshops. For example, sugar was produced in big factories like Messers Tate Lyle Silvertown, while sweets were being manufactured in backstreet kitchens. Timber was processed in power-driven sawmills, where machines were used, but up to c.1860, the wood was shaped at the carpenter's bench or at cabinetmakers' trestles. Even iron-making giant furnaces of Black County, co-existed with backyard workshops of blacksmiths. Cutlery manufacturing of Sheffield had a similar kind of organization of production, where big rolling mills supplied materials to 60 small crafts-based workshops.⁶⁷

In the textile manufacturing industry of Britain, which felt the impact of mechanization much earlier than other industries, the extent of use of

machines was quite uneven ‘though production of textiles was mechanized, clothing trade remained largely dependent on “needlewomens” fingers’. Mechanization was more prevalent in worsted, less in woollen, more widespread in cotton, and less in the production of linen and silk textiles. Technological dualism continued to exist in textile mills for a considerable period. Even in large textile mills, hand mules as self-actors coexisted in the spinning department, while handlooms and power looms coexisted in the weaving section of mills, manufacturing silk and woollen textiles.⁶⁸ In metallurgy industry, steam power and machines were used in primary processes like puddling and rolling, while moulding remained primarily a craft-based skill. In the engineering industry also, despite the emergence of mechanization of most processes, fitting remained in the hands of craftsmen.⁶⁹

The system of production based on standardization of products and use of interchangeable parts, which was being used in the manufacturing of sewing machines in the United States, did not spread to Britain. For instance, Enfield Rifles were manufactured with the help of machines, using interchangeable parts, while ammunition was made by hand. In Birmingham gun quarters, small-arms manufacturing was widespread amongst small producers, whereas lock, stock and barrel remained separate handicraft trades. Gun manufacturing in Britain remained primarily a craft-based production, produced in decentralized small workshops. This was quite at variance with the practice of manufacturing guns in the United States where guns were being manufactured since c.1820, using interchangeable parts at the Eli Whitney Gun Manufacturing Unit. British gun manufacturing has been described as a ‘slice of eighteenth century industrial organization, which has survived entirely intact into the world of Great Exhibition’.⁷⁰

As we know, the great exhibition of industrial products, to showcase the strength of the British manufacturing sector, was organized in c.1851 in Hyde Park, London. The exhibition continued from May 1, c.1851 to October 15, c.1851. The building that was the venue for the exhibition was made of 2,50,000 glass panes and was appropriately called the Crystal Palace. In this exhibition, 14,000 exhibits were displayed. All these exhibits were the luxury products of yesteryear, which modern manufacturing had transformed into products of mass consumption. The continued existence of traditional flexible manufacturing along with modern manufacturing was a unique characteristic of the British manufacturing sector. The reason for this ‘especially in the case of gun manufacturing in Birmingham’ was the

prevalence of irregular demand for guns in Britain. Unlike the United States, where possession of firearms was a necessity amongst frontier farmers, in Britain, it was part of conspicuous consumption of upper class elites of the society. Due to uncertainty of demand, accompanied by need for customization of guns to suit the needs of elite customers, traditional flexible manufacturing continued to persist. These factors also inhibited the manufacturers of guns to invest in expensive capital goods to increase the extent of mechanization.⁷¹

Similarly in Sheffield, even up to c.1860, steel manufacturing was split into two distinct groups, one consisting of large steel makers and the other consisting of older crafts-based workshops producing cutlery. Historical evidence amply demonstrates that small-scale workshops continued to exist, using vertically disintegrated division of functions along with multi-plant operations. Another inherent characteristic of the British manufacturing was that each manufacturing industry existed in clusters at one important location. Existence of cluster of firms in locations like Manchester, Lancashire, Birmingham and Sheffield, producing similar products, also shows how the concentration of specialized, industry-specific skilled craftsmen facilitated the growth of a localized network of different and related manufacturing enterprises, with strong technological linkage in cluster form.⁷²

In Britain, skilled workers not only supplied their own skills in the process of production, they also provided training to apprentices and junior workers. This was a unique process of skill formation at that time, when firms depended on skilled workers to organize production at the shop floor and also generate workforce at a lower cost. The massive process of skill formation did not depend on state support. Since reproduction of skill was associated with particular manufacturing skills, industry-specific skills were available at specific locations. Once an entrepreneur made a choice regarding what to produce, his choice of location of facility of production depended on from where he would be able to hire requisite skills.⁷³ This phenomenon gave birth to regionally concentrated firms, vertically disintegrated along narrow specializations, in a range of manufacturing activities. This led to inter-firm interdependence amongst manufacturing enterprises due to dependence on other firms to supply their necessary inputs and for the sale of their output. These regional clusters of manufacturing firms kept growing not because of the growth of existing firms, but because of the entry of new firms.

These vertically specialized firms became horizontally fragmented or experienced what is described as 'plant disintegration but local integration'.⁷⁴ This unique characteristic of British manufacturing has received expression in several concepts evolved by different scholars. Marshall coined the term '*industrial district*' in his book *Industry and Trade*, which he published in c.1919.⁷⁵ Another scholar, P. Sargent Florence, evolved the term '*industrial swarming*' in 1948.⁷⁶ It is the existence of firms that are interdependent in cluster form that created '*external economies*' for small producers, which made them capable of facing competition from large vertically integrated enterprises based on maximizing '*internal economies*'. This phenomenon has also been described as '*economies of agglomeration*'. Some scholars have also described this form of organization of production as '*flexible specialization*'.⁷⁷

This form of organization of production provided opportunities for entrepreneurs to establish family firms. This was possible because entry level or threshold level of capital required was very small. Due to this reason, families with small and medium levels of wealth could also establish these firms. These conditions made entry quite easy. Perhaps looking at this peculiar characteristic of British enterprises, Alfred Marshall evolved the concept of '*perfect competition*'.⁷⁸ According to Marshall, perfect competition exists when '*entry*' and '*exit*' of firms in the market is free, and each producer is supplying an insignificant proportion of the total supply of the industry. This characteristic of British manufacturing has been described as '*small producer capitalism*' or '*personal capitalism*'.⁷⁹

The integration between ownership and control in small family businesses imposed managerial constraints on the growth of the size of the firm. Due to limited availability of managerial resources, depending upon the size of the family, these firms remained small, single-plant, single-location firms. They derived their strength from external economies, which emerged because these firms were part of cluster of firms. Managerial constraint emerges, in firms, when after attaining a certain size, the firm's further growth can continue only if the family is prepared to delegate decision-making power, responsibility or control to hired managers. During the eighteenth and nineteenth centuries, amongst British business families, there prevailed a general belief that one should avoid hiring of professional managers because they cannot be trusted. Being salaried persons, where they managed the businesses owned by others, it was expected that they would not manage businesses with the same degree of commitment, vigilance and care with which owners of businesses will themselves manage the

enterprises. This belief led to a general acceptance of a managerial principle that enterprises that hire professional managers are committing suicide. This was accepted as a principle because it was expected that these businesses were bound to fail due to 'negligence and profusion'.⁸⁰

This suggests that the prevailing thought amongst the owners of family businesses against hired managers was guided by what is now known to contemporary economists as the '*agency problem*'.⁸¹ This problem arises in professionally managed enterprises where a divorce has emerged between the owners of capital (principals) and the owners of control (agents)—when the agents (professional managers) follow objectives to guide their decisions, which are not necessarily compatible with the objectives of the owners (principals). The objective of the owners of the firm is to maximize profits, whereas behaviour of professional managers is guided by status, power or influence-enhancing objectives, which compromises the objectives of owners of firms.

The acceptance of this stylized fact about professional managers by the British owners of family businesses, kept the size of their businesses small. The economic consequence of this belief was that British manufacturing evolved its structure through a market-mediated '*invisible hand*' rather than through a managerially coordinated '*visible hand*'.⁸² However, this form of organization of firms provided advantages to entrepreneurial business families to retain ownership as well as control of their enterprises. This peculiar characteristic of the British manufacturing firms has been conceptualized by business historians as '*proprietary capitalism*'.⁸³ The distinguishing feature of proprietary capitalism is integration of ownership and control.

Continuity of flexibility in the production process in British manufacturing enterprises, achieved with the help of integrating traditional flexible manufacturing with modern manufacturing techniques, provided a unique advantage to British manufacturers; they now had the opportunity to produce customized products according to the preferences of the consumers, and this remained an important determinant of competitive advantage. In ship building, production of consumer durables, and engineering products, customization was significantly prevalent. Ramsone's of Ipswich, which was known for manufacturing of farm machines and equipment, maintained 700 models in their catalogues. The use of customization rather than standardization of products remained an essential characteristic of British manufacturing until the twentieth century. It remained embedded in British manufacturing, despite the distinct advantage that the Fordist method of production provided to the manufacturing firms of the United

States, which depended on vertical integration of production processes to produce standardized products. This process was quite different from British manufacturing, which practiced vertical disintegration and customization. The Fordist method also produced products on assembly line, using interchangeable parts for mass markets, in large enterprises, employing hierarchy of managers to maximize internal economics of scale. In contrast, in British manufacturing, family businesses were engaged in the production of products in small batches, without the use of assembly line-based production process. Instead they used inter-firm division of functions to maximize external economies. It is interesting to mention that while business historians symbolize Fordism as a paradigm of the American method of organization of production, they do not realize that the British Rolls-Royce, can similarly be described as the epitome of the British manufacturing paradigm, which kept on producing cars manufactured according to the preferences given by their elite customers up until recently.^{84,85}

There is great relevance in studying the process of transformation of traditional flexible manufacturing of Britain into modern manufacturing for the story of Indian manufacturing. In the entire process of transformation, two dates are quite important—the years c.1760 and c.1851. It was the year c.1760 when the process of growth of modern manufacturing began in Britain. The year coincided with the beginning of the geographical expansion of the rule of the East India Company in c.1757, after the Battle of Plassey. This coincidence tells us that when a company of merchants of Britain was consolidating its political power in the Indian sub-continent, at that point in time the British manufacturers were beginning to influence British economy and polity.

The second important date is c.1851, which symbolized the emerging supremacy of the British manufacturers, when they showcased their success story at the Great Exhibition. The consequence of this important historical event on the story of Indian manufacturing was that it coincided with the end of the rule of the East India Company and beginning of the British Raj in c.1857. The end of the rule of the East India Company was a manifestation of the end of mercantilism and the beginning of the influence of British manufacturers on the process of policy making towards the economy of India. Subsequent chapters deal with these two important historical events that altered the story of Indian manufacturing.

NOTES

1. This form of organization of manufacturing has been described variously by scholars; viz. 'protean stage of industrialization' by Hobsbawn (1954); 'industry before industrial revolution' by Tilly and Tilly (1971); 'Proto-industrialization' by Mendels (1972) and 'Proto-factory' by Freudenberger and Redlick (1964).
2. For understanding regarding these diverse forms of manufacturing, which were prevalent in Britain before the Industrial Revolution, see Cippola (1974), Burke (1979), Postan and Rich (1952), Thirsk (1994) and Weber (1927).
3. To understand the impact of socio-economic and technological changes that were experienced by different forms of manufacturing enterprises, see Dobb (1963); Hill (1967) and Cippola (1974).
4. See for this, Wrigley and Schofield (1981).
5. See Wrigley (1988) and Hudson (1996).
6. See Oglivie and Carmen (1996).
7. See Mandeville (1714, 1989) and Hoppit and Wrigley (1994).
8. For this, see Landes (1969), p. 44.
9. See Mendels (1972).
10. In 1954, W. Arthur Lewis, one of the leading development economists, evolved a model that explained how developing economies can use the unlimited supply of labour to achieve economic growth; see Lewis (1954).
11. For details regarding these ideas, see Freudenberger and Redlick (1964) and Landes (1998).
12. For this kind of analysis, see Landes (1998).
13. Pollard (1968)
14. Pollard (1968), p. 46.
15. The concept of *economies of agglomeration* was introduced in economic analysis by Alfred Weber to show how firms, which are located at close proximity to each other in cluster form and have strong technological linkages, get benefits from external economies. Therefore, all kinds of saving in costs, which firms enjoy due to their location at the same place, he described as economies of agglomeration; see Weber (1929).
16. For the complete understanding of the concept of flexible specialization, see Piore and Sabel (1984).
17. To understand the differences between the nature of capital being used in traditional flexible manufacturing and modern manufacturing, see Hicks (1969) and Pollard (1968).
18. For understanding the difference between the Smith–Ricardo and Harrod–Hicks models regarding concept of capital see Hicks (1965) and Fei and Gustav (1989).

19. See for this Smith (1776, 2003).
20. See West (1976).
21. See Pollard (1968), p. 19 and Caton (1985).
22. For understanding the process as to how traditional flexible manufacturing helped in skill formation in Britain, see Seth (2002).
23. To understand how the use of machines influences the learning of workers, see Berg (1980), Braverman (1974, 1989) and Seth (2000, 2002).
24. See Babbage (1835/1971).
25. See Babbage (1835/1971), Chapter 22.
26. See Babbage (1835/1971), p. 212.
27. See Babbage (1835/1971), p. 175.
28. See Rosenberg (2000) and Seth (2002).
29. For the understanding of Babbage's formulation, see Rosenberg (1976).
30. For detailed understanding about Smith's concept of division of labour, see Kindleberger (1976), Caton (1985) and Landes (1986).
31. For understanding Smith's theory of profit, see Smith (1776, 2003), Ch. IX and X.
32. For detail about the 'depredation theory', see Schumpeter (1954), p. 333.
33. For understanding regarding Ricardo's views of machinery and its implications for the process of production, see Ricardo (1863/1882), Chapter 32. See Chayanov (1925/1968).
34. See Chayanov (1925/1968).
35. For knowledge regarding the relationship between the behaviour of pre-industrial household and traditional flexible manufacturing, see Kriedte et al. (1981).
36. For understanding the concept of *labour-consumption balance*.
37. To know how the behaviour of the household of the pre-industrial family economy provided advantage to traditional flexible manufacturing, see Medick (1994), p. 416.
38. For understanding regarding the process of transformation of circulating capital of merchants into fixed capital of modern factories, see Defoe (1928).
39. For the knowledge regarding these different advantages, see Mendels (1982) and Wilson (1994).
40. To have complete understanding regarding the process of transformation from traditional flexible manufacturing into modern manufacturing, as experienced by capital-extensive and capital-intensive manufacturing industries, see Freudenberger and Redlick (1964), p. 379.
41. See Ashton (1926).

42. To know the legislations that were enacted by the British government to control embezzlement of raw materials by the artisans, see Pollard (1968), pp. 46–48.
43. For these facts, see Landes (1994), p. 123.
44. To know about the process of transformation of traditional flexible manufacturing into modern factory form of organization in British manufacturing industries, see Mathias (1959).
45. To know the relationship between mining and farming, in historical perspective, see Thirsk (1994), pp. 72–73.
46. See Burt (1998), p. 104.
47. For understanding of ‘inversion of behaviour’ amongst the members of household production units of traditional flexible manufacturing, see Chayanov (1925/1968), Miller (1969) and Kriedte et al. (1981).
48. See, Landes (1994), p. 124.
49. For the understanding regarding the process of technological change that occurred during this period, see Singer et al. (1958), vol. I and II, Rider (2007), vol. I and II and Horn (2007).
50. See Prasannan Parthasarthy (2011), Ch. IV, in which he has described this process of divergence in detail.
51. For a detailed analysis of this argument, see Lemire (1991, 2004).
52. See Coleman (1973) and Jenkins (1994).
53. See Walton (1989).
54. See Chapman (1965).
55. For further details regarding this strand of thought, see Parthasarthy (2011), Riello and Parthasarthy (2011) and Riello and Roy (eds.) (2009).
56. See Berg (2005).
57. See Berg (2005), pp. 21–46, 85–111.
58. See Seth (1987).
59. Rostow (1957) has described the textile manufacturing industry of Britain as the leading sector of the economy because it provided the initial impetus to several other manufacturing industries. Also, see Rostow (1963).
60. For details regarding the series of inventions that transformed the traditional flexible manufacturing into the modern factory form of organization of production, see Singer et al. (1958) and Ashton (1960).
61. The scholars who believe that there was continuity in the process of transformation for traditional flexible to modern manufacturing, rather than any revolutionary change, see Hobsbawm (1968) and Wilson (1965).
62. The scholars who have accepted c.1760 as the turning point in the growth of output in the manufacturing sector of Britain are Neff (1943) and Ashton (1948).
63. See Landes (1998), p. 43.

64. See Landes (1998), p. 43–44.
65. These ideas are available in Frank (1998).
66. Anti-machine rhetoric is an on-going theme in the working-class movement. Machine breaking amongst Luddites has provided enough material for the historians of the British labour movement, see Berg (1980), pp. 15–17.
67. See Marx (1853), Dutt (1956), p. 103 and Seth (1987), Ch. II.
68. For details regarding these facts, see Raphael (1994), Hoppit and Wrigley (eds.) (1994), vol. II, Part V pp. 196–263.
69. See Berg (1993).
70. See Treblicock (1969) and Behagg (1194).
71. See, Berg (1980), p. 4.
72. See Behagg (1998), p. 6.
73. See Habhakuk (1962), Smith (1967), Treblicock (1969) and Behagg (1998).
74. See Habhakuk (1962), Zeitlin (1995), Lazonick (1990) and Berg (1993).
75. See Lazonick (1991), p. 26.
76. See Marshall (1919).
77. See for details Florence (1948).
78. See Weber (1929).
79. See Marshall (1929).
80. See Piore and Sabel (1984).
81. See for this Smith (1776, 2003).
82. The problems associated with separation between ownership and control has led to the origin of behavioural as well as managerial theories of firms. These theories are discussed in detail in the text books of Micro-Economics and Managerial Economics.
83. To know the distinction between markets coordinated (working of invisible hand of market) and managerially coordinated (visible hand of managerial hierarchies), see Chandler (1962, 1977) and Mc Graw (1988).
84. Term used by Chandler (1962, 1977) for the British form of capitalism, which was based on organization of production, where firms enjoyed integration between ownership and control.
85. To know in detail the history and characteristics of the Rolls-Royce Motor Car company of Britain, see Nocklods (1959), Bird and Hallow (1984) and Pugh (2000).

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Traditional Flexible Manufacturing and the East India Company

As described in the Introduction, the Indian economy experienced the impact of two different forces of globalization, in tandem, around c.1500. One was the entry of Mughals through land route, and the other was the arrival of European trading companies through sea route. Also discussed was the fact that from c.1526 to c.1707 (i.e., until the death of Aurangzeb), it was the centralized authority of the Mughal emperor that determined the economic environment experienced by the Indian sub-continent. The kind of economy that evolved during the Mughal Empire provided necessary and sufficient conditions for the emergence of traditional flexible manufacturing. In due course, a symbiotic relationship emerged between the Mughal Empire and traditional flexible manufacturing. The implications of this symbiotic relationship have been discussed in detail in Chap. 2 of the present study.

After the death of Aurangzeb, centralized authority of Mughal state was fragmented into several regional centres of power, competing with each other to fill the political space vacated by the erosion of authority of the Mughal state. After the Battle of Plassey (c.1757), the East India Company began to fill the vacuum created by the decline of the Mughal Empire in the political space of the Indian sub-continent. The Battle of Plassey was followed by the Battle of Buxar (c.1764), which led to the Treaty of Allahabad between the Mughal Emperor Shah Allam II and the East India Company. Through this treaty, the emperor granted '*diwani right*' (i.e., right to collect land revenue) to the East India Company on Bengal Subah, which, at that time, consisted of territories of present-day Bihar, Bengal and

Orissa. This was the beginning of a process of transformation of a trading company into a territorial empire in the Indian sub-continent.

Subsequent to this historical event, the dictates of the East India Company were enforceable in a vast geographical area, far beyond its earlier trading centres located at Bombay (Mumbai), Calcutta (Kolkata) and Madras (Chennai). The company had its own army and administrative setup, which had developed capability to influence not only the destiny of millions of people living in the Indian sub-continent, but also to influence its economy. The organizational transformation of the East India Company into an agency of the empire became so paramount for the British Crown that it continued to control territories in India, on behalf of the Crown, up to c.1857. Therefore, the company continued to perform the '*Business of empire*'¹ from c.1757 to c.1857; despite the fact that the East India Company ceased to be a trading company in c.1833 (when the British parliament stripped it of its commercial functions).

The transformation of the East India Company into an agency of the British Empire has been variously described by scholars. Some describe it as '*imperium in imperio*',² the '*East India Company state*',³ and some others describe it as '*sovereign merchant*'⁴ or '*corporate state*'.⁵ The government of this trading company was most powerful in Asia; it was the government whose revenues were larger than that of the country from where it had obtained chartered status. This was a peculiar kind of a government, which was owned by a trading company, whose shares were traded daily at the London Stock Exchange.

The East India Company's rule, as long as it lasted, represented the interest of the merchants of England. Until the beginning of the Industrial Revolution, trade was the foundation of the British economy. Therefore, for a considerable period, interests of the company were the same as those of dominant elements of the British society. With the growth of modern manufacturing in England, a new social structure evolved, which facilitated the emergence of a new class of *industrialists*, whose interests were at variance with the interests of landed gentry and traders. The new social structure replaced the ideological dominance of mercantilism with classical political economy. Hence, the period during which the Indian sub-continent experienced the territorial expansion of the East India Company coincided with the period of transformation of British traditional flexible manufacturing into modern manufacturing. This suggests that during this period, the interest of Indian traditional flexible manufacturing

became entangled in the basic conflict between merchants and industrialists of Britain.

In the present chapter, an attempt has been made to understand how the transformation of the East India Company into an agency of the British Empire impacted the economic environment of business in India in general and functioning of traditional flexible manufacturing in particular. This chapter, in fact, deals with how the second force of globalization (i.e., the East India Company) influenced the story of Indian manufacturing. For purposes of our narrative, this chapter is divided into four sections. In Sect. 4.1, I describe the conditions and circumstances that led to the transformation of the East India Company into an agency of the British Empire. In Sect. 4.2, I analyse the impact of the rule of the East India Company on traditional flexible manufacturing in India. In Sect. 4.3, I present the debates regarding the process of de-industrialization that occurred as a consequence of the rule of the company. In Sect. 4.4, I explore the emerging contradictions between the interests of merchants and the new emerging class of industrialists in Britain, which became manifest in the birth of classical political economy, and how new ideology impacted the rule of the East India Company in India.

4.1 THE PROCESS OF TRANSFORMATION OF THE EAST INDIA COMPANY

We have described, in Chap. 2 of the present study, that around c.1500, European economies depended on the imports of spices and luxury manufactured goods produced by the traditional flexible manufacturing of India to satisfy the needs of European nobles and rich gentry. The imports from Asia were financed by exports of bullion to balance the trade. This pattern of trade continued to exist for centuries. The trade in spices and luxury handicrafts was dominated by the local Asian trader, while European merchants enjoyed a subordinate position by performing their operations at the lowest level of the supply chain. The occupation of Constantinople by the Ottoman Empire in c.1453 denied the access to trade in spices and luxury handicrafts to European traders. The use of pepper was necessary for Europeans to make preserved meat edible, making it an essential part of their lives. This necessity compelled the Europeans to find alternative sea routes to get access to spices like cinnamon, nutmegs, pepper, clove and mace.⁶ Also the need to search for gold and silver, which were required to

buy spices, provided preconditions for the beginning of the '*age of discovery*'. These twin needs converted European rulers into '*venture capitalists*' because they began to finance very risky voyages for the discovery of sea routes by European navigators. The competition amongst European nations to reach the source of spices was so intense that it would not be misplaced to view it like the contemporary competition amongst the nations to reach the moon. Encouraged by the king of Spain, Christopher Columbus began his voyage for discovery of India by going west across the Atlantic and instead discovering America, which provided ample supply of gold and silver. The Portuguese sailor Vasco da Gama began his journey southward along the coast of Africa and the Cape of Good Hope and succeeded in reaching Malindi. The popular perception is that here Vasco da Gama met one Indian merchant and ship pilot, Kanji, who guided him to reach Calicut, the 'City of Spices'. Despite the fact that the American and Indian sub-continent were geographically distant from each other, they sustained each other for a considerable period. The gold and silver obtained from America helped Europeans to buy spices and luxury manufactured products from India. It is also not surprising that Columbus referred to the natives of America as Indians.

The Portuguese were the first Europeans to establish direct trade links with the Indian sub-continent, after Vasco da Gama's ship reached Calicut at the Malabar Coast in c.1498. The Portuguese wanted to make Calicut a dedicated port for their trading operations. For this purpose, they waged war with the ruler of Calicut, Zamborin, in c.1502. However, they did not succeed. They were able to negotiate with the ruler of Cochin to construct a port in his kingdom. Subsequently, Portuguese were able to occupy the island of Goa from the Sultan of Bizapur in c.1510 under the command of Alfonso de Albuquerque. Since then, Goa remained the Portuguese maritime capital in the Indian sub-continent until it was made an integral part of India. After establishing their foothold in Goa, Portuguese also developed several fortified trading settlements in Hubli and Chittagaon in Bengal. The total maritime empire of Portuguese in the Indian sub-continent was known as '*Estado da India*'. The arrival of Portuguese in India transformed the nature of trade at the trading centres where Portuguese started conducting business. It led to the demise of free trade because with the help of their superior naval power, the Portuguese were able to monopolize trade.⁷ This was challenged by the Dutch company known as Vereenigde Oost Indische Companie. This company was formed in

c.1602. The Dutch company established its trading posts in Muslipatnam, Tegepatnam, Pulicut, Nagapatnam and at Surat.⁸

The first serious attempt made by a French trading company to enter the Indian market is dated c.1664, when Colbert formed the Companies des Indes Orientales. The French company started its trading operations from its trading base at Machilipatnam in c.1667. Soon it had to abandon Machilipatnam, where its forces were defeated by the forces of the Dutch company. However, one of the agents of the French company, Bellanger de Lespinay, was able to get a grant of a small village from the Sultan of Bijapur in c.1673. This village, Pondicherry, now called Puducherry, later became the main centre of trading of the French trading company. Subsequently, the French company also started its operations at Chandernagore in Bengal.⁹

India's poignant contact with Britain began when Queen Elizabeth I signed the Royal Charter that granted monopoly of trade with India to the East India Company on New Year's Eve (December 31) of c.1600. The company began its operations from Surat in c.1608. In the year c.1618, the East India Company was able to negotiate its first trade treaty with Mughal emperor Jahangir.¹⁰ After establishing its roots in Surat, it opened another factory (Office of the Factor) at Madras (now known as Chennai) in c.1640 and constructed here its first fort, St. George.^{11,12} The East India Company also acquired territorial rights over the territory that grew into what came to be known as Bombay (Mumbai) on lease from the British King Charles II in c.1668. Charles II had received this territory as dowry from the Portuguese, when he married Portuguese Princess Kathrine of Aragon in c.1662. This area consisted of seven islands: Wadala, Colaba, Mazgaon, Old Women's Island, Mahim, Parel and Mutunga-sion. At that point in time, this area was inhabited by tribes like Koli, Bhandari, Agri, Prabhu and Pachkalashis, who used to speak dialects of Maratha or Konkani languages. Bombay had an excellent harbour and natural isolation, which protected it from land attacks. The East India Company also received permission from the Mughal emperor Aurangzeb to open a new factory in villages, Kolikata, Govindpore and Sutanati, located on the banks of river Hugli in c.1690. It is here that a new settlement of the company grew with the name Calcutta (now known as Kolkata). The East India Company constructed here a fortified trading centre in Fort William.¹³ This place subsequently became the capital of the empire created by the East India Company.

There existed serious conflict of interest amongst different European trading companies because each one of them wanted to corner the largest

share of market in the trade with India. So long as the Mughal Empire was strong, their conflicts remained confined to coastal regions. These companies were operating in India through patronage and goodwill of the Mughal emperors. Therefore, these companies remained primarily trading companies until the death of Aurangzeb in c.1707. After his death, the Mughal Empire began to disintegrate into several autonomous regions as a consequence of factionalism, rebellion and threat from across the borders. The emerging political uncertainty provided preconditions to European trading companies to mobilize military and naval power at unprecedented levels. The defense mobilization by these companies was also emerging as a consequence of globalization of conflict amongst European countries, especially between France and Britain.¹⁴ The increased militarization of European countries and globalization of their conflicts were laying the foundation of an epochal transition to a new world order, which was termed by historians and political analysts as '*imperialism*'.¹⁵

The weakening of the centralized authority of the Mughal state after the death of Aurangzeb created opportunities for some of the provincial rulers to carve out independent regional bases of power. Murshid Kuli Khan, the governor of Bengal Subah, established his own autonomous rule in Bengal, and shifted its capital from Dacca to a town named after his own name, Murshidabad. Similarly, Asaf Jan, Nizam-ul-Mulk, evolved a power base in southern India with its capital at Hyderabad. Another provincial ruler, Sadat Khan (Burhan-ul-Mulk), carved out an autonomous regional power in Awadh with its capital at Lucknow.

Some of the non-Muslim warrior groups also established their regional power bases in different parts of the Indian sub-continent. Marathas formed an empire in western India, Sikhs in Punjab and Jammu and Kashmir, Rajputs in Rajasthan, Jats in territories around Delhi, and Hyder Ali and Tipu Sultan in Mysore. Amongst all these political entities, Marathas were emerging as strong contenders to replace the centralized authority of the Mughal state. However, after their defeat in the third Battle of Panipat, the Maratha Empire was segmented into several smaller political entities. Bhonsales were ruling from Poona, Holkars were rulers at Indore, Scindias at Gwalior, and Gaikwards in Baroda. However, after the death of the Bhonsale King Shahu in 1749, his prime minister, Balaji Bajirao Peshwa, took control of his territories and established the Peshwa Dynasty.

For a considerable period of time, historians believed that the fragmentation of polity, economy and legal environment, after the death of Aurangzeb, led to systematic decline in traditional flexible manufacturing

in India.¹⁶ However, several studies conducted by scholars on specific regions amply suggest that in certain regions, the preconditions that are necessary for the continuity of traditional flexible manufacturing continued to exist, arresting its decline. These regional studies show that the decline of Mughal authority and emergence of autonomous successor states led to a variety of regional experiences with varying consequences for the continuity of traditional flexible manufacturing.¹⁷

The emergence of autonomous regional powers in Awadh, Hyderabad, Maharashtra, Punjab, Rajasthan and Mysore created certain objective conditions that facilitated the continuity of the traditional flexible manufacturing, chief being the consolidation of power of merchants in these new autonomous states. These autonomous centres of power created new elites through the process of '*gentrification*' of society.¹⁸ The revenue needs of these successor states also increased the importance of revenue farmers. These different varieties of elites described as '*portfolio-capitalists*'¹⁹ sustained themselves by performing several important economic functions in the society. Their activities had given birth to what is now known as '*tributary commercialism*'.²⁰ These elites provided supply-side as well as demand-side support to arts and crafts. It was this support that provided sustenance to traditional flexible manufacturing.

Despite the fact that the fragmentation of the polity did not completely wipe out the existence of traditional flexible manufacturing, it did increase the intensity of conflict amongst regional rulers. These conflicts were not just confined to war for territorial occupation, but also for settling successions amongst rival claimants of power. In all these conflicts, demand for the might of the forces maintained by different European trading companies increased significantly. Rival political entities started *outsourcing* the military power of rival European trading companies to settle their conflicts. The demand for military power of the companies provided them not only revenue to maintain larger armies at the cost of local rulers, but also opportunity to increase their sphere of influence. The possibilities to maintain large armies with little costs provided added advantage to the European trading companies to expand their military power, which had become a necessity as a consequence of emerging globalization of conflict amongst European states.

The process of outsourcing of the armies of different European companies began with the death of the ruler of Hyderabad, Nizam-ul-Mulk, in c.1748, which led to a war of succession amongst his sons. A similar war of succession occurred after the death of Nawab of Arcot. In both the wars of

succession, French and British trading companies' forces supported opposing claimants. When successions were finally settled after the wars, it so happened that the French-company-supported prince became the ruler of Hyderabad and the British-company-backed Prince Muhammad Ali Wallajah became the ruler of Arcot.²¹ These two incidents increased the participation of the forces of European trading companies in the conflicts amongst local rulers.²²

In the case of Bengal, there emerged a direct confrontation between the Nawab of Bengal and the British East India Company. In c.1717, the East India Company received a *firman* (permission) from the Mughal emperor, Shaharyar, to carry on free trade in Bengal Subah. The East India Company, ignoring the true intent of the *firman*, started issuing *dastaks* (entry passes) with financial consideration to the officials of the East India Company for their private trade, as well as to other European and local traders. This practice substantially reduced the revenue of the Nawab of Bengal.²³ The agitated Nawab Siraj-ud-Daulah threw out the contingent of the East India Company from Bengal. However, after receiving enforcement from Madras under the command of Robert Clive, the army of the Nawab of Bengal fought a battle at a place called Plassey in c.1757. Clive won the Battle of Plassey by entering into a secret deal with the commander of the army of the Nawab, Mir Zaffar, who deserted the army of the Nawab in the battlefield. The Battle of Plassey was the most successful 'business deal' of the East India Company because it won the war by entering into a deal with the commander of the forces of the Nawab. It resulted in a massive transfer of wealth gotten from the systematic plunder of Bengal.²⁴

Nawab of Bengal, along with the forces of Mughal Emperor Shah Allam, tried to recapture the lost territories of Bengal from the East India Company. The forces of the East India Company and the combined forces of the Nawab of Bengal and Mughal emperor faced each other in the Battle of Buxar c.1764, which ended with the Treaty of Allahabad between the East India Company and the Mughal Emperor Shah Allam II. This treaty granted *diwani rights* (rights to collect taxes) to the East India Company. This transformed the company into the ruler of Bengal.²⁵ This transformation converted the 'John Company' into a Frankenstein known as 'Company Bahadur'.^{26,27} After integrating monopoly of trade with monopoly on political power in Bengal, the East India Company obtained unrestricted access to the best products produced by the traditional flexible manufacturing of Bengal. After controlling the centres of traditional flexible manufacturing in Bengal, the East India Company followed the same

strategy to consolidate its political control over other centres of traditional flexible manufacturing located in other parts of the Indian sub-continent. The process began with Bihar (c.1765), followed by Eastern Uttar Pradesh (c.1775), Malabar Coast and Mysore (c.1792–1801), and Surat and Ahmedabad (c.1800–1803). In new circumstances, the nature of interaction between the East India Company and the Indian economy underwent qualitative change.

In order to understand the consequences of the symbiotic relationship that evolved between the East India Company and traditional flexible manufacturing, after the company became the ruler of the Indian economy, it is essential to know its organizational structure; to understand its objectives (mission), its work culture and nature of its operations.

4.2 CONSEQUENCES OF THE RULE OF THE EAST INDIA COMPANY ON TRADITIONAL FLEXIBLE MANUFACTURING

The transformation of the East India Company into an agency of the British Empire resulted in restructuring of the relationship between the company and the economy of the Indian sub-continent. The new relationship restructured several macro- and micro-level processes that had significant impact on the traditional flexible manufacturing of India. The most important macro-level change was that the East India Company began to use substantial parts of income that it earned from land revenue on financing its purchases of Indian merchandise for exports. It began to buy Indian silk, muslin, cotton textiles, spices and other products manufactured by the Indian traditional flexible manufacturing, without making payments in bullion.

The new arrangement reversed the historical process in which Western countries, including Britain, had nothing to offer apart from bullion to buy manufactured items. Once the tax revenue of the company increased substantially, its directors decided that the revenue would be used to finance the purchases of merchandise in India for export, and whatever surplus remained would be used to purchase tea at Canton in China. The new arrangement helped the company to finance its purchases in India for exports without any corresponding flow of bullion or merchandise. This form of trading arrangement has been described as '*unrequited trade*'.²⁸ The new trading arrangement brought an end to the advantage that the Indian sub-continent had enjoyed since the days of the Roman Empire—to

receive bullion in exchange for its products. The economic consequences of this arrangement were discussed by Burke who was the author of the Ninth Report of the Select Committee, which appeared in June 25, 1783. He called the new arrangement a '*drain of wealth*'²⁹ from India to Britain. According to Burke, the drain of wealth from India took place (i) through the use of land revenue to buy Indian manufactured items for exports, which was described by the East India Company as '*investments*' and (ii) £ 4,00,000 was paid annually to the British Crown, which was described by Burke as '*tribute*'. While describing the drain of wealth, Burke wrote 'Numerous fleets of large ships, loaded with most valuable commodities of the east annually arriving in England gave rise to an opinion of happy condition and growing opulence of a country whose surplus production occupied so vast a space in commercial world. This export, from India, seemed to imply reciprocal supply, by which the trading capital employed in the production was continuously strengthened and enlarged. But a payment of tribute, and not a beneficial commerce to that country, wore this specious and divulsive appearance'.^{30,31,32}

The understandings of Burke regarding the magnitude of drain of wealth from India were based on the calculations made by Philip Francis. Similar opinions were also expressed by William Bolts, Alexander Dow and Harry Verelst.³³ The idea of '*drain of wealth*' was also highlighted by nationalist historians like R.C. Dutt and Dadabhai Naroji who used it to explain the deteriorating state of the Indian economy.³⁴ The drain of wealth also became an important argument in the writings of Marxist historians in India to explain the economic consequences of British imperialism. A noted Marxian historian, Irfan Habib, also calculated the extent of drain of wealth from India to Britain. According to his estimates, the amount of drain was more than two million pounds during c.1789–1790 and more than £ 4.7million during the years c.1790–1801. This amount, according to Habib, was 9 per cent of the GNP of India at that time.³⁵

It is quite revealing that two decades after the Battle of Plassey (c.1757), in c.1778, a new painting was installed on the ceiling of the revenue committee room, where meetings regarding the changing fortunes of the East India Company were held. The painting was painted by the artist Spiridione Roma and was entitled *The East Offering Her Riches to Britannia*. The painting shows three women, each of them representing a different country. The fair woman is Britannia, who is looking down upon the other two women. A kneeling black woman represents India, who is offering

rubies and pearls to Britannia. The painting clearly illustrates how the wealth of the East was being drained into Britain.³⁶

In c.1818, five years after the trading monopoly of the East India Company had come to an end (c.1813), a marble relief was made in the memory of an expatriate British merchant of Calcutta, named Alexander Colvin, by a sculptor Richard Westmacott. In the sculpture, India is depicted by a seated woman, her body shown without any ornaments and her hands resting on an empty pot. The relief clearly shows that by this time the material wealth of the country had been taken away to Britain.³⁷ This also shows how the transformation of the Indian economy had captured the imagination of not only scholars but also artists.

Historically, European economies paid bullion in exchange for Indian manufactured products. Since the Indian economy always suffered from shortages of precious metals, the bullion earned from trade with Europeans performed an important function in the economy of the Indian sub-continent. It provided metal for minting coins, which were necessary for the smooth functioning of the economy of the sub-continent. The East India Company created shortages of precious metals by taking over the treasuries of local rulers and by financing trade from India by land revenue collected from the Indian sub-continent. These activities of the company resulted in shortages of currency, which caused virtual stagnation of business activities in India.³⁴ The disappearance of bullion in exchange for merchandise reduced the gains from trade, as expressed by trade theorists in terms of income and employment. A group of merchants of Calcutta submitted a petition to the Calcutta council, complaining how the lack of currency had brought virtually all businesses to a halt.³⁸

Before the Battle of Plassey, company officials were performing trading activities through their dependence on local merchants for purchasing product produced by traditional flexible manufacturing. For this purpose, local merchants had organized networks of artisanal household workshops, based on the *Dadni* system, to procure products for selling in the markets. These merchants facilitated the company officials in procuring products produced by traditional flexible manufacturing for exports. The trading houses of Indian merchants, like the House of Jagat Seth and Umichand, were far bigger in size of operations. The dependence on local merchants was far greater amongst the British employees of the East India Company, who were involved in private trade in India. These company employees were always in need of credit. The dependence on local merchants for credit needs had increased the incidence of indebtedness amongst the officials of

the company to the local merchants.³⁶ Moreover, the East India Company also had to share trading space with other European trading companies. The phenomenon is described as '*mutual mercantilism*'.

The transformation of the East India Company into Company Bahadur entirely altered the circumstances. Through its newly acquired political power, it attempted to marginalize the role of Indian merchants. To make Indian merchants ineffective in the markets, the company used market as well as non-market strategies to evolve its own monopoly over trade in the products produced by traditional flexible manufacturing.

The organizational structure, which had provided competitive advantage to Indian manufacturing to become one of the largest suppliers of manufactured goods, had emerged as a consequence of nexus between merchants and craftsmen, and has been described here as traditional flexible manufacturing. So long as this nexus between merchants and craftsmen continued to exist, Indian manufacturing had the capability to produce abundant quantities of quality handicrafts to satisfy the needs of the market. The East India Company deliberately created conditions to break this nexus. The moment this nexus was broken, it led to the beginning of de-industrialization. To begin with, the company declared its direct monopoly of trade in certain products. In these products, company became the sole buyer or monopsonist. The process of monopolization of trade, using its newly earned political power, began in c.1750 when Mir Zafar gave away monopoly of trade in saltpetre to the East India Company. This was followed by monopolizing of trade in salt and opium in c.1793. The appropriation of monopoly rights in trading of these products eliminated the role of Indian merchants in the trading of these commodities. In new circumstances, when the company enjoyed twin monopolies (i.e., monopoly of trade and monopoly of political power in the market), it also developed capacity to manipulate prices in these products. Once the East India Company gained political dominance in the Indian sub-continent, the native merchants had to pay duties at various internal checkpoints, whereas British merchants and their agents were exempted from such duties.

The East India Company also minimized the role of Indian merchants by reducing their role in procurement of merchandise. For this purpose, the company developed independent channels to procure goods produced by Indian craftsmen directly through *gomashtras* employed by the company. To facilitate the process of procurement of Indian manufactured items like textiles, the company divided markets into *aurangs*, consisting of centres of traditional flexible manufacturing of certain specific products. Each

aurang was working under the supervision of chief *gomashtas*, who in turn employed *gomashtas* and *paikars* for the purposes of procurement of products. These *gomashtas* replaced the role of Indian merchants in each market.

After the occupation of Awadh, to exploit its political power for commercial gains, the company employed 500 *gomashtas* in Awadh alone. European traders who were close to top army officers or administrators of the company like ‘*residents*’ took maximum advantage of the new circumstances. Under the patronage of Resident of Awadh Mr. Nathaniel Middleton, Job Scott, a free merchant, was able to establish a commercial empire of cotton piece goods in *aurang* at Tanda. Here he exercised absolute power, which he used to appropriate output of weavers of the area at lower prices without facing any competition. Another trader who gained from the patronage of the Resident of Awadh was John Hyde.³⁹ Such nexuses between local officials of the East India Company and British traders existed in all the markets in India, where the East India Company assumed political power. Such nexus between local officials of the army and administration and British traders emerged in the most important centres of production of traditional flexible manufacturing.

Finally, to deal a final blow to the role of Indian merchants in the production and distribution of products produced by Indian traditional flexible manufacturing, the East India Company banned the *Dadni* system in c.1770, which was the basis of the emergence of traditional flexible manufacturing as a form of organization of production. It is by using all these aforementioned strategies that the emergence of the East India Company as a monopolist of the political power eliminated the symbiotic relationship with local merchants, which was based on mutual mercantilism.⁴⁰

During the same period, the British manufacturers developed competitive advantage over the products produced by the traditional flexible manufacturing of the Indian sub-continent. The increasing importance of British manufacturers, and their emerging influence on the political economy of Britain, forced the East India Company to share trading space with British manufacturers. It allowed the entry of free merchants who acted as agents of the British manufacturing companies to sell their products in the Indian markets. These agents formed agency houses, which were generally partnership companies, working under the patronage of the officials of the East India Company. Some of these companies were formed by the relatives of the officials of the company. Slowly, these companies began to function as banks and became important channels to facilitate remittance sent by British expatriate workers to their relatives in Britain.⁴¹ Most of these

agency houses operated from the presidency towns, because these agency houses had evolved a symbiotic relationship with the British citizens working in India.

The first agency house, which was founded in Bombay Presidency, was Forbes Company in c.1767, followed by Alexandra & Company in Calcutta Presidency in c.1767 and Parry and Company in Madras Presidency in c.1789. Apart from Alexandra & Company, which also established the Bank of Hindustan in Calcutta in c.1770, Calcutta Presidency had the largest number of agency houses, including Ferguson & Company, Colive & Company, and Pickard & Company. The largest agency house of Calcutta was Palmer & Company, which was established in c.1810. Similarly, Bombay Presidency also had several other agency houses like Bruce Fawcett & Company established in c.1790, Mackintosh & Company in c.1805, Richi Stewart & Company in c.1810 and Leaking & Company in c.1810.^{42,43}

The East India Company not only marginalized the role of local merchants in the process of organization of production and distribution of handicrafts, it also imposed several kinds of restrictions on Indian craftsmen. These restrictions were imposed to reduce their bargaining power, to procure their products on a preferential basis and at substantially lower prices. The company prevented weavers from weaving cloth for other merchants, either local or foreign, until they had produced enough to meet the requirements of the company. The East India Company introduced indenture (*khatbandi*) regulation in (c.1770–1786), which turned weavers into bonded labour, because this regulation helped in binding craftsmen exclusively to the agent of the company. Through this regulation, the company denied artisans the right to sell their products in the open market; it also reduced their bargaining power against the agents of the company. What began as a coercion or bullying of Indian craftsmen by the company agents, after the Battle of Plassey, became official with the *khatbandi* regulations. These regulations affected the life of *tanti* (weavers), *nunias* (salpetre makers) *mulungi* (salt workers), and *nacauds* (silk reelers).⁴⁴

Using its political power, the East India Company also forced craftsmen to work in the production centres organized by the company. In these centres, their wages were quite low and they were forced to work for longer hours. The working conditions in these centres were also much lower than the Mughal *karkhanas*, which were owned by the Mughal emperors, royal family members and *subedars* of different provinces.⁴⁵ The company

organized centres of production of Indian manufacturing goods in each of the important centres to meet where traditional flexible manufacturing was clustered. For example, in Madras Presidency, for its requirement of muslin, it set up a company factory near Madras, and for calicoes, it evolved centres of production in Cuddalore-Inegram and Madapollam.⁴⁶ The company also imposed *motarfa* tax on weavers. Although this tax was subsequently abolished in Bengal Presidency in c.1793 and in Bombay Presidency in c.1844, it continued to be in operation in Madras Presidency. From this tax, the company earned 1 million rupees in c.1850. According to the estimates of Dodwell, due to the imposition of *motarfa* tax during the period c.1800–1875, employment in the manufacturing sector declined by almost 50 per cent.⁴⁷

Bolts, who has provided a detailed account of the company excesses on weavers, remarks that the company used all possible methods of exploitation to exploit weavers ‘such as fines, imprisonment, flogging and forcing bonds on them’.⁴⁸ The impact of the tyranny of the East India Company was so devastating for the weavers and silk winders of Dacca that they began the practice of self-mutilation by cutting their thumbs to avoid exploitation by the officials of the company. This practice slowly eclipsed the whole industry, which was known to produce the best quality muslin or *malmal khas*.⁴⁹

Manufacturing of silk in the Indian sub-continent was organized into three separate activities: (i) cocoon rearing and harvesting (i.e., sericulture), (ii) spinning or reeling of silk yarn (i.e., making of raw silks), and (iii) weaving of silk. Sericulture was a highly localized activity due to its dependence on mulberry trees for rearing of cocoons. Since cocoons also need processing within a period of four to five days after harvest, the spinning and reeling of silk was also localized near the places where cocoons were harvested. Due to this reason, weaving of silk was widespread in all the corners of the Indian sub-continent, from Bengal in the East to Surat in the west and Coromandel Coast in the South.

The interests of the East India Company were related to raw silk only, which it was exporting to provide inputs to British manufacturers. However, the Bengal raw silk was of poor quality because it was produced by *nacauds* using traditional technology of reeling. In order to protect the interest of thousands of workers ‘working under British throwsters, who totally depended on Bengal raw-silk’,⁵⁰ the first thing that the East India Company did, as soon as it assumed political power in Bengal, was to improve the quality of raw silk.

The East India Company introduced 'filature silk' in Bengal around c.1790; it had borrowed this technique from the Italian silk industry. This method used the mechanism of double crossing and twisting silk thread, which gave the silk yarn roundness and even quality of thickness. By c.1823, the volume of silk yarn wound on filature machines had replaced the silk yarn wound by traditional *nacauds*. The filature silk became quite popular in areas like Rampur, Jangipur, Kumarhatti, Malda, Ganutia and Purlia.⁴⁶ The filature silk machine required investment in fixed assets. The volume of fixed investment required for the adoption of new technology was beyond the means of craftsmen. These machines were generally owned by the East India Company or by its officials who were engaged in private trade. In these factories, *nacauds* were employed as wage workers. The introduction of the filature method of silk reeling led to the decline of the traditional silk reeling industry.⁵¹ However, it should be noted here that while the East India Company introduced new technology for reeling of silk, it did not introduce new techniques, which were emerging in Europe, for the weaving of silk.

With the increasing monopolistic behaviour of the East India Company, the contracts between weavers and the company agents were redesigned. Traditional flexible manufacturing largely depended on the contract between weavers and merchants. The nature of contract determined the nature of the organization of production. During Mughal rule, weavers enjoyed freedom to cancel their contract with the merchants by selling their cloth to any other merchant and returning the advance taken from the merchants. Weavers enjoyed this freedom because there existed competition amongst merchants (i.e., buyers). As the company was able to monopolize trade in textiles, it emerged as the single and largest buyer of textiles.

The new circumstances provided immense bargaining power to the officials of the company, who also introduced new a format of contract. In the new format, the company took away the power to break the contract from the craftsman and gave itself the right to cancel the contract. It also abolished the practice that forced the buyers to buy the entire cloth from the weavers for which the contract was signed. The company also assumed the right to reject the cloth that did not meet the quality standards. These revisions in the contract marginalized the bargaining power of weavers. The company agents also started misusing the provisions laid down in the new contracts. One of the most misused provisions was the rejection of large proportions of cloth that the weavers were weaving for the company against

quality standard. These rejected pieces of cloth were again procured by the company agent at throwaway prices.⁵²

As a result of these strategies, the East India Company was able to break the nexus between local merchants and craftsmen's household workshops, which was the precondition for the existence of traditional flexible manufacturing. The nexus survived the decline of the Mughal Empire in some of the successor states of the Mughal Empire. However, its existence was made difficult by the emerging political power of the East India Company. It is interesting to mention that the *Dadni* system ended in c.1770, when it was discontinued by the orders of the East India Company. This was prompted by the conflict between Indian merchants and the agents of the company regarding advances that were to be paid to Indian merchants. The conflict became so intense that the two big merchants of Bengal, Shobha Ram Basak and Ramkrishan, refused to take business on behalf of the East India Company.⁵³

The emerging disassociation of merchants with the organization of production of handicrafts led to a disconnect between craftsmen and mass markets. This facilitated the slow and systematic decline of traditional flexible manufacturing. Therefore, it would not be inappropriate to state that traditional flexible manufacturing experienced a decline with the territorial occupation of the Indian sub-continent by the East India Company. Decline in traditional flexible manufacturing does not *pari passu* mean decline of handicrafts. Since primitive flexible manufacturing is just one of the methods by which handicrafts can be supplied to products in mass markets, crafts-based methods of production can be embedded into several kinds of organizational structures. This suggests that after the process of territorial expansion of the East India Company, craftsmen lost the support of merchants who had been organizing them into networks to sell their products in the mass markets. The disengagement of merchants with crafts-based manufacturing exposed craftsmen to several kind of risks and uncertainties.

After the emerging political power of the East India Company, traditional flexible manufacturing was reorganized in a new relationship between craftsmen and the agents of the company. In the new relationship, craftsmen largely became wage workers. This major shift in the relationship between company agents and artisans has been described as a shift 'from market determined to coercion based transaction'.⁵⁴ Some historians justify the use of coercion by the agents of the East India Company as a necessary evil, to enforce contracts with craftsmen in the absence of third-party

institutions, which would have helped in enforcing contracts. The process of decline of traditional flexible manufacturing and emerging political power of the company reduced the bargaining power of the craftsmen. Similar to what exists between ‘*parasite and host*’ where parasite uses the host for its own sustenance’,^{55,56}

It is worth mentioning here that while the East India Company broke the nexus between craftsmen and merchants in the manufacturing sector, it developed a strong symbiotic relationship with Indian merchants who were engaged in the trading of commodities. This was necessary, because by this time, the Indian economy had been transformed from a manufacturing economy to a supplier of raw materials. India had slowly become a net exporter of primary products like cotton, after the Civil War in America, and exports of jute after the Crimean War. India has also emerged as an important exporter of opium. In order to export these commodities, the East India Company and agency houses developed strong ties with Indian merchants. These merchants helped them to maintain a supply chain of these commodities from farmer onward up to shipping of these commodities to Britain.

The decline in traditional flexible manufacturing, along with the fall of royalty and nobility with the territorial expansion of the East India Company, resulted in large-scale migration of Indian merchants to Bombay, Calcutta and Madras. Bombay became an important destination for *Gujaratis*, *Parsees* and *Banias* because it provided them protection from Maratha invasions. It provided them the same public good, which was provided by the Mughal Empire during its best period—the protection of private property and rules of law. This shift also transformed them from producers of handicrafts to traders in commodities. These merchants earned a substantial amount of wealth by selling cotton and opium. They subsequently became entrepreneurs and established modern cotton textile mills in Bombay.

The merchants from different southern locations converged at Madras, while *Marwaries* migrated to Calcutta.⁵² This process of migration of merchants from old port cities to presidency towns led to a decline of trade in old ports like Surat, Calicut and Coromandel Coast.⁵⁷ These old port cities experienced isolation from their sources of supply because political instability disturbed the entire supply chain and weakened the existing networks evolved by merchants.

The period during which the Indian sub-continent was experiencing territorial expansion of the East India Company coincided, in Britain, with the process of transformation of its traditional flexible manufacturing to

modern manufacturing (which Marxists describe as a change in the mode of production discussed in Chap. 3). The emergence of new techniques accompanied by organization of production into modern factories created conditions where machine-made goods could compete with Indian handi-crafts. In fact, it gave rise to unequal competition between ‘*machine-facture*’ of Britain and ‘*manufacture*’ of India. The use of machines made it impossible for cheap Indian workers to compete with Lancashire’s mules and throstles. Consequently, so many centres of traditional flexible manufacturing just disappeared. The advantage achieved by the British manufacturing industries facilitated a reverse flow of textiles and other manufactured items to Indian markets, which provided preconditions for the emergence of de-industrialization or re-ruralization. The new transformation reduced the significance of the monopoly of trade with India given to the East India Company, which the British government ended in c.1813, and in c.1833, all trading activities of the East India Company were terminated.

From this analysis, it is quite apparent that the end of traditional manufacturing came along with the territorial expansion of the East India Company. This happened because the company used its political power to marginalize the role of Indian merchants, which broke the nexus between merchants and craftsmen. However, it seems that the speed of the process of de-industrialization increased after c.1813 with the end of monopoly of trade given to the East India Company. For the sake of simplicity, we can take c.1813 as a crucial year when British manufacturers began to influence government policies.

4.3 DEBATE ON DE-INDUSTRIALIZATION

As described in Chap. 2, until c.1750, the Indian sub-continent was producing about 25 per cent of the manufacturing output of the world. This proportion declined significantly by c.1900s when its share was just 5 per cent. This significant decline in the output of manufacturing sector of India is described as de-industrialization. The fall in the output of the manufacturing sector also resulted in decline in the contribution of the manufacturing sector to the national income as well as employment. The notion that the Indian sub-continent experienced de-industrialization is an important event in the story of Indian manufacturing.

The episode also symbolizes an important period in the story of Indian manufacturing when Indian skilled craftsmen experienced mass de-skilling and were forced to work on land. The skills, which they had mastered over

centuries to make the best manufactured products of the world, suddenly became irrelevant because they went back to work in the primary sector. This process was contrary to the experience of British manufacturing where traditional manufacturing was replaced by modern manufacturing. In the case of India, traditional manufacturing declined without being replaced by modern manufacturing. Therefore, in the context of the story of Indian manufacturing, de-industrialization also means a movement of the economy one stage backward rather than one stage forward. The decline in traditional flexible manufacturing was not just a loss in the income and employment in the manufacturing sector; it was a loss of potential source of transformation of traditional manufacturing into modern manufacturing. If the process of de-industrialization had occurred due to replacement of traditional flexible manufacturing by modern manufacturing, as had happened in the case of Britain, it would not have been cause for concern. This happened in India because the decline in manufacturing was not accompanied by the birth of modern manufacturing. On the contrary, it was believed that the birth of modern manufacturing was deliberately postponed or arrested.

Due to the aforementioned reasons, the episode of de-industrialization assumes greater importance in the biography of Indian manufacturing. This event has occupied an important place in the writings of nationalist as well as Marxian economists and historians. Nationalist scholars evoked it as the negative consequence of foreign rule. Therefore, achieving independence from foreign rulers was seen as an important solution to the problem. Marxian scholars, on the other hand, used this episode to paint a darker picture of capitalism, because de-industrialization in India emerged as a consequence of imperialism. Marxians believed that imperialism is a higher stage of capitalism.

The gravity of the process of de-industrialization experienced by the manufacturing sector of the Indian sub-continent was revealed for the first time by William Bentinck who was governor general of India during the period c.1833–1835. He mentioned, in great detail, the consequences of the imported mill cloth of British textile mills on the decline of Indian cotton textile manufacturing. His views were quoted by Karl Marx in his book when he mentions ‘the bones of cotton-weavers are bleaching the plains of India’.⁵⁸ He mentions again the process of de-industrialization experienced by the manufacturing sector of the Indian sub-continent in his article dated June 25, 1853 entitled ‘British Rule in India’, which appeared in the *New York Daily Tribune*. In his words, ‘It was the British intruder

who broke up the Indian handloom and destroyed the spinning wheel. England began with driving the Indian cotton from the European market, it then introduced twist into Hindustan and in the end inundated the very mother country of cotton with cotton'. He further adds, 'from c.1818 to c.1836, the exports of twist from Great Britain to India rose in proportion to 1: 5200' and this resulted in 'British steam and science uprooted, over the whole surface of the Hindoostan, the union between agriculture and manufacturing'.⁵⁹

Marx, though, mentions the process of de-industrialization, but accepts this event as a necessary jolt that the Indian society and economy needed. This is because he viewed de-industrialization as an important push towards a social revolution. Marx believed that the Indian economy was operating under the conditions he mentioned while describing the Asiatic mode of production; these conditions had made the economy self-sustained but stagnant, a form of low-level equilibrium trap. He writes that in India 'family communities were based on domestic industry in peculiar combination of hand weaving, handspinning and hand tilling agriculture, which gave them self-supporting power . . . English interference dissolved these semi-barbarian, semi-civilized communities, by blowing their economical basis, and thus produced the greatest and, to speak the truth, the only social revolution ever heard of in Asia'. Thus he glorified the historical role of de-industrialization—'If not, whatever may have been the crimes of England, she was the unconscious tool of history in bringing about a revolution, and concludes the article, by saying "whatever bitterness the spectacle of the crumbling of an ancient world may have for our personal feelings, we have a right, in point of history to exclaim".'⁶⁰

Unlike Marx, who viewed de-industrialization as a big push to a stagnant society, it became quite an important issue in the narrative of nationalist scholars, who used it as an important example of the failure of the British rule. According to them, British manufacturing interest forced the British government to expose the traditional flexible manufacturing of India, without providing any protection against the products of modern manufacturing of Britain. It is the lack of protection to native manufacturing that had caused de-industrialization. The nationalist scholars did not accept the argument that it was the improvement in technology, which British manufacturing has achieved, that provided it competitive advantage over handicraft-based methods of production used by Indian traditional flexible manufacturing.

The nationalist scholars argued that de-industrialization emerged as a consequence of lack of protection given to India manufacturing. The argument implicitly assumes that, if at that point in time, India was ruled by a national government that had provided protection to Indian manufacturing, de-industrialization would not have occurred. This line of thinking was necessary to add fuel to the desire of achieving political independence. It is for this reason that the episode of de-industrialization appears again and again in the writings of nationalist scholars like Dadabhai Naroji in c.1901,⁶¹ and R.C. Dutt in 1906.⁶² In the writing of Gandhi, it is almost a running theme. Finally, it appeared in the book written by Nehru.⁶³ In fact, one of the casualties of the process of de-industrialization, *charkha* (the spinning wheel), became an important symbol for the Gandhi-led independence movement in India.

Despite the fact that the process of de-industrialization had assumed significance in the imagination of the scholars, representing ideologically all colours of the rainbow, it did not result in the settling of some of the important issues related to the debate. The first contentious issue is when the process of de-industrialization began. The knowledge of the timing of this event is of great importance, because the timing of this historical event will tell us who culprits of this crime were. Regarding the timing of the process of de-industrialization that was spread between c.1750 and c.1860, historians have identified two different sub-periods. According to some scholars, it was the decline of the Mughal Empire that caused de-industrialization. The other set of historians believe that de-industrialization occurred because of penetration of cheaper products produced by British mills.

The second important issue on which there is no consensus amongst scholars is regarding the factors that caused de-industrialization—whether the process was caused by factors that were endogenous to the economic structure of the economy or exogenous to the economy. Scholars who lay stress on endogenous factors believe that de-industrialization was inevitable because the factors that caused de-industrialization were embedded in the structure of the economy. On the other hand, scholars who emphasize the role of exogenous factors argue that it emerged as a consequence of economic interference of the East India Company and vested interests of the British Raj.

The contemporary debate on de-industrialization began after the availability of data reported in the population census, national income estimates and occupational structure of the working population after c.1870s. The

earliest empirical evidence regarding the occurrence of de-industrialization was reported by Colin Clark. He used data reported in the census reports of c.1881–1911. His analysis established that the proportion of population engaged in manufacturing, mining and construction declined from around 28 per cent to 12 per cent.⁶⁴ Daniel Thorner challenged his estimates and used revised data on census from c.1881 to c.1931. His estimates show that sectoral composition of workforce engaged in manufacturing registered insignificant change between c.1881 and c.1901 and it remained stationary between the period c.1901–1931. According to his estimates, there is no evidence that de-industrialization in India occurred after c.1881. Therefore, he suggests that if at all de-industrialization occurred in India, it must have happened prior to c.1881.⁶⁵

Harnetty's observations regarding handloom weaving show that the handloom weaving, which supported the entire domestic demand, along with exports, peaked in value terms in c.1800 and in terms of volume in c.1802. Afterwards, the exports of textiles to Britain declined due to emerging competition from British mills.⁶⁶ Simmons used data reported by Paul Bairoch regarding the process of de-industrialization experienced by economies that were on the periphery of the European economies. According to him, the Indian sub-continent in c.1750 accounted for 25 per cent of the global output in manufacturing. By c.1800, its share declined to 20 per cent, in c.1860 to around 10 per cent and by c.1880 it was less than 3 per cent. However, critics of these estimates argue that decline in the global share of Indian manufacturing might have occurred not necessarily due to decline in the rates of growth of manufacturing in India, but perhaps due to faster rates of growth in manufacturing experienced by other countries. In order to overcome this criticism, Bairoch also provides estimates on per capita level of industrialization in India. The index of per capita level of industrialization declined from 7 in c.1750 to 6 in c.1830 and to 2 in c.1880. This suggests that there was no dramatic de-industrialization between c.1750 and c.1830. The de-industrialization is more pronounced after c.1830, when mill-made products from Britain began to enter the Indian market.⁶⁷

Krishnamurty, who studied the problem of de-industrialization with the help of shifts in the occupational pattern of the population for the period c.1881–1951, found that the occupational pattern was almost stationary. He did not observe significant changes in the occupational pattern of the population, with the share of primary sector remaining at about 70 per cent, that of manufacturing around 10 per cent and services accounting for about

15–20 per cent. His exercise also suggests that if there had been any event of de-industrialization in India, it must have occurred prior in c.1881.⁶⁸

The empirical exercise conducted by Clingsmith and Williamson, covering the period between c.1750 and c.1913, shows that the Indian sub-continent underwent the process of de-industrialization during the two sub-periods between the eighteenth and nineteenth centuries. The first phase of de-industrialization occurred between c.1750 and c.1810, resulting from the decline of the Mughal Empire. The second epoch covers the period between c.1810 and c.1860, resulting from the competition from the factory system of production in Britain. They suggest that India had a century-long, two-part transition from being net exporter to net importer of textiles. According to them, the process of de-industrialization was complete by c.1860. It is perhaps due to this reason that almost all the studies that cover the period after c.1860 do not find any evidence of de-industrialization.⁶⁹

According to Roy, if there existed reliable data on the occupational pattern of Indian population for the period c.1750 or c.1800, the proportion of workforce engaged in manufacturing would have been around 25–30 per cent, which declined to about 8–9 per cent by c.1900. This drastic fall in proportion of persons engaged in manufacturing shows de-industrialization or peasantization of the economy. However, he suggests that acceptance of this fall as de-industrialization will amount to ‘exaggeration of reality’.⁷⁰ This is because during the early colonial period, manufacturing used abundant supply of slack labour time.⁷¹

It is evident from the studies conducted on timing of the process of de-industrialization, that the studies that cover the period after c.1860 did not find any evidence of de-industrialization. Therefore, many scholars have suggested that de-industrialization might have occurred much earlier.⁷² It is precisely for this reason that we have included the debate on de-industrialization during the period when the East India Company ruled the Indian sub-continent (i.e., between c.1757 and c.1857).

Scholars who believe that de-industrialization occurred prior to c.1860 attribute it to the collapse of the Mughal Empire. The empire provided political stability, integrated market, single currency, single economic environment, and consumption of traditional product produced by Indian traditional flexible manufacturing. Therefore, decline of the Mughal Empire led to the process of de-industrialization. (This process has been described in greater detail in Chap. 2.) I also concurred with this conclusion, as it is clear from my paper on ‘Primitive Flexible Manufacturing and Mughal

Empire',⁷³ 'it would not be inappropriate to state, that the dawn and the dusk of primitive flexible manufacturing is intimately linked with the rise and fall of the Mughal empire'.⁷⁴ However, studies conducted by scholars on specific regions show that the preconditions that are necessary for the continuity of traditional flexible manufacturing continued to exist in some of the successor states of the Mughal Empire, like Awadh, Hyderabad, Maharashtra, Punjab, Rajasthan and Mysore.

Our understanding about the timing of the process of de-industrialization is based on the organizational structure of the traditional flexible manufacturing. Most scholars who have participated in the debate regarding timing of the process of de-industrialization have ignored that traditional flexible manufacturing, which catered to the needs of mass markets, including exports, survived due to the nexus between merchants and craftsmen, which was working through the *dadni* or putting-out system. In this form of organization of production of manufactured items, merchants played a strategic role. This nexus between merchants and artisans did not break after the decline of the Mughal Empire. Instead, it continued to exist in successor states. However, little understanding of history clearly shows that the nexus between merchants and craftsmen broke down with the emergence of the East India Company as a ruler of the sub-continent. Therefore, according to our understanding, de-industrialization occurred during c.1757–1857.

It was the emergence of the East India Company as a political entity that encouraged it to monopolize trade in the manufactured products. In the process of monopolization of trade, it systematically followed policies and strategies to marginalize the role of the Indian merchant in the organization of production of Indian handicrafts. This process has already been described in greater detail in an earlier section. Hence, we will associate the beginning of de-industrialization with the territorial occupation of the Indian sub-continent by the East India Company. Due to this reason, spatial variation in the timing of de-industrialization also varies, because different territories of the Indian sub-continent were politically occupied by the company at different points in time.

The process of de-industrialization began with the occupation of Bengal by the East India Company after the Battle of Plassey in c.1757. Therefore, c.1757–1800 could be the period when Bengal experienced de-industrialization. It is also a historical fact that during this period the most prosperous province of the Mughal Empire became the poorest region of the Indian sub-continent and experienced a famine in c.1770. Subsequently, the spatial spread of de-industrialization became related to the time

when different spatial units of the Indian sub-continent were politically occupied by the company. However, certain regions remained under native rulers like Hyderabad, Mysore, Punjab, Rajasthan and Kashmir. In these regions, traditional flexible manufacturing continued to exist, especially in certain manufactured products that were catering to *niche* domestic markets. Craftsmen who lost the support of merchants for marketing their products in mass markets, and also in terms of receiving working capital needs, either started working as wage labour in the factories organized by the company, or worked at reasonably disadvantaged contracts for the *gomastas* employed by the company, or had to give up their craft.

Massive decline was also experienced by the traditional flexible manufacturing that was engaged in the production of luxury handicrafts. The emergence of the East India Company as a political power eliminated the hierarchy of *Mansabdars* (nobles and aristocrats) of the Mughal period and replaced them by salaried administrators of the company. This shift in the structure of elite led to a decline in the demand for luxury handicrafts. It is reported that 'perhaps three quarter of the domestic demand of luxury handicrafts, with magnitude of about 5 per cent of the Mughal national income, disappeared'.⁷⁵

Along with the decline of domestic and export demand of the products of traditional flexible manufacturing, Indian handicrafts faced competition from machine-made goods. Some anthropologists have raised a very pertinent question regarding the increasing demand of machine made goods in India—'How, then, do culturally determined patterns of consumption change to accommodate alien manufacturers in a society in which the market itself is not powerful enough to create taste'.^{76,77}

It is suggested that the period after c.1750, when English machine-made goods began to penetrate the Indian markets, coincided with the period of fragmentation of the Mughal Empire and emergence of new regional elites. These new regional political entities were trying to assert their identities. They intended to differentiate themselves from the Mughal aristocracy; to these elites, the British manufactured products provided excellent substitutes. This was reflected in the differentiated consumption pattern of regional elites, who gained power in the successor states of the Mughal Empire.

The consumption pattern of the new power elite also was manifested when they constructed their new palaces. They decorated their new residences with European clocks, curtains, mirrors, art wares and other novelty items. Lucknow became an important place for the demand of British glass

wares. Huge quantities of sheet glass from Britain was imported, which was used in the construction of *chota* and *Bara Imambara*.⁷⁸ The use of British products by new power elites can be seen in the items displayed in the Salar Jung Museum of Hyderabad, and other museums showing the collection of rulers of Rajasthan, Punjab and Awadh. One can say with certain amount of brevity that the consumption pattern of new elites was transformed from being socially embedded to *commodity fetishism*, which is based on the premise that the value of a product lies in itself.

The other powerful influence, which reduced the demand for the products of traditional flexible manufacturing, was that of European freebooters, who were appointed by the local rulers to train and modernize their armies. These army advisors and trainers began to dress their armies in scarlet English broadcloth. Under their influence, local rulers adopted British textiles to prepare uniforms for their armies. Thus, the demand for British textiles received initial support from these local rulers. According to Faiz Baksh, who recorded historical facts of the period, 'when eunuch administrator of Lucknow Jawahir Ali Khan's personal soldiers (*sabit-khanis*) were seen in green livery, irregulars in black, and Mewati soldiers in white, it made other rich people envious'.⁷⁴

The most important weakness of the debate on de-industrialization is that it has remained focused on associating decline in textile manufacturing in the Indian sub-continent with de-industrialization. It may be because textile manufacturing was the most important manufacturing industry of that period. However, in the process, they have ignored other manufacturing industries. Perhaps these manufacturing industries might have undergone different experiences. It seems that the flexible manufacturing that was engaged in the production of domestic utensils, metal wares, agricultural implements, and silver and gold jewellery might have experienced an upward trend because these products were not experiencing any competition from British factory-made products. Similarly, manufacturing industries like hide and skin, leather and leather products might have also experienced positive growth rates because demand for leather products by the army of the East India Company and local rulers for saddles, breeches and shoes must have increased substantially. The demand for shoes and footwear might have also increased due to westernization of dress code of emerging new professions.

Until the beginning of the Industrial Revolution, trade was the foundation on which the entire structure of the British economy depended. Therefore, for a considerable period, there existed symbiosis between the

interest of the East India Company and the dominant sections of the British society. The emergence of modern manufacturing in Britain led to the creation of a new social structure, where the interests of manufacturers became more important. These were at variance with the interests of the landed gentry and merchants. The new social order replaced the supremacy of mercantilism, the ideology that supported the interests of traders and the company, with classical political economy, which articulated the interests of manufacturers. The shift in the ideological premise of the British social order reduced the historical relevance of the East India Company. The consequences of this ideological shift was that the East India Company ceased to be a trading company in c.1833 and as an agency of British imperialism in c.1857. In the section that follows, I narrate the emerging contradiction between the East India Company and new social order that was emerging in Britain.

4.4 CONTRADICTION BETWEEN THE EAST INDIA COMPANY AND NEW SOCIAL ORDER

The shift in the ideological supremacy of classical political economy to mercantilism emerged as a consequence of emerging contradiction between the interests of merchants and industrialists. In the new circumstances, the antagonists of the East India Company included a British landed gentry, which was losing economic and social space to the wealthy ex-employees of the East India Company. These employees, on returning from India, were buying their estates and were also competing for the women belonging to the same strata of society for marriage. These ex-employees were also entering the British Parliament, changing the social and economic composition of the members of the parliament. This, in turn, was altering the nature of debates and issues, which were being taken up in the Parliament.

The more articulate and formidable antagonist of the East India Company was emerging as a new class with a new ideology. This new class was emerging as a consequence of transformations, which British society and economy was experiencing after the invention of the steam engine. The emergence of steam power as an inanimate source of power was transforming the technology being used in British manufacturing and means of transportation. These new inventions in technology altered the British traditional manufacturing into modern manufacturing, which has been described by historians as the Industrial Revolution. The process of

transformation of British traditional flexible manufacturing into modern industry has been analysed in greater details in Chap. 3 of the present study.

Before the emergence of the Industrial Revolution, foreign trade was the foundation on which the structure of the British economy depended. Therefore, interests of the East India Company were the same as those of the dominant sections of the British society. However, the transformation of the British flexible manufacturing into modern manufacturing resulted in a new social order, which was manifested in the emerging dominance of interest of manufacturers. Their interests were at variance with the interests of the landed gentry and merchants. The emergence of a new class of manufacturers gave birth to new ideology and economic laws, which were articulated by Adam Smith in his famous book, *Wealth of Nations*. The new ideology evolved into a new school of thought known as classical political economy. The new thought began to challenge the premises on which mercantilist ideas were based. Mercantilism provided historical justification for the existence of companies like the East India Company, in particular, and social dominance of merchants in general. The earlier schools of thought like physiocracy considered manufacturing activities as 'sterile' economic activity. This school of thought was evolved to protect the interest of capitalist farmers (i.e., peasants).⁷⁵ While mercantilist school protected and propagated the interests of merchants, for the first time, manufacturing was accepted as a productive economic activity by Adam Smith and other classical economists.

It was during the unfolding of the age of discovery that the commercial horizons of the economies were vastly extended and economic intercourse of Europe, which was restricted to Europe and part of the Mediterranean, expanded thousands of miles across the oceans of Asia, North and South America, Australia and Africa. The connectivity provided access to new markets and interaction between various centres of trade and crafts through long-distance trade. It was trade in Asian commodities like spices, cotton and silk textiles, tea and coffee that expanded the volume of trade. European demand for these products was immense and Europeans had to pay for these commodities in bullion. The bullion that financed Europeans' desire for these products came essentially from America. This process led to the emergence of a trade triangle, in which gold and silver from America reached Asia through European intermediaries, in exchange for Asian products.

These historical conditions provided preconditions for the existence of trading companies like the East India Company. At the same time, the

increasing contribution of trade to the prosperity of the European economies provided historical conditions for the birth of mercantilism. Since expansion of trade at that time was constrained by the availability of bullion, the followers of this school believed that it is the stock of gold in the possession of an economy that is the real wealth. The views of this school of thought are spread in the writings of pamphleteers like Thomas Mun (c.1571–1596) and Josiah Child (c.1630–1699) in England, and Antoine de Montchrétien (c.1576–1621) and Jean Bodin (c.1530–1536) in France.

Following the spread of the influence of this school of thought, gold became the obsession of Europeans. It is a well-known historical fact that their discoveries of new lands were primarily motivated by the stores of large volumes of gold and silver in the possession of people inhabiting these lands. Christopher Columbus, who opened the route to America for Europeans, wrote ‘Gold is wonderful thing. Whoever owns it is the lord of all wants. With gold, it is even possible to open the soul of the way to paradise’.⁷⁹ There also exist historical accounts regarding the life of Atawallpa, the ruler of Peru, who was held hostage by the Spanish conquistador, Castilian, Francis Pizarro, and was killed despite paying the ransom of a roomful of gold and two roomfuls of silver.⁸⁰ The lust for gold amongst Europeans, at that time, was quite surprising to the people of other civilizations, where gold and silver had only ritualistic or iconic value. For instance, ‘for Peruvians gold was sweat of sun and silver the moon’s tears’.⁸¹

The glitter of gold was so overbearing for the Europeans during this period that they undermined the importance of all other economic activities that did not help in increasing the stock of gold in an economy. Therefore, there emerged an understanding that economic activities like trade and shipping are most important because they help in earning gold. They also accepted the role of nation state, which helped in increasing the stock of gold by manipulating terms of trade by imposing protective tariffs. These historical facts became the essential premises of the mercantilist philosophy.⁸²

The term mercantilism was used for the first time by one of the disciples of Quesney Mirabeau.⁸³ There are several versions of mercantilism that can be traced to different pamphlets published by different authors who enriched the contents of the school of thought. It is interesting to mention that some of the important British thinkers who contributed to the development of the idea of mercantilism, like Misselden, Mun and Child, were associated with the East India Company; the former two occupied the position of directors of the company. In common parlance, mercantilism

stands for policies that promote favourable balance of payment by encouraging exports and discouraging imports, with the intention of earning bullion for the country. In the writing of some of the scholars of mercantilism, it is a system of thought that was focusing on nation building by transforming the polity and economy of middle ages into a system of nation state.⁸⁴ However, ideas on mercantilism presented by Thomas Mun in his two important pamphlets entitled *England's Treasure by Foreign Trade*,⁸⁵ and *Discourse of Trade from England into East Indies*, presented theoretically more profound versions of mercantilism. His presentation on mercantilism was accepted by Adam Smith as an important description of mercantilism. Subsequently, most of the arguments of Smith against mercantilism were based on the ideas articulated by Mun. The economic logic that Thomas Mun evolved to justify the preeminence of foreign trade as an instrument to enrich an economy was based on the premise that a nation cannot become rich just by getting gifts or by purchase taken from some other nation. The only solution to increase wealth of a nation is foreign trade 'where in we must ever observe this rule, to sell more to strangers yearly than we consume of their value'.⁸⁶ He further adds that as an individual enriches himself by not spending as much as he gains, the same maxim should be used by a country. He also suggested that natural resources should be developed to reduce dependency on imports of resources, and also advocated for the protection of local manufacturing enterprises. He also advocated the use of tariffs to increase trade surplus (i.e., the stock of bullion).

If one followed the norms mentioned by Mun for creating national wealth, then logically it was difficult to justify the massive exports of bullion by the East India Company to India to buy merchandise. Many of the contemporary scholars of the time considered this act of the company as a drain of wealth from Britain. However, Mun justified the export of bullion by the East India Company on the ground that though the company sends bullion to India, it re-exports the merchandise to other countries on profit, which increases the possession of bullion of Britain. Therefore he explained how the export of bullion was advantageous to the country. He also suggested that enlightened citizens of the country should view the entire process of transactions rather than limit their vision to initial transactions between Britain and India. He justified the export of bullion to India by telling that when people view export of bullion to India in isolation 'which misinforms their judgement and leads them to error, For, if we only behold the action of a husbandman in the seed time, when he casteth away good

corn into ground, we will rather accompt him as a madman rather than husbandman; but when we consider his labour in *harvest time*, which in end of his endeavour, we find the worth of his actions'.⁸⁷

It was following the mercantilist policies that the British government provided chartered status to several companies, including the East India Company, to enjoy monopoly of trade with the East, enacted English Navigation Act in c.1651 to protect British shipping from Dutch competition, and Corn Laws in c.1689 to regulate the trade of food grains. The objective of the Corn Law was to encourage British farmers to continue to grow corn by guaranteeing them protection from cheaper imports and allowing them to export when there was glut in the market. For the first time, the ideological premises of mercantilism, on which the foundation of the East India Company rested, were challenged by Smith in his book. His book was a manifestation of the socio-economic transformation of the British economy from the dominance of trade to dominance of manufacturing in the process of creating wealth.⁸⁸

Smith explained that the belief that wealth of a nation consists of gold and silver is based on the premise that they play dual role in the functioning of an economy (i) as a facilitator of transactions, and (ii) as a measure of value. If we view gold and silver as facilitators of transactions, then having more of them will help in buying more of other commodities. While viewing them as a store of value, it becomes quite obvious that having more of gold and silver in possession provides more claim on other commodities. It is because of its dual role that the Mercantilist school justified the possession of gold. Mun justified the exportation of bullion to buy foreign goods on the ground that if consumption of foreign goods does not increase in the country, these goods are re-exported on higher profits, which helps in increasing the treasure, than if it was spent on purchase. Smith writes that it appears a solid and sophisticated argument that export of bullion for trade may be advantageous for the country, but the argument was more to draw the attention of the government to preserve quantity of metals, and ignores 'how preserving and augmenting the quantity of any other useful commodity, which freedom of trade without any such attention never fails to supply in proper quantity'.⁸⁹ He emphasizes that these arguments were given by the traders to the Parliament that trade enriched the country. Merchants know that this process enriches them, and in what way it enriches the country they do not explain, because it was not part of their business.

Smith provides an entirely a new role to foreign trade in comparison to the role provided to it by the mercantilists. We are presenting here his view

in his own language to put to the readers not only his ideas, but also the words that he uses to present his argument with force.

Between whatever places foreign trade is carried on, the all of them derive two distinct benefits from it. It carries out that surplus part of the produce of their land for which there is no demand among them, and buys back in return for it something else for which there is demand. By means of it the narrowness of the home market does not hinder the division of labour in any particular branch of art or manufactures from being carried to the highest perfection. It encourages them to improve its productive power and augment its annual produce to the utmost, and there by increases *real revenue and wealth of the society* (emphasis added).⁹⁰

To put new perspective on the role of foreign trade, he gives the example of trade between Britain and Asia—‘the discovery of a passage to the East Indies opened perhaps a still more extensive range of foreign commerce than that of America, notwithstanding the greater distance the rest were mere savages. But the empires of China, Indostan, Japan as well as several other in the East Indies, without having rich mines of gold and silver, were in every other respect much richer, better cultivated and more advanced in arts and manufactures rich and civilized nations can always exchange to a much greater value with one another’.⁹¹ However, he stressed that due to the influence of mercantilism, Britain and other European economies have not been able to maximize the benefits from foreign trade with the East because of the existence of monopoly of trade given to companies like the East India Company. He concluded that ‘no great nation in Europe had ever yet had benefited from free commerce’.⁹²

Smith systematically demolished the premises on which the old social order dominated by merchants was based. Smith’s criticism of merchants is well known. He writes in his book, ‘the capital of merchants, on the contrary, seems to have no fixed or necessary residence anywhere, but may wander about from place to place according as it can either buy cheap or sell dear’. He makes an important comment—“A merchant, it has been said, very properly, is not necessarily citizen of any particular country. It is in great measure indifferent to him from what place he carries on his trade, a very trifling disgust will make him remove his capital. No part of it can be said to belong to any particular country till it has been spread, as it were, over the face of that country”. He makes this point more emphatically, when he states—“capital. . . . that is acquired by commerce. . . . is

very precarious and uncertain possession until some part of it has been secured and realized in the civilization and improvement of land.”⁹³

The aforementioned ideas of Smith formed the premises on which his arguments against the East India Company in particular, and against merchants in general, were based. He did not approve of the founding of a great empire by the East India Company based on mercantilist principles. He remarked that this kind of empire was a project ‘fit for nations whose government is influenced by shopkeepers’.⁹⁴ The consequences of the new ideology on the East India Company, articulated by the classical political economy, under the leadership of Smith, were that the British parliament passed Pitt’s Act of c.1784, which increased parliamentary control over The East India Company. Subsequently, the Charter Act of c.1813 ended the trading monopoly of the East India Company. Finally, in c.1833, the East India Company was stripped of its commercial functions, but was allowed to remain the governing agency of the British empire in India. Hence, the period during which India experienced territorial expansion of the East India Company coincided with the rise and subsequent dominance of manufacturers in British society. This resulted in structural change in the British social order. In this strange way, the Indian economy became entangled in the basic conflict between merchants and manufacturers that was taking place in Britain. This conflict came to an end with the end of the rule of the East India Company in c.1857, which also signified the end of mercantilism in Britain. For the people living in the Indian sub-continent it was the beginning of the British Raj.

In this chapter an attempt has been made to study the consequences of the second force of globalization, the European trading companies, in the story of Indian manufacturing. We have analysed the process of transformation of the East India Company from a trading company to an agency of the British Empire. The process has been explained with the help of different historical events that helped the East India Company to fill the political space that was left empty by the decline of the Mughal Empire.

The emerging political dominance of the company, after the Battle of Plassey, for the first time provided opportunity to the East India Company to consolidate its monopoly of trade. The symbiotic use of these twin monopolies facilitated the process whereby the East India Company was able to break the nexus that existed between merchants and craftsmen, the nexus that had facilitated the birth of traditional flexible manufacturing. Through the use of its political power, it was able to marginalize the role of Indian merchants in the process of traditional flexible manufacturing. It

simultaneously also evolved policies that adversely affected the bargaining power of craftsmen. These new circumstances broke the nexus between the merchants and craftsmen, which was the basis of organization of production in traditional flexible manufacturing in India. This nexus worked through the *dadni* or putting-out system. Once divorced from the support of Indian merchants, Indian artisans either had the option to become wage workers in the centres of production organized by the East India Company or work on highly disadvantaged contracts with the *gomasthas* of the company. If craftsmen did not want to exercise these alternative options, the third option was to give up their craft and work in the agricultural sector.

It is due to the strategies used by the company that created separation between Indian merchants and craftsmen that I have suggested that the beginning of the process of de-industrialization should be dated with the political occupation of India by the East India Company. It is the territorial expansion of the company that created historical conditions for the decline of traditional flexible manufacturing, which had provided the organizational structure where Indian craftsmen could get access to mass markets including exports. Although crafts could exist in other organizational structure, also, craftsmen could not supply their products in distant markets. It is also explained in this chapter that the new power elites in different regions in India after the decline of the Mughal Empire also facilitated the process of de-industrialization. These new regional elites adopted Western goods in their consumption pattern, to differentiate themselves from the Mughal elites. By adopting Western products, they reduced the demand for luxury handicrafts. The final blow to Indian handicrafts was dealt by the potent force of machine-made goods produced by British modern manufacturing, which replaced the products produced by traditional handicrafts. Despite these forces at work, Indian handicrafts continued to exist in regions where local rulers continued to rule. These crafts also remained operational in the products that satisfied *niche* markets. Moreover, the emergence of integrated markets with single currency and similar regulations provided opportunities for the growth of those manufactured products that did not experience competition from British manufactured products like metallic domestic utensils, agricultural implements, shoes and footwear, silver and gold jewellery, and so on.

The chapter also provided an analysis of changes that were occurring in Britain, which were facilitating the emergence of new ideology based on classical political economy. The new ideology was challenging the existence of companies like the East India Company and was making them totally

irrelevant in the new social order. In the chapter that follows, this process is described in greater detail. The chapter deals with how organizational structure of the East India Company provided conditions for the opportunistic behaviour on the part of management and employees of the company and resulted in several kinds of compromises with the quality of corporate governance of the company. The acts of omission and commission performed by the management also created hostility between the company and the civil society of Britain. It was the changing attitude of the civil society towards the East India Company that forced the British Parliament to intervene in the functioning of the company. This aspect of the rule of the company will be discussed in detail in the next chapter.

NOTES

1. The process that transformed the East Indian Company from conducting business to conducting business of empire has been explained by Bowen (2006).
2. This term has been used by Travers (2007).
3. This particular representation of the rule of the company is given in Stern (2004).
4. The terms ‘merchant sovereign’ or ‘sovereign merchant’ have also been used by Travers (2007).
5. The term ‘corporate state’ has been used by Robins (2006).
6. For the understanding regarding different spices and plants that influenced the course of history, see Hobhouse (1999).
7. To know the nature, extent and implication of trade with Portuguese in India, see Whiteway (1893), Hall (1996) and Fruber (2004).
8. To know the story of the Dutch East India Company, see Om Prakash (1985) and Pearson (2007).
9. For a detailed knowledge about the operation of the French company, see Malleson (1901).
10. For the entry of the East India Company in Surat.
11. Balpours (1885).
12. For the occupation of Bombay by the East India Company and the subsequent evolution of Bombay, see Malabari (1910).
13. To know in details the history of the East India Company in Bengal, see Travers (2007).
14. For the understanding of the process of globalization of conflict amongst different European economies, see Travers (2007).
15. For the understanding regarding the transition of the world order towards *imperialism*, see Bayly (1988).

16. The scholars, who believed that there emerged 'dark ages' after the decline of the authority of the Mughal Empire, explained the process from different perspectives. Sarkar (2014) explains the political social and religious decline of the Mughal Empire. Some other scholars explained the decline of Mughal Empire due to fiscal constraint or crises in the Jagirdari system; see Chandra (1998), Ali (1975) and Karen (1979).
17. For economic and social consequences of the decline of Mughal Empire on different regions, see the study of Wink (1986); for Maharashtra, Stein (1985); for Mysore, Grewal (1995); and for Punjab, Banga (1978) and Marshall (1975a).
18. The term *gentrification* of the society for the Indian economy has been used by Bayly (1983) and for the process of gentrification of Bengal, see Om Prakash (1998).
19. The concept of 'Portfoliocapitalists' has been used by Bayly and Subrahmanyam (1988).
20. For details regarding the origin of 'tributary commercialism' in Mysore during the period of Hyder Ali and Tipu Sultan, see Ludder (1996).
21. For details regarding the war of successions, see Bayly (1988).
22. The reasons that led to the participation of European trading companies in the local conflicts have been discussed in Stein (1998).
23. For the economic implication of the *firman* issued by Mughal Emperor Farrukhsiyar and the use of *dastak* by the East India Company, see Robins (2006), pp. 64–65.
24. The Battle of Plassey was quite an important business deal for the East India Company. Just by giving Mir Jafar, the commander of the forces of Nawab of Bengal Shiraj-ud-Daula, promise to appoint Nawab of Bengal. It is recorded that 'the company loaded the treasury of gold and silver on a fleet consisting of around hundred boats was sent to Calcutta. In this business deal Clive has earned £ 2.5 million for the company and £ 2,34,000 *for himself*'; see Robins (2006), p. 3.
25. The Imperial decree, which provided Diwani right to the East India Company, by Mughal Emprie Shah Allam II, provided monopoly of political power as well as trading monopoly to the East India Company. This status of the East Indian Company violated its own relationship with respect to British Crown and Parliament; see Dirk (2006), p. XIII.
26. The East India Company was popularly called the John Company; see, Furber (1970).
27. Details regarding the occupation of different centres of traditional flexible manufacturing have been obtained from Powell (1892).
28. See Robins (2006), p. 76.
29. See Burke (1783 [1981]), vol. V.
30. See Burke (1783 [1981]), vol. V, p. 224.

31. See Robin (2006), pp. 2–5 and Ramaswamy (2011), pp. 76–78.
32. See Ramaswamy (2011), Ch. IV and Grioseclose (1993), pp. 50–53.
33. For the ideas on economic drain of persons described in the text, see Bolt (1772 [1998]), Dow (1792) and Verlest (1776).
34. See Dutt (1906), pp. 29–31.
35. For the estimates on economic drain made by Habib, see Habib (1990).
36. Hunder (1868) and Hunter (1874).
37. See Marshall (1975b), p. 466.
38. See Om Prakash (2007), p. 151.
39. See Robinson (1912), p. 70 and Sinha (1968), vol. III.
40. See Robins (2006).
41. See Singh (1966) and Hodgson (1938).
42. See Tripathi (2004).
43. See Bhattacharya (1982), p. 273.
44. See Bhattacharya (1982), p. 288.
45. For details regarding the organization of factories by the East India Company and conditions of craftsmen working in these factories, see Hussain (1958).
46. For these facts, see Parthasarathi (2001), p. 84.
47. Dodwell (1922) p. 2 and also quoted in the Cambridge Economics History of India, p. 369.
48. See Bolt (1772 [1998]), p. 74.
49. See Robins (2006), p. 60.
50. Bhattacharya (1982).
51. Bhattacharya (1966).
52. See Arasaratnam (1980) and Parthasarathi (2001).
53. Chaudhary (1972), pp. 81–83.
54. See Om Prakash (2007), pp. 133–168; Roy (2010), pp. 135–139 and Roy (2005), p. 345.
55. See Dewey (1988), p. 5.
56. See Markovits (2008) and Subramanian (2012), p. 5.
57. See Sinha (1968), vol. I p. 360, Hunter (1874), vol. IX, pp. 252–268 and Seth (1987), pp. 25–26.
58. See Marx (1868), vol. I, p. 275.
59. See Marx (1813), in Iqbal Hussain (ed) (2006), p. 14.
60. See Marx (1853a, b, c, 2006; pp. 16–17).
61. See for the ideas of Dadabhai Naoroji, Naoroji (1901/1962).
62. See Dutt (1906).
63. See Nehru (1947).
64. See Clark (1950).
65. See Thormer (1962).
66. Harnetty (1991).

67. See Simmons (1985) and Bairoch (1982).
68. Krishnamurthy (1983), p. 548.
69. See Clingingsmith and Williamson (2004), pp. 20–21.
70. See Roy (2005), p. 118.
71. See Roy (2005), p. 118.
72. See Roy (2005), Markovits (2000), Sarkar (2014) and Clingingsmith and Williamson (2004).
73. See Seth (2008).
74. See Seth (2008), p. 92.
75. See Maddison (1971), pp.34–35, Maddison (2003), Deavy (1975) and Gadgil (1924).
76. See Appadurai (ed) (1986), p. 303.
77. See Faiz Baksh (1889), ii p. 97, quoted in Appadurai (1986), p. 304.
78. Physiocratic tradition took roots in France in the seventeenth and eighteenth centuries in the writings of Francois Quesney (1694–1774), Mercier de la Riviere (1770–1793) and Du Pont de Nemours (1739–1817). In order to establish economic importance of land-owners, Physiocrats accepted agriculture as the only productive activity because it had the capacity to produce *economic surplus* over and above the cost of capital. Therefore, non-agricultural economic activities were described as *sterile activities*; see Meek (1962), Robins (1979) and Baumol (2002).
79. The statement of Columbus is mentioned in Wright (2000), p. 11.
80. See for these facts Prescott (1847) and Wright (2000).
81. See Wright (2000), p. 81.
82. See Robbins (1998), p. 48.
83. See Hecksher (1935).
84. See Schomoller (1902), pp. 51–52.
85. See Mun (1664 [1928]).
86. See Mun (1621 [1930]), p. 17.
87. See Mun (1664 [1928]), p. 19.
88. Adam Smith's ideas against mercantilism are available in his book *Wealth of Nations*, Book IV chapter I, See Smith (1776, 2003).
89. See Smith (1776, 2003), pp. 539–540.
90. See Smith (1776, 2003), p. 546.
91. See Smith (1776, 2003), p. 554.
92. See Smith (1776, 2003), p. 500.
93. See Smith (1776, 2003), p. 563.
94. See Winch (1978), p.32.

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Structure of Organization and Nature of Corporate Governance of the East India Company

In order to understand the consequences that the economy of the Indian sub-continent, in general, and traditional flexible manufacturing, in particular, experienced during the rule of the East India Company, it is necessary to know its organizational structure. The consequences that the economy of the Indian sub-continent experienced during the rule of the company is described in greater detail in Chap. 4. It is due to its organizational structure, that the company evolved a unique symbiotic relationship with the economy of the sub-continent. Most consequences the economy of the sub-continent experienced can be traced back to the structure of the company's organization. This is because its organizational structure determined its (i) objectives (vision and the mission), (ii) its work culture, and (iii) the nature of its corporate governance. Hence, it is important to understand the pattern of its organization and the nature of its corporate governance to assess the impact of different kinds of interactions that the East India Company had with the economy of the Indian sub-continent. In the present chapter, an attempt has been made to study the relationship between the organizational structure and nature of corporate governance of the East India Company.

The East India Company was the first joint-stock multinational corporation of the world. It had continuous existence as a commercial corporation from c.1600 to c.1833; and as purely an agency of the British Empire from c.1833 to c.1857. Looking at this corporation in historical perspective reveals that it had the capacity to put to shame some of the largest contemporary corporations that are listed in the Fortune 500; in terms of persons

employed, volume of merchandise handled and extent of market power enjoyed by them. Due to its organizational structure, it was perhaps the first business organization that experienced the consequences of separation between ownership (stockholders) and control (managers); this provided scope for opportunistic behaviour on the part of its staff and management. Historical details of the same show that there existed striking similarities between the behaviour of management of the East India Company and management of some of the contemporary corporations. It is also important to mention that some of the acts of omission and commission of the management of the East India Company also provoked similar responses from its contemporary civil society, policymakers and intellectuals, as have been received by contemporary corporations.

Despite the fact that the first joint-stock company was registered in Britain, this form of business organization became more prevalent in the United States. Due to this reason, most of the theoretical works to understand the consequences of separation between ownership and control originated in the United States, beginning with the pioneering study done by Berle and Means.¹ The wider issues that are associated with the implications of separation between ownership and control have become the subject matter of a new specialization known as 'corporate governance'. This specialization covers the relationship between managers and stockholders of joint-stock companies. The main focus of this discipline is to study the nature of power-sharing between stockholders and management of the company and its implication on corporate performance.

It has been observed by business historians that the nature of corporate governance varies in time as well as in space, because corporate property relationship in each time and in each space is embedded in the institutional arrangements that have emerged due to interaction between society, polity and business.² The studies on corporate governance have established that the most important determinant of the nature of corporate governance is corporate property relationship. This relationship varies across nations as a consequence of (i) financial arrangement viewed in terms of bank versus market driven,³ (ii) objectives followed by the corporate sector, in terms of stockholders versus stakeholders value maximization,⁴ and (iii) policy regime of the time, expressed in terms of regulated or market driven.⁵

This suggests that corporate governance is related to the formulation of a framework that can minimize the consequences of separation between ownership and control. Therefore, it is a study of the institutions, regulations and socially and legally accepted business practices, which give context

to the relationship between owners and stakeholders of a corporation. Over time, the literature on corporate governance has evolved around two different streams of thought. One strand of thought is trying to study the nature of corporate governance based on the nature of the relationship between owners of the company and those who control the process of decision making. Different theories of corporate governance have evolved on the basis of the nature of the relationship between two group of stakeholders. The second strand of thought has developed the theories regarding corporate governance, based on the extent of concentration or dispersal of ownership of stocks of the company.

Agency theory of corporate governance is based on the premise that corporations are formed through nexus or contracts amongst different interests.⁶ Since contracts are not able to anticipate all the consequences that might arise in the future, the agents who control the decision-making process start exercising discretion on the use of resources of the company. This provides them opportunity to maximize their own personal objectives, which may be different from the objectives of the owners. The implicit premise of the agency theory of corporate governance is that there exists conflict of interest between owners and the persons who control the company. Managers are guided by self-interest and they do not miss any opportunity to maximize their personal gains.⁷

Some scholars have evolved an alternative view of corporate governance, which accepts that business firms are a nexus of a well-established trust relationship rather than as a nexus of people with conflicting interests. This theory is known as the stewardship theory of corporate governance.⁸ The theory is based on the assumption that managers are not just agents of owners of the company but work as stewards of the company. Because their objective of maximization of personal wealth is constrained by several other higher level human motives. These other motives emerge in managers due to the existence of a market of managers. The market of managers rewards personal achievements, recognition and reputation. Hence, managers' greed to maximize personal wealth is constrained by other motives, which command a premium in the market of managers. Contrary to these premises, there has emerged another premise in the study of corporate governance, which has evolved from the understanding that organizations emerge as a consequence of a 'social contract' between different stakeholders. Therefore, this strand of thought believes that the purpose of the business firm is to create value for its stakeholders.^{9,10,11}

The literature on corporate governance has also identified another strand of thought based on the pattern of ownership of stocks of companies (i.e., whether stocks are concentrated in the hands of few individuals or are widely dispersed amongst them). It has been observed that the economies in which stocks are concentrated in the hands of few individuals in the form of large blocks generally have weak and inefficient stock markets. There is also lack of transparency in corporate disclosure, and the stock market fails to change the ownership of the companies. On the contrary, economies that have a dispersed pattern of stockholding generally have a well-developed and efficient stock market, higher standards of corporate disclosure and transparency, and a market for corporate control. Different patterns of stockholding may emerge as a consequence of the 'polity' or 'legal system' prevalent in different economies.

The conduct of the East India Company has been the subject matter of hundreds of books and research papers. However, most of these writings have remained preoccupied with the study of its conduct as an agency of the British Empire, to put it mildly, or as an instrument of British imperialism, to put it strongly. Therefore, most historical writings on the East India Company have remained focused on implication of its conduct on the economy, polity and society of the Indian sub-continent. There exists a paucity of studies that have analysed the East India Company purely as a corporate entity to understand its behaviour and identify how far the behaviour of this first joint-stock company contrasted with the behaviour of contemporary corporations. This exercise is essential to know the answers to the questions regarding the nature of corporate governance of the East India Company. The present case study of the East India Company is a modest attempt in this direction. It is relevant to mention here that while exploring historical writings to evaluate the working of the East India Company as a corporate entity, its history was, in fact, unfolding the contemporary debates on corporate governance. This is how one realizes that the past has the capacity to explain the present.

For the purposes of the analysis the present chapter has been divided into three sections, where each section deals with a specific aspect of the problem. Section 5.1 deals with the history of the East India Company as a corporation and its organizational structure. It also deals with the internal contradiction that existed in its organizational structure. Section 5.2 deals with the relationship between its organizational structure and the nature of corporate governance. Section 5.3 deals with the responses of its contemporary civil society, policymakers and intellectuals that influenced the nature of its corporate governance.

5.1 THE EAST INDIA COMPANY

The East India Company was formed on New Year's Eve c.1600 by a royal charter granted by Queen Elizabeth I of Britain. It was formed with the help of cooperation between three different strata of British society. Persons belonging to these three strata of the society hardly interacted with each other in the normal course, but were bound together to satisfy their private interests. The East India Company was financially provided by the rich merchants and bankers of London. It received logistical support to transport its merchandise across different oceans by sailors and navigators. Its merchandise was protected by the soldiers, in the seas from different pirates, and at different locations across the world, from local rulers and administrators. Therefore, its organizational structure had to accommodate and harmonize the interest of these three important constituents.

The status of 'Royal Chartered Company' was given by the British Crown as a specific privilege. The chartered company status was given to a company that was able to establish harmony between private profit motive and public interest, or the interest of the Crown.¹² The status of chartered company also endowed it with quasi-sovereign rights, like the right to mint its own coins, exercise law and order, and provide justice in its own overseas settlements.¹³ This status did not provide any additional advantage to its managers who were operating in Britain. Naturally, this status provided more scope for opportunistic behaviour by its overseas managers. This is because the chartered status, which gave them quasi-sovereign rights, provided them with opportunities to bribe or enter into a treaty with local rulers. At times, they had to take decisions to fight wars with them as well. Therefore, overseas operations of the company necessitated the empowerment of overseas managers of the company. These additional powers given to overseas branches of the company helped them evolve their own distinct identity.

Since the beginning of its operations, the East India Company maintained its own army and naval force. Because of this scholars believe that the East India Company represented the idea of 'commerce with sword in your hand'. The main objective of the British Crown to grant royal charter to the East India Company was to give the company monopoly of trade with the East so that it could corner a substantial market share in the lucrative Asian trade for the British Crown. Around the same period, several companies were formed by merchant adventurers, which were also granted royal charter, to exploit the trading opportunities created by the discovery

of new sea routes. Such companies were Muscovy, Levant, Royal African Company and Hudson Bay Company. Most of these companies created by the royal charter have become part of history, apart from Hudson Bay Company, which is still operating in Canada as the largest chain of stores, and the British Broadcasting Corporation (BBC).¹⁴ It also appeared in the newspaper that Sajiv Mehta, a British citizen of Indian origin, re-launched the East India Company on Indian Independence Day by opening a store in London in 2010.¹⁵

Granting of the royal charter to some selected companies led to a debate amongst contemporary scholars. The scholars who were antagonist to the practice of granting royal charter to companies believed that the chartered companies were organized primarily to maximize and appropriate monopoly rent. In this formulation, rent emerges as a consequence of creating entry barriers by royal charter, which helps the company to earn monopoly profits.¹⁶ However, protagonists of the practice viewed that the granting of royal charter to a company amounted to giving the company a right over its intellectual capital (like granting a patent right, which also gives monopoly right to the company). This is because royal charters were granted to only those companies that created information and knowledge about new overseas routes, markets or source of supply of new products. The granting of royal charter provided to the company a monopoly, which reduced the risk of venturing into uncertain business.¹⁷ However, such property rights had the potential to encourage rent-seeking behaviour amongst them. The protagonists of the chartered status argued that the status did not automatically yield rents, unless and until the company transacted goods and services. During the course of transaction, rent could be earned either by minimizing costs or maximizing surplus earned from the transaction.¹⁸

Despite the existence of alternative views on granting of chartered status to the company, contemporary scholars of the East India Company, by and large, accepted the appropriateness of granting it the said status. These scholars accepted the validity of practice, on the grounds that the opening of trade in new markets and products is as important as innovation, and therefore such companies are entitled to enjoy monopoly right for a certain period of time. Hence, these scholars believed that conferring of chartered status by the Crown is equivalent to granting intellectual property right or patent right on new knowledge.¹⁹ Even Adam Smith, who was one of the most influential critics of the East India Company, did not dispute the granting of the status of chartered company to the East India Company. He writes that 'when a company of merchants undertakes at their own risk

and expense to establish a new trade with some remote and barbarous nation ... It is the easiest and most natural way in which the state can recompense them. ... A temporary monopoly of this kind may be vindicated upon the same principles on which like monopoly of a new machine is granted to its inventor, and that of a new book to its author'.²⁰

Unlike the trading companies of other European countries, the East India Company was a joint-stock company. This was a unique innovation in its organizational structure, unlike, say, a Portuguese company that was owned by the Portuguese government, and the Dutch company that was also owned by the state but accepted private investment from individual investors without giving them voting rights. The concept of joint-stock has its roots in an Italian invention, *Compagnia*, a name based on the Latin phrase *cum panis*, which means a 'sharing of bread'.²¹

Initially, the East India Company raised separate joint stocks for each voyage, beginning with the first voyage in c.1603. Each stockholder subscribed to stocks voyage by voyage and profits made from each voyage were shared by the stockholders after the completion of each voyage, based on the value of their stocks. In the first voyage, 218 investors came together and raised total capital of £68,373, to finance the fleet of four small ships. From c.1613 onwards, joint stocks were raised on an annual basis. The first annual stock valued £420,436, to finance fleets for four years c.1613–1616. The second annual stock raised a total investment of £1.6 million to finance annual voyages between c.1617 and c.1622.²² Several annual joint stocks were raised subsequently, however, after c.1653, joint stocks became permanent.²³ The stocks of the company, in the beginning, were traded at its head office located at Leadenhall Street in London. Later, trading in its shares shifted to London's Royal Exchange. However, after c.1773, its shares were traded at the London Stock Exchange.²⁴

Although modern joint-stock companies enjoy unlimited lifetimes, lasting beyond the lifetime of original promoters, the East India Company needed periodic revalidation of its charter from the British Crown. Hence, its continued existence depended on its goodwill and relationship with the British Crown and Parliament. To guarantee its existence, the East India Company followed the policy of bribing people in authority to obtain their patronage. This policy was followed strategically when Sir Josiah Child became a member of the board of directors of the company in c.1674 and remained with the company till c.1699. He strictly believed in the tenants of *mercantilism* and wrote series of articles and pamphlets to project his ideas,

including the famous pamphlet, *A New Discourse on Trade*. He was instrumental in consolidating the position of the company with the British Crown.

Child gave 10,000 guineas to Charles II, the king of Britain, to obtain continuity of the charter of the company in c.1681. This eventually became an annual payment, until the rule of Charles II ended. One of the important benefits of the relationship between the British Crown and the company was that the company received the occupation of Bombay (now Mumbai), which Charles II had received from the Portuguese as dowry when he married the princess of Portugal. When James became the king of Britain, the practice of bribing the Crown was revived when charter of the company was renewed in c.1693. Following the receipt of the royal charter by the company in c.1693, British Parliament appointed a committee made up of British parliamentarians to investigate the charges of corruption. The committee discovered multiple incidents of bribing by the company to secure continuity of the charter. Each act of bribery was traced back to the governor of the company, Sir Thomas Cook, son-in-law of Josiah Child. This amply demonstrates that the company followed the policy of bribing to obtain the patronage of the British Crown.²⁵

The stockholders of the company were big and small investors from diverse socio-economic backgrounds. These thousands of stockholders were spread over each and every part of British geography. As recorded by historians of the East India Company, there were 3084 individuals who owned the East India Company stock in 2826 separate holdings. These shares were owned either jointly, individually, or in the name of partnerships or corporations.²⁶ The interests of these thousands of shareholders were looked after by a very small group of persons—twenty-four directors of the company and their supporting staff at the London office, and the governors of three presidencies in three different corners of the Indian sub-continent—Bombay (Mumbai), Calcutta (Kolkata) and Madras (Chennai). These governors, along with their supporting staff of writers, factors, and so on were actually running the business of the company.

In c.1785, one of the secretaries of the East India Company, Thomas Morton, compiled a detailed description of its administrative structure. This is the only surviving detailed account of the organizational structure of the company. It has been reported in the recent work of Bowen.²⁷ According to this description, the company was governed by a court of directors who functioned with the help of various committees, headed by one of the directors. The committees formed by the court were divided into three different classes. The first class of the committee was described as

‘correspondence’, which consisted of committees of correspondence, law-suits, military funds and treasury. The second class of committees included the warehouse, accounts, buying, and house committees. Finally, the third class included shipping, troops, stores, private trade and prevention of private trade committees.

In c.1776, a separate office of ‘examiner’ was created in addition to the office of secretary of the company. This office assumed significant importance over time because it emerged as a vital bureaucratic link between the company office in London and different presidencies in India. This office was occupied by some of the leading intellectuals and experts on India. For instance, Nattaniel Brassey, the author of *Code of Gentoo Laws* published in c.1776, Halhead, the author of *Grammar of Bengal Languages*, published in c.1778, James Mill, the author of *British India*, and poet Thomas Love Peacock occupied the office of examiner at different points in time.²⁸ The employees of the East India Company were strictly promoted on the basis of seniority. The lower bureaucracy of the company consisted of examiners of different ranks and writers. In addition to its London office, the East India Company’s offices in the presidencies in India followed a hierarchical structure, for example, a new employee in the company could enter as a writer. After serving as a writer for at least five years, he was promoted to factor. After serving for another three years, he was designated as junior merchant, and then a few years later he was promoted to senior merchant. Some employees of the company were also elevated to work in presidency councils and were even appointed as governors of the presidencies.

Functioning of the East India Company was similar to modern corporations because it was also managed by a hierarchy of paid managers. These managers coordinated the buying and selling of merchandise, and processing of information at the London office as well as over long distances between the company’s operational offices in different presidencies and its various trading centres. The administrative structure of the company was evolved to make effective control of the head office over managers and other employees working in overseas locations. This was necessary to reduce the costs of transactions made by the company because it relied on the ‘managerially coordinated transactions rather than market coordinated transactions’.²⁹ The dependence on managerially coordinated transactions necessitated the emergence of a managerial hierarchy and networks of coordination to establish appropriate control mechanisms.

In the contemporary economic analysis, a firm or a company is conceptualized as a collection of contracts that determine the nature of the

relationship between the organization and different stakeholders. The East India Company had also entered into multiple contracts to work efficiently. For example, there existed a contract between the British Crown and Parliament and the board of directors of the company, through Royal Charter, to run the company according to the objectives of the charter. Similarly, there existed a contract between the stockholders of the company and its management. Finally, there was a contract between management located at the London office and management and staff working at overseas locations. To reach the appropriate and desired outcome from each contract, there was need for proper design and enforcement of contracts. Institutional economics have given due importance to the process of evolution of third-party institutions to enforce contracts.³⁰

The organization of the East India Company into a joint-stock company created a separation between ownership and control. This form of organization provided, on the one hand, several kinds of advantages to the company, like the possibility of raising capital from a wider pool of investors and the ability to hire professional managers instead of relying on hereditary owners. On the other hand, this form of organization had a built-in tendency to breed double disadvantages to the company. The limited liability of the owners (stockholders) liberates them from bearing full consequences of their investment decisions, because consequence of each of their investment decisions is limited to the extent of their investment in stocks. The limited liability of investors makes them indifferent to the functioning of the company on a daily basis. The separation between ownership and control also creates opportunities for the management to resort to opportunistic behaviour and pursue their own objectives, which may or may not be compatible with the objectives of the owners.

The opportunistic behaviour on the part of management has been described as the principal (owner)-agent (management) problem.³¹ The analysis of the principal-agent problem in economics is as old as the subject is. The first systematic writing in economics by Adam Smith highlighted the problem by stating that the organizational structure of a joint-stock company has inherent tendency towards mismanagement because of 'negligence, profusion and malversation of their own servants'.³² However, the analysis of this problem has now been developed in greater detail in principal-agent models. During the time of the East India Company, the joint-stock form of organization was an exception not the rule. The separation between ownership and control became all-pervading in America during the 1920s and 1930s.³³ The existence of principal-agent problems at a much

wider scale led to the origin of theoretical literature on this problem. The main objective of the theoretical writings on principal-agent models is to establish harmonious relationships between the interests of different stakeholders. In a typical principal-agent model a principal (owner) hires an agent (manager) to act on his behalf to achieve objectives laid down by the owner. But the agent, after being hired, often pursues objectives other than those proposed by the owner. This happens because incentives of the principal are at variance with the incentives of the agents, leading to 'incentive conflict'. This poses two important challenges to the principal (i) selection of an appropriate agent; otherwise it leads to 'adverse selections' and (ii) once the agent has been hired, the principal has to evolve an appropriate incentive structure to motivate the agent to perform and achieve objectives of the principal; otherwise it will lead to 'moral hazards'.³⁴ In principal-agent problems, the principal can reduce the agency costs (the costs of opportunistic behaviour of the agents) by monitoring and collecting information to minimize adverse selection as well as moral hazards.

5.2 PROBLEMS OF CORPORATE GOVERNANCE IN THE EAST INDIA COMPANY

Principal-agent problems can arise in any corporation between any contracting parties. Since in the East India Company there existed multiple contracts, they created multiple kinds of principal-agent problems. In case of corporations that are confined to national boundaries, such problems are less likely in comparison to companies with multinational operations. The most serious principal-agent problem, which the East India Company experienced, was between the management and staff located at the head office of the company in Britain and managers and employees working in the Indian sub-continent. The problem was much more serious due to the additional disadvantage of information asymmetry, which existed due to temporal and spatial distances that separated the principals from the agents. The temporal and spatial distances were insurmountable due to the existing means of transportation, which were not only slow but also hazardous, and means of communication that could not provide information rapidly.³⁵ Moreover, as has been previously described, the chartered status of the company provided to the overseas managers certain quasi-sovereign rights, which allowed them to follow their own objectives. This special status provided ample opportunities to its overseas employees, especially its

armed wing, to occupy territories in foreign lands to maximize their personal wealth. The East India Company therefore contained, in its organizational structure, the integration of interest of merchants and conquistadors. This is because it was built into its DNA to make the East India Company an agency of British imperialism. Due to the aforementioned reasons, we are focusing on the principal-agent relationship that existed between the head office of the company at London and its overseas officials working in the Indian sub-continent. This has been done because other forms of relationship between principal and agents were more or less the same as experienced by other joint-stock companies.

To minimize agency costs, companies have to minimize moral hazard and the impact of adverse selection. To minimize moral hazard, a company can pay to its staff 'efficiency wages'. An interesting example of efficiency wages was the introduction of a five-dollar-a-day minimum wage by Henry Ford in his Ford Motor Company in 1914. Ford stated while introducing this raise in wages, 'There was no charity in raising minimum wages . . . we are building for future . . . A low wage business is always insecure'.³⁶ This means that the company has to pay to its employees wages higher than the market-clearing level. This practice is at variance with mainstream neo-classical understanding of the functioning of labour markets, which envisages that wages are flexible and have a tendency to settle at the market-clearing level. The efficiency wage criterion is based on the premise that higher wages, to some extent, improve the efficiency of workers. This happens because paying efficiency wages increases loyalty of workers; it motivates them and help in reducing work shirking and attracting better workers.³⁷ However, paying higher wages than the market-clearing level increases costs to the company.

The alternative policy that can help a company to minimize the problems associated with moral hazard is to impose a bond or entry-level fees on employees.³⁸ This strategy increases cost to the employee rather than cost to the company. However, indirectly, it may also increase cost to the company if workers reduce their work efforts to the level mentioned in the bond. Some economists view efficiency wages and bonding as alternative strategies, but some others view them as complementary strategies.³⁹ The extent to which bonds and efficiency wages can reduce the opportunistic behaviour on the part of employees depends on the risk of detection and conviction, and quantum of punishment (i.e., the value of the bond). Therefore, in addition to paying efficiency wages and imposing bond, a company has to invest in resources for foolproof supervision of its employees, failing which,

despite receiving higher wages, employees can indulge in opportunistic behaviour by cheating as well as shirking work.

To minimize the impact of adverse selection, bonding as a method can be used when a company hires employees at different ranks. However, it is not an optional strategy because execution of a bond does not guarantee that the company hires the best workers. A better strategy would be to hire employees at entry-level positions and design an appropriate promotion scheme to allow the employees to grow in ranks within the company according to their skills and capabilities. By following this strategy, a company can acquire more information about the employees, which can help in minimizing the consequences of adverse selection caused by information asymmetry. It is a historically validated strategy because most of East India Company's employees who made significant contributions to the growth of the company came from this group. There does not exist similar evidence regarding the appropriateness of the strategy of bonding. The East India Company had also designed an appropriate employment contract, which it entered into with its overseas employees, to minimize the possibilities of opportunistic behaviour. This necessitates a careful analysis of the contract that was executed between the East India Company and its overseas employees.⁴⁰

Economic historians who have studied the nature of contract and its enforcement between the East India Company and its overseas employees, observed that the contract consisted of two important parts. The first part consisted of 'covenant of indenture' and the other part consisted of 'bond' duly signed by two persons standing as guarantee to the bond. Employees generally entered in the service of the company at the age of seventeen as writers. The covenant of indenture was given in the form of a lengthy document that was filled by the overseas employees. The contract also had a clause for 'dismissal' of the employees in case they breached the contract. The contract lasted for five years, which was generally automatically renewed. The contract also incorporated the scheme of rewards and incentives that were given to its employees. To minimize agency costs of contract, the company was giving to its employees a fixed annual salary, which was quite low, promotion based on seniority and permission to trade on their own account to any port or place in India northwards of the equator. Since the company permitted its employees to carry on trade on their own account also, it provided them facility to remit their earnings from private trade to Britain. The remittance was sent through a bill of exchange. The bills functioned like a deposit wherein employees deposited rupees in the

treasury of the company in India. The company paid sterling equivalent amount to the beneficiaries of the payment in Britain.⁴¹

The analysis of the contract between the company and its overseas employees amply demonstrates that the company made serious attempt to minimize the consequences of moral hazards and adverse selection while designing its contract. The analysis also suggests that the company hired its employees at the entry level and gave them opportunity to grow within the company according to seniority and capabilities. This policy provided, as has been mentioned, better information to the company about the employees and helped in reducing the chances of adverse selection. Although the company paid lower wages to its overseas staff, it provided them incentive to earn more through private trade. Through this strategy, the company reduced its cost yet provided opportunities to employees to earn a decent income. The company did not pay efficiency wages to its employees because, in the absence of effective supervision, probability of detection of inefficiency was very small. Effective supervision was quite difficult due to constraints imposed by geographical distance and quality of means of transport and communication. To complement the advantages of these two provisions in the contract, the company threatened dismissal as well as asked its employees to provide cash guarantees by two persons. These provisions in the contract worked as constraints on the opportunistic behaviour of its overseas staff.

The appropriateness of the provisions of executing a bond and payment of low-wage strategy of the company has already been discussed in respect to their consequences on the principal-agent problem. What has not yet been discussed are the repercussions of permission given to its employees to conduct trade on their own account, in the Indian sub-continent, on the principal-agent problem. Initially, private trade was conducted by the overseas employees of the company because the company did not have operational and administrative capability to prohibit it. This suggests that the private trade to its employees was allowed unofficially, as a result of managerial incapacity of the company to regulate the opportunistic behaviour of its overseas staff in carrying out private trade. Therefore, it is quite obvious that private trade by its overseas employees must have existed since the inception of the operations of the company in the Indian sub-continent. However, permission to trade on their own account was formalized in the contract signed by them since c.1675. Even the company's employees working on company ships were accepting low wages because their employment provided opportunity to make profits from private trade. This form of

trade was described as ‘privileged trade’, which was a ‘proxy’ for smuggling. The foreign free-cargo allowance ranged from six tons for a commander of the ship to a few cubic feet of space for a skilled tradesman.

Accepting that the private trade by its employees could not be regulated, the company used it as a clever strategy to reduce its cost by paying low wages and permitting its employees to engage in private trade to compensate the loss of income due to low wages. This practice also helped in maintaining the company’s monopoly of trade in Britain because its employees could trade only on the ports of Asia. For middle- and senior-level officials of the company, this practice of permitting private trade gave opportunity for making fortunes before retirement from the company, and enjoying standard of living in London comparable to nobles and gentry of Britain. The servants of the company were driven by unregulated greed to maximize their private wealth because the company did not pay them decent wages. The private greed of the employees ‘made roguery necessary’ for them, otherwise it was difficult to survive on low wages in India. ‘*Nawab*’ was the term used by the British for persons who returned from India with a huge fortune. This fortune allowed them to live life like ‘*nawabs*’ (the term used for the provincial governors during Mughal rule). In c.1730, Edward Stephen became the first Bengal-returned ‘*nawab*’ to enter the House of Commons. These employees, who returned to Britain with substantial wealth earned from India, became the object of envy of the British gentry.⁴²

The opportunity to pursue simultaneously ‘trade for the company’ and ‘trade on their own account’ led to the practice of ‘multitasking’ by its employees.⁴³ This had serious implications on the principal-agent problem. The practice of multitasking is akin to the job of a bell boy in restaurants, who receives a fixed income from the employer and in addition receives ‘tips’ from customers. In order to maximize their tips, bell boys can compromise the interests of their employer. Several attempts have been made to study the repercussions of multitasking on the principal-agent problem. The studies have observed that if the wages paid to the employees are insensitive to the company’s level of profit (i.e. absence of profit-sharing incentives), the employee will spend more effort on private trade. It has also been observed that when principal permits agents to pursue ‘company trade’ as well as ‘private trade’, private trade may draw more effort from the employees irrespective of whether their wages are high or low. This happens because the work for the company gives him a fixed salary, but private trade results in additional reward, which he does not have to share with the

company. Therefore, an employee may spend more time and energy on private trade, and just enough on company trade, which rules out the possibility of dismissal.⁴⁴

In the case of the East India Company, its employees had the added advantage of conducting private trade because there existed synergy between private and company trade. The synergy existed because employees could leverage the benefits of the trade-related infrastructure created by the company, as well as benefits from the intangible assets of the company, in terms of trading privileges given to the company by the local rulers in the Indian sub-continent, and protection provided by the private army and navy of the company. Despite the fact that the organizational structure of the East India Company created a principal-agent problem between the head office of the company in London and the operational offices in India, the company was able to achieve its objective of maximizing trade with India. The credit goes to the nature of the contract it had evolved between the company and its overseas employees. This is because the contract provided, on the one hand, a very lucrative incentive in the form of private trade as a 'carrot' and threat of dismissal as a formidable 'stick'. This threat, to a great extent, was able to put constraint on the opportunistic behaviour of the overseas employees. This suggests that the contract, as designed by the company, kept the private greed of company officials within acceptable limits.

The extent of opportunist behaviour of the employees of the East India Company and their chances for rent-seeking behaviour considerably increased after c.1717 when the company received a *farman* (permission) to carry free trade in the Bengal Subah from Mughal Emperor Shaharyar. The officials of the company, ignoring the true intent of the *farman*, started selling *dastaks* (entry passes) to the officials of the company for private trade, and to local and foreign traders as well. This practice increased the private earnings of its officials at the cost of revenue of the Nawab of Bengal,⁴⁵ which subsequently led to the Battle of Plassey. The opportunistic behaviour of the employees of the East India Company became quite obvious when its forces were able to install a *nawab* of their own choice, Prince Mohammad Ali Wallajah, in Arcot in c.1752.⁴⁶ In supporting the *nawab*, Robert Clive made a substantial fortune along with other company officials like Paul Befield. Private wealth was also created by the company officials who were advancing personal loans to the Nawab of Arcot and to the Rajah of Tanjore at very high rates of interest. This whole process had assumed the

attributes of a scandal, after which, the company quite rapidly changed the governors of the Madras Presidency. However, all of them continued the practice and returned to London with substantial wealth.

The principal-agent problem again became alarming when the company appointed another puppet, Mir Zaffar, as the Nawab of Bengal, after the Battle of Plassey in c.1757. To take advantage of the new circumstances, company officials plundered the treasury of Bengal. The presents received by the chief architect of the battle, Robert Clive, alone amounted to £ 200,000, excluding his share in military spoils and income from *Jahgire* (land grant), which he received from the *nawab*. The annual revenue of the land grant was £ 27,000.

The opportunistic behaviour of the management of the East India Company in the Indian sub-continent became more glaring when the company entered the business of empire along with trade. This happened when the company was granted *divani* right (right to collect land revenue) by the Mughal Emperor Shah Alam II after the Battle of Buxar in c.1764. *Divani* right made the company richer because of the earnings from the land revenue from one of the richest provinces of the Mughal period, Bengal. Clive also exploited this opportunity by indulging in insider trading in company stocks. He did this before informing the company office in London about the grant of *divani* right and its financial gains to the company. Clive purchased a substantial number of shares of the company through his attorney John Welsh. When the news of *divani* reached in April, the company shares were traded at £165, by the middle of June, the price of each share increased to £187, and by Christmas, the share price was £223. In the longest meeting of the board on March 18, 1767, shareholders demanded an increase in dividends from 10 to 12.5 per cent. But the British government also wanted a share of the enhanced earnings. The company was forced to pay £400,000 to the government to cover war debt. Simultaneously, the Parliament passed the Dividend Act in June 1767, which fixed the dividend at 10 per cent. Clive also sold his stock in 1767, which doubled his investments in stocks.⁴⁷ However, when Clive came back to London in c. 1770, he was invited by the Parliament to defend his case on corruption. He was charged with appropriating £ 234,000 of the company exchequer. Although, instead of punishing him, the British Parliament considered him as the hero of Plassey. However, being humiliated by the charges of corruption, he committed suicide in c.1774.⁴⁸

It is important to mention here that all the governors, or governor-generals who succeeded Clive, were the victims of 'objective conflict' with the board of directors of the company. The objective of the board of directors was to maximize the earnings from trade to have more and more resources at their discretion, and also to please stockholders. They had no interest in financing expensive battles against the native rulers. On the contrary, the officials of the company, who were located in the sub-continent, had the incentives to wage wars. Each war provided them access to the treasury of the local rulers, which provided them opportunity to accumulate personal wealth. Moreover, in new circumstances, directors of the company did not matter much because these actions, even though morally incorrect, were politically correct. They knew that the British Crown, as well as Parliament, would consider them as heroes who were laying the foundation of the British Empire in India.

The consequences of intertwining of these two monopolies—trade and political power—were experienced by the people of Bengal. The monsoon failed in Bengal in c.1769 and c.1770. The drought transformed into a famine. The human tragedy caused by this famine was much larger in proportion than the Bhopal gas tragedy caused by another corporation, Union Carbide in India in 1984. It had become clear that the Bengal famine was caused by corruption in the trading of rice by the East India Company servants, who were manipulating the market to make a fortune.⁴⁹ These greedy company officials transformed a food scarcity into a famine. Adam Smith, while describing the causes of the occurrence of famine in Bengal, writes in his book, *The Wealth of Nations*, which appeared six years after the famine, that 'The drought in Bengal a few years ago might probably have occasioned a great dearth. Some improper regulations, some injudicious restraints, imposed by the servants of the East India Company, upon rice trade, contributed, perhaps to turn that "derth" into famine'.⁵⁰

So long as the East India Company remained primarily a commercial corporation, its activities interested only stockholders of the company or the British Crown. As soon as it also became the agency of the British Empire, its activities began to draw the attention of common British citizens. Due to this, lapses committed by the company in corporate governance attracted the attention of the British civil society and intellectuals, as well as the British state.

5.3 RESPONSES OF STATE AND BRITISH CIVIL SOCIETY ON THE ISSUES RELATED TO THE CORPORATE GOVERNANCE OF THE EAST INDIA COMPANY

After the Battle of Plassey (c.1757) and Battle of Buxar (c.1764), the East India Company was transformed into an agency of the British Empire. The transformation led to the entry of the company into the business of empire also.⁵⁰ This new role of the East India Company has been variously described by scholars. Some scholars describe it as ‘imperium in imperio’,⁵¹ the ‘East India Company state’,⁵² ‘sovereign merchant’, a ‘company state’,⁵³ or ‘corporate state’.⁵⁴ The East India Company now ceased to be only a corporation, and began to draw attention of the British civil society and intellectuals as well as policymakers. It is because the British citizens, as well as the Crown and Parliament, became sensitive to a basic issue—whether a private trading company can be permitted to wage wars, follow independent foreign policy, and enter into treaties with sovereign powers in the Indian sub-continent. It was generally accepted by the people in authority that the East India Company could not be given complete autonomy to pursue foreign policy that is independent of Crown as well as Parliament. Authorities were also concerned about the opportunistic behaviour of the officials of the company. These issues led to a prolonged struggle between the state and the East India Company to arrive at a new equilibrium in their relationship.

The state intended to regulate the company’s governance at the London office and at the offices located in different presidency towns in the Indian sub-continent. Attempts were being made to impose an environment on the workings of the East India Company, which may induce the practice of better governance. The protagonists of the company argued that the chartered status granted by the British Crown to the company provided it immunity from parliamentary interventions. Not only this, many enlightened citizens of the country were also of the view that giving right to the state to intervene in the affairs of the company might result in compromising the private property rights of the company.

Initially, attempts were made by the British Parliament to reform the corporate governance of the company at the London office through legislations. Reforms were initiated to alter the electoral process for the election of the company’s court of directors. In c.1765, an act was passed (7 Geo III c. 48) that changed the voting qualifications of the stockholders of joint-stock companies. It was legislated that a stockholder should have, in his

possession, stocks of the company worth £500 for at least last six months to qualify as a voter to elect the board of directors. In c.1767, another legislation was introduced (7 Geo III c. 49) that prohibited stock splitting. These two legislations were not able to reform the process of election for the court of directors. This was because well-informed electoral cartels were able to split holdings six months before the annual elections, which were held in the month of April every year. Therefore, massive activities occurred in the stock market during the months of September and October to change the ownership of the stocks.

The failure to reform the election process to the board of directors of the company by these two legislations, and occurrence of the 'Bengal Bubble' in the stock prices of the East India Company caused by the Bengal famine in c.1770, prompted the British Parliament to act. In the Bengal Bubble, some influential persons of British civil society had lost their lifetime savings, including Edmund Burke and William Burke. Under these circumstances, the Regulation Act was passed in c.1773. According to this act, only a quarter of the directors retired from their positions every year. Therefore, annual elections were held only to fill a quarter of the 24 director positions. The qualifications of the electoral club, which could participate in the election, were also changed to avoid stock splitting. According to the act, only those stockholders could participate in the election who possessed stocks of worth £1000, that too for a period of twelve months. The legislation also introduced the practice of proportionate voting, in proportion to the value of stocks possessed by the stockholders. Those who possessed the minimum qualifying amount of stocks (i.e., stocks worth £1000) were entitled to cast only one vote. Stockholders who owned stocks valued up to £3000 were able to cast two votes, and up to £6000 three votes. The maximum entitlement of four votes was given to stockholders who possessed stocks worth more than £10,000. This new legislation provided stability to the court of directors because on the one hand, elections were being held only for a quarter of positions, and on the other hand, the importance of small stockholders in the process of election was eliminated. The small stockholders constituted 55.4 per cent of the total stockholders of the company in c.1773. Through these reforms, this act provided more powers to big shareholders to influence important company decisions. The act reduced the incentive of stock splitting practiced earlier by voting cartels. The Regulation Act also put a ceiling on the amount of dividends that could be passed onto the stockholders of the joint-stock companies at 10 per cent.

To effect changes in corporate governance at company offices located in the Indian sub-continent, the Regulation Act of c.1773 curtailed the autonomy of the company by creating a post of governor-general of India based in Calcutta Presidency whose position was senior to the governors of the Madras and Bombay presidencies. To run the affairs of the company in India, a council consisting of five members was constituted. Of the five members, two members were nominated by the company and three members were to be appointed by the Parliament. These provisions in the law provided majority to the government-appointed members. However, this provision also led to hostility between company, appointed members and the government-appointed members of the council. The Regulation Act also tried to curtail the opportunistic behaviour of company officials because it brought trade in salt and opium under the monopoly of the company, which reduced the opportunity of private trade by company officials in these two important commodities.

Following the changes brought by the Regulation Act, Warren Hastings was appointed the first governor-general of the Calcutta Presidency and three councillors, Philip Francis, General John Clavering, and George Monson were appointed by the Parliament. These three councillors were totally ignored by Warren Hastings and other company officials. However, out of these three members, Philip Francis took a strong stand against company officials, especially Hastings.

William Bolts was perhaps the first person of civil society who brought to the notice of the civil society malpractices of the officials of the East India Company. He published his book, *Consideration on Indian Affairs*, in c.1772⁵⁵ in which he highlighted the conduct of Harry Verelst, who was the governor of Bengal after Robert Clive. Following the publication of his book, he was harassed by the governor and forced to leave India. He travelled back to London to seek justice from the British judicial system. The British courts provided him justice in c.1774, when the court accepted that Verelst was guilty. This was perhaps the first recorded example of fixing extraterritorial liability of a multinational corporation. Bolts' case established in the eighteenth century that a CEO of a company can be tried thousands of miles away from the place of crime. Why can similar action not be taken against the CEO of Union Carbide in the United States using a similar provision of law?

The information that Edmund Burke received from Philip Francis, and his relative William Burke, about the operations of the officials of the East India Company in India, shaped his views about the company. William

Burke was working with the Rajah of Tanjore, who provided information to Edmund Burke about the company officials who were involved in the scandal of providing personal loans to the Nawab of Arcot and Rajah of Tanjore. The two Burkes collaborated to bring notice to Britain's civil society the scandal amounting to £ 3 million in c.1779. Edmund Burke also received inputs from Philip Francis, who had returned from India, when he published the Select Committees 9th report in c.1783. He mentioned in this report that, after the territorial occupation of India by the East India Company, 'trade ceased to be exchange, and has been transformed into plunder'. He further wrote that company factors have turned in one stroke, the whole trade of the company in their own hands, on their own capital, at their own risque (risks) and the company has become factor for them.⁵⁶

Edmund Burke was an influential thinker of the time. His book on French revolution had provoked ideological debate amongst conservative and liberal thinkers. He did not appreciate state intervention in the activities of the company so long as it did not violate the mandate given by the royal charter. Due to this reason he initially objected to the efforts of Prime Minister Lord North to regulate the company. However, once firsthand accounts of the activities of the officials of the East India Company, from Philip Francis and William Burke, became available to him, his thinking about the company changed significantly. During this time, the coalition government of Lord North and Charles James Fox was ruling the country. Edmund Burke helped the coalition government in drafting the East India Bill, which is popularly known as the Fox India Bill. The bill was presented in the Parliament in c.1783. This bill was intended to make the East India Company accountable to the British Parliament. For this purpose, the bill intended to replace the company's court of directors with seven commissioners to be appointed by the parliament. In December c.1783, when this bill was presented in the House of Commons of the British Parliament, it received massive approval.

Fearing that the Fox India Act may also receive positive response from the House of Lords, the East India Company provoked the British Crown by explaining how this bill would provide more powers to the prime minister and the Parliament on the affairs of the East India Company in comparison to the Crown. The explanation motivated King George III to issue a kind of whip to the members of the House of Lords by telling them that any member of the House who supports the bill would be considered as against the Crown. The results of the voting were quite obvious. The bill was defeated in the House of Lords. This led to the fall of the coalition

government led by North and Fox. In the following year c.1784, elections were held to the British Parliament, in which the East India Company financed the election of the opposition party. After election, William Pitt the Younger formed the government.

Despite the fact that the new government headed by Pitt favoured the company, it was compelled, by the mounting pressure of the civil society and the parliamentarians, to regulate the East India Company. He introduced the Government of India Act, drafted by Henry Dundas, to Parliament in July 1784. The act accepted the appropriateness of the chartered status of the company, but proposed a five-member board of control appointed by the king, as well as gave the king powers to recall any company executive in India. This act provided more powers to the Crown in the affairs of the East India Company at the cost of the British Parliament.⁵⁷

All these incidents left Burke a depressed and dejected person. His frustration is reflected in his statement that ‘all the tyranny, robbery and destruction of mankind practiced by the company in the East are popularized and pleasing to the country’. However, when Hastings came back to England after completing his term as governor-general of Bengal in c.1788, Edmund Burke initiated an impeachment trial against him because he knew that the British legal system did not provide the legal provisions to try the misdeeds of the company officials; neither had he believed in getting any positive gain from the impeachment. He knew that whatever may be the merit in the evidence against Hastings, the outcome of the impeachment would eventually rest on the voting in the British Parliament. What happens at the time of voting, he had already experienced. The only possible gain in the entire impeachment process was that the debate in the Parliament did influence public opinion on the case. As it was expected, in c.1795, Warren Hastings was acquitted at the impeachment trial.

The impeachment trial and the accompanying debate that took place in the Parliament reveals that contemporary British citizens and intelligentsia were agitated about the impunity that the East India Company enjoyed from consequences of its misdeeds. Its officials were not only indulging in opportunistic behaviour, but were also resorting to all sorts of unethical and inhuman practices in full knowledge of the public and government. However, at that point in time, there was an absence of a legal framework to regulate the activities of corporations and their managers. The courts were not at all equipped to bring them to books and have them pay for their crimes. This is also the problem with contemporary legal systems because the process of globalization of businesses has not been accompanied by

commensurate efforts to globalize institutions of corporate governance and justice redressal systems. However, what the incompetent legal system could not achieve, was made possible by socio-economic and political transformation experienced by the British society, polity and economy.

British Parliament made several attempts to improve the quality of corporate governance of the East India Company. These attempts were in the forms of legislations that were presented by the Parliament, such as the Regulation Act, Fox India Act, and Pitt's India Act. The Fox India Act became a casualty of the power struggle between the Crown and the Parliament. The acts that succeeded in getting approval from Parliament gave more power to bigger stockholders and excluded small stockholders from influencing the governance of the company. These reforms reflected the nature of British democracy of the period, when 'the electorate was narrow and consisted of scores of rotten borough'.⁵⁸

The most articulate and formidable antagonist of the East India Company was emerging as a new class, with a new ideology, as a consequence of a transformation that the British economy and society were experiencing after the invention of the steam engine by James Watt, and several other inventions that occurred in the processing of cotton. This new ideological premise formed the basis of the book written by Adam Smith, *Wealth of Nations*, in c.1776. This book was in fact a manifestation of the socio-economic transformation of the British society from the dominance of mercantilism to the birth of classical political economy. The new school of classical political economy challenged the very foundation that provided logical premise for the existence of companies like the East India Company.⁵⁹

The new ideology and new social order, which epitomized virtues of free trade, freedom of enterprise and free market, compelled the British state to end the trading monopoly of the East India Company through the Charter Act of c.1813 and finally, c.1833, the East India Company was stripped of its commercial functions. However, it remained as an agency of British Empire until c.1857.

NOTES

1. In this study, the authors explain the phenomenon of separation between ownership and control, which was emerging as an important paradigm of organization of businesses in the United States; see Berle and Means (1932).
2. See, for this strand of thought, the writings of Roe (2002, 2003) and La Porta (1999, 2003).

3. The authors who have established the relationship between the financial sector and the nature of corporate governance are Boots (2000) and Verdier (2002).
4. For the difference between stockholders' interest and stakeholders' interest, see Blair (1995) and Harsmann (1996).
5. To understand the relationship between policy regime and the nature of corporate governance, see Hall and Soskice (2001) and Rajan and Zingales (2003).
6. For understanding the approach to corporate governance based on the principle-agent approach, see Arrow (1985), Fama (1980) and Alchian and Demsetz (1972).
7. See Jensen and William (1976) and Fama and Jensen (1983).
8. For the understanding of the stewardship theory of corporate governance, see Donaldson and Davis (1991) and Davis et al. (1997).
9. For details regarding the stakeholders approach to corporate governance, see Jones and Wicks (1999), Freeman (1984) and Hill and Jones (1992).
10. The scholar who established the relationship between polity and nature of corporate governance is Roe (2002, 2003).
11. La Porta (1999, 2003) has explained the impact of a country's legal system on the nature of corporate governance of the country's corporation.
12. For understanding Royal Charter Companies, see Gower (1969), pp. 23–25.
13. For details regarding quasi-sovereign rights of a chartered company, see Robins (2006), p. 25.
14. See for these facts, Carlos and Nicholas (1988), Bowen (2006) and Robins (2006).
15. See, Times of India (2010), August, 16.
16. For the documents that challenged the granting of chartered status to the companies, see Jones and Ville (1996).
17. See, Jones and Ville (1996).
18. For this idea, see McFetridge (1995) and Jones and Ville (1996).
19. The scholars who believe that granting of Royal Charter amounted to granting of intellectual property right to the corporation are Scott (1909–1912) and Carlos and Nicholas (1996).
20. For this, see Smith (1776, 2003), Book IV, Chapter I, p. 957.
21. For this fact, see Brendel (1982), p. 436.
22. For these facts, see Mukerjee (1974), p. 393 and Keay (1993).
23. For this, see Lawsan (1993), p. 21.
24. These facts have been taken from Robins (2006), p. 11.
25. For these facts, see Robins (2006) and Bowen (2006).
26. To know the pattern of shareholding of the East India Company, see Bowen (1987, 1989).

27. To know the description of the administrative structure of the East India Company, see Bowen (2006), Ch. VII, pp. 185–186.
28. These details are given in Bowen (2006).
29. To understand the difference between managerially coordinated transactions and market-coordinated transactions, see Chandler (1977).
30. For these ideas, see Alchian Demsetz (1972); Grief (1993) and Hajeebu (2005).
31. To understand the nature of opportunistic behaviour of the managers, see Arrow (1985), Fama (1980) and Alchian and Demsetz (1972).
32. This quotation has been taken from Smith (1776, 2003), Ch 1, p. 957).
33. See, Bearle and Means (1932).
34. The use of incentives to influence the behaviour of the agent has been described in greater detail in the writings of Grassmann and Hart (1983), Holmstrom (1979, 1982) and Shavell (1979).
35. For information asymmetry between employees, and the London office and employees working in the Indian sub-continent of the East India Company, see Carlos (1991, 1992a, b), Carlos and Nicholas (1990) and Anderson et al. (1982).
36. For the ideas of Henry Ford on giving higher wages to the employees of the Ford Motor Company, see Raff and Summers (1987). The quotation used here is taken from Raff and Summer (1987), p. 559.
37. For why employers pay efficiency wages to their employees, see Salop (1979), Stiglitz (1984, 1988), Weiss (1990), Akerlof (1982, 1984) and Seth and Aggarwal (2004).
38. The use of bond or entry-level fees on employees to minimize the problem associated with moral hazards has been discussed in the works of Carlos (1992a, b).
39. See, Carlos (1992b).
40. For detailed analysis of the contract that was executed between the East India Company and its overseas employees, see Hajeebu (2005) and Grief (1993).
41. For the process of remittance of earnings of overseas employees of the company to their families and relatives in Britain, see Hajeebu (2005).
42. To know how employees of the company working in India became wealthy individuals after completing their services in India, see Holzman (1926) and Marshall (1976), p. 229.
43. For the practice of multi-tasking by the overseas employees of the East India Company, see Holmstorm and Paul (1991).
44. To understand the consequences of the practice of own account trade by the employees of the East India Company, see Hajeebu (2005).

45. The use of *dustaks* and its consequences on the relationship between the Nawab of Bengal Subah and the East India Company, see Robins (2006), pp. 64–65.
46. For installing the Prince Mohammad Ali Wallajah at Arcot by the East India Company, see Bayly and Subrahmanyam (1988).
47. For insider buying of stocks by Robert Clive, see Robins (2006), pp. 85–86.
48. For these facts, see Stein (1999), p. 208.
49. For this, see Roy (1998), pp. 512–515.
50. See, Bowen (2006).
51. For this, see Travers (2007).
52. For this, see Stern (2004).
53. See, Travers (2007).
54. See, Robins (2006).
55. To know how Bolts described the practices of the officials of the East India Company, see Bolt (1772 [1998]).
56. This quotation has been taken from Robins (2006), p. 128.
57. See, Marx (1853a, b, c).
58. See, Desai (2009), p. 48.
59. See, Smith (1776, 2003), Book IV, Ch. I.

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Modern Manufacturing and the British Raj

After the invention of the steam engine, which paved the way for the birth of the Industrial Revolution, British society, polity and economy also underwent revolutionary transformation. The changes transformed its traditional flexible manufacturing into modern manufacturing, and Britain emerged as the workshop of the world. This process has been described in greater detail in Chap. 3. The Industrial Revolution, for the first time in human history, removed constraints that had prohibited the possibilities of realization of human potential. It gave rise to a new period, when revolutionary changes became the norm and change became a constant. The importance of this event for our narrative is that from the womb of these historical changes, a new child was born. This child has been variously described as manufacturer, industrialist, entrepreneur or capitalist, depending upon which aspect of his biography one intends to highlight.

The manufacturers, as they increased in numerical strength, gained prominence in the society, polity and economy of Britain. This was inevitable because manufacturing provided possibilities to create unlimited amounts of wealth. The same was not true in agrarian economies, where owners of land could create wealth up to the extent the intrinsic quality of soil, or its fertility, permitted. Moreover, returns on land were ‘diminishing’ in nature. The emerging prominence of manufacturers as creators of wealth and employment opportunities resulted in the birth of new power elite in Britain. At the same time, Adam Smith’s book, *The Wealth of Nations*, provided ideological support to the new power elite. The new ideology, the ‘classical political economics’, replaced the dominance of physiocracy

(which protected the interest of peasants) and mercantilism (which provided ideological support for the activities of merchants and the existence of companies like the East India Company). This shift in the ideological premises of policymakers in Britain is narrated in Chap. 4 of the book.

Classical political economics became the new testament of the new elite, which preached the appropriateness of policies based on laissez faire, private property right and free trade. The new elite, through its influence on policymaking, began to challenge the premise that provided justification for the rule of the company of merchants on the Indian sub-continent. The new elite also challenged the monopoly of trade with the East, given to the East India Company by the British Crown. Influenced by the ideology of manufacturers, policymakers in Britain began to impose more stringent regulation on the East India Company. The process began with the Regulation Act of c.1778. It was followed by Pitt's India Act c.1778, and the Charter Act c.1793. Each successive regulation reduced the extent of the autonomy of the East India Company. In c.1813, the new political force succeeded in removing the monopoly of trade with the Indian sub-continent given to the company by the British Crown. Finally, in c.1833, the company was stripped off all its commercial activities. This process is described in Chap. 5. Therefore, c.1813 can be considered an important date, since this is when the paramountcy of the interest of British manufacturers began to influence policymaking in Britain.

A similar process against the rule of the company was also unfolding in the Indian sub-continent. The rule of the company had affected the interests of several groups and strata of the Indian sub-continent. The collective discontent of these diverse sections of society was expressed in the form of the Sepoy Mutiny (as described by imperialist historians), or first war of independence (as projected by nationalist historians). The revolt began when the troops of the 19th native cavalry deserted and marched towards Delhi on the night of May 10, 1857. Several attempts have been made to analyse this episode by different historians (imperialist, nationalist, Marxist and rationalist). The interest in this episode was revived recently with the appearance of a well-researched, well-documented and brilliantly written book by William Dalrymple, *The Last Mughal*.¹ Several other books also appeared in c.2007 (some old reprints and some new contributions), when India celebrated the 150th anniversary of the episode. We are not going to digress to analyse different dimensions of the revolt, because the anatomy of this event has already been covered by several historians.^{2,3}

The most important consequence of the first war of independence for the story of Indian manufacturing was that the rule of the company was abolished and the Indian sub-continent came directly under the rule of the British Crown through the Better Government of India Act c.1858. The end of the rule of the company was the beginning of the British Raj. The transfer of the rule of the East India Company to the rule of the British Crown and Parliament uncovered the reality to the masses in the Indian sub-continent that from then on, India would be directly ruled by the British Raj and not by any of its proxies. The transfer of all the territories ruled by the East India Company to the British government created a unitary political entity called India, which could be transferred to any new political entity, en bloc, in the future. In c.1876, the British government organized the Delhi Darbar to revive the Mughal tradition and display of imperial splendour. Around four hundred princes were invited to participate in the event. The Delhi Darbar was organized to emphasize the new unity under the British Raj, which had replaced the centrality of the Mughal Empire. To this historical event Sir Dinkar Rao, Chief Minister of Maharaja of Gwalior described, 'India has been until now a vast heap of stones, some of them small. Now from roof to basement, each stone of it is in its right place'.⁴ Direct rule of the British Crown also meant that henceforth, the interest of manufacturers of Britain would directly influence the policies of British government towards the Indian economy in general and towards Indian manufacturing in particular. The buffer created by the existence of the East India Company would no longer be able to stop this from happening.

In this chapter, I attempt to analyse the impact of the transfer of power to govern the Indian sub-continent, from the East India Company to the British Raj, on Indian manufacturing, which, in fact, amounts to an analysis of the consequences of shifts in paramountcy of the interest of merchants to the interest of manufacturers in the policymaking of the British government. To understand the impact of this historical fact, this chapter is divided into three sections. Section 6.1 describes the changes that occurred in the pattern of governance due to transfer of power directly to the British Raj. Section 6.2 deals with the process of emergence of modern manufacturing in India.

6.1 CHANGES IN THE PATTERN OF GOVERNANCE

Before c.1857, the administration of the Indian sub-continent was conducted by the Court of Directors of the East India Company, which was elected by the shareholders of the company. The court of directors was answerable to the board of control, a body set up by the British government in c.1784. The court of directors appointed a hierarchy of examiners, writers and merchandisers to run the company's affairs. Apart from officials working in the London office of the company, several officials who were working in different parts of the Indian sub-continent were also appointed. The highest position in the administration of the East India Company, in the Indian sub-continent, was enjoyed by the governor-general, whose office was located at Calcutta (Kolkata), followed by the governors of each of the presidencies, Bombay (Mumbai) and Madras (Chennai).

Subsequent to the transfer of power, the court of directors and the board of control were abolished and replaced by the office of the secretary of state along with his advisory board. The office of secretary of state was occupied by the person who enjoyed the confidence of the ruling party in the British Parliament. The office of the governor-general was replaced by the office of viceroy. Similarly, examiners and writers were replaced by permanent secretaries. In new circumstances, the policies regarding the Indian sub-continent were largely influenced by the shifting fortunes of the political parties in the British Parliament. Prior to the transfer of power, in the kind of governance structure that existed, the company's administration was quite authoritarian, devoid of any external interference. In the new structure of governance, the influence of the ruling political party in the British Parliament became paramount in policymaking. The involvement of British Parliament in the administration of the Indian sub-continent provided scope for the influence of pressure groups that existed in British political structure at that point in time, such as the textile manufacturers of Manchester and Lancashire, jute manufacturers of Dundee, salt manufacturers of Cheshire and traders of opium and indigo.

The civil servants of the East India Company were trained at the East India College, which was located at Haileybury, Hertfordshire. This college was established in c.1805 and civil servants of the company were especially initiated in the ideas contained in the writings of political economy in the East India College. Thomas Malthus held the chair on political economy of the college between c.1805 and c.1834, Richard Jones between c.1834 and c.1855, and James Stephen between c.1855 and c.1858. The college was

closed in c.1858. Civil servants were selected through a competitive exam. The civil servants 'were trained to rule not to serve. Though by ruling they served'.⁵ These officials were not expected to be great scholars or intellectuals, but were expected to have the ability to collect data and argue convincingly based on these data. Statistics became their obsession, perhaps because it was known at that time as 'political arithmetic'. However, the exception to this stereotype was some of the members of the Indian Civil Services (ICS). Scholars of Indian history and economy must be familiar with the brilliant writings of ICS officers like Malcolm Darling, William Todd and W.W. Hunter.⁶

All the candidates who were selected to join the ICS had to study classical political economy as a compulsory subject. They had to read all the important texts on political economy like McCulloch's edition of the *Wealth of Nations*, and Ricardo's *Principles of Political Economy and Taxation*.⁷ It was believed by policymakers that the knowledge of political economy would equip the civil servants to find appropriate answer to questions relating to policy formulation. Most civil servants, who were selected through competitive examination, generally came from the British middle classes. Principles of political economy had special appeal to the mind-set of middle classes of Britain because it provided importance to competition and merit rather than to family and kinship ties. The value system based on the premises of political economy, in fact, had replaced the acceptance of tenants of orthodox Christianity as a dominant value system amongst British middle classes.

After the birth of political economy, policymakers in Britain began to depend on the theoretical premises implicit in the text of political economy. Despite the fact that there existed several areas of disagreement amongst classical political economists, there existed consensus amongst them on wide areas. All of them agreed that policies made by the government should not affect the working of free markets. In fact, they advocated that government policies should facilitate the efficient working of the market economy. To achieve this objective, most policymakers of the British Raj accepted that there should be (i) free inter-regional and international trade, (ii) interference of the government in only those areas where markets fail, and (iii) rule of law and regulations to enforce contracts.⁸

The British Raj intended to erase the image of the empire created by the East India Company as an agency of transfer of resources from colony to Britain. Therefore, unlike the Mughal state, which did not legislate to give freedom to a conventional legal framework that existed in the form of a

community-based redressal system.⁹ The British Raj believed in the legislative state. The British policymakers thought that the Indian society was segmented into different religions and was also hierarchical due to the prevalence of caste-based hierarchy. Therefore, the British Raj wanted to project itself as an institution that provides impartial justice.

This was necessary to project because the government during the British Raj wanted to establish that the British rule is necessary for India, otherwise the fragmented and hierarchical society of India will get translated into fragmented polity. However, it was impossible to provide equality in justice when the expatriate British population was politically unequal. In practice, the legal structure placed British citizens above law and protected their acts of omission and commission. The Regulation Act of C-1773 laid the foundation for the establishment of the supreme court of India. It was established essentially to maintain the principle of extra-territoriality to all British subjects in India, to project that British citizens, wherever they live in the colonies, were subject to only British laws. The premise on which this principle was based suggested that irrespective of the country where British are settled as colonizers, its citizens would be tried by English courts and presided over by English judges, according to English laws and argued by English advocates.

The first example of this extra-territorial principle was observed immediately after the establishment of the supreme court in India with the trial of Nand Kumar who was diwan of Nawab of Bengal. In March c.1775, he filed a case against Warren Hastings, in which he charged him of taking a bribe of £35,000 in lieu of help he provided for appointment in the court of the Nawab. Instead, Warren Hastings sued him for forging the document, which was proof that he had taken the bribe. The first chief justice of the supreme court, who was a close friend of Hastings, Elijah Impay, gave Nand Kumar the death sentence on the charges of forgery. The forging of a document was not such a serious crime to be punished by the death sentence. This was described at that time as 'judicial murder'. Bal Gangadhar Tilak appropriately described the prevailing reality when he wrote that 'the Goddess of British justice though blind, is able to distinguish between black and white'.¹⁰ Apart from providing justice, legislations were also required for guaranteeing efficient working of the market. This necessitated the legislations regarding property rights and enforcement of contracts.¹¹

By c.1857, British manufacturing had been enjoying competitive advantage, emanating from several inventions and innovations, which facilitated

the birth of the Industrial Revolution. These advantages had eliminated the fear of competition from the Indian traditional flexible manufacturing. In fact, most of the traditional manufacturing had experienced a decline, as has already been discussed in detail in the section on de-industrialization in Chap. 4. Therefore, for the British policymakers, ideology of free trade advocated by classical political economists was most appropriate. The rule of the East India Company was perceived by British manufacturers as an institution that was protecting the interest of Indian traditional flexible manufacturing. After all, the East India Company had earned its profits from the exports of products made by Indian traditional manufacturing. Moreover, its monopoly of trade with India denied them access to Indian markets. In the aftermath of the East India Company, such fears also disappeared. Therefore, British manufacturers wanted the policy of free trade to have free access to Indian markets.

The policy of free trade was advocated by British manufacturers, despite knowing that their own growth was made possible under protectionist policies of the British government. Not only were their protectionist policies protected by wars against competing nations, but so were their interests. In new circumstances, protection was helping the landed gentry of Britain rather than manufacturing because protection increased the price of finished goods due to higher costs of imported raw materials. Imposing tariffs on the imported food grains increased prices of wage goods, which necessitated the payment of higher wages. Therefore, the growth of modern manufacturing in Britain is considered as the first historical example of ‘infant industry’ arguments.¹²

The principles of classical political economy provided theoretical support to the interest of British manufacturers. The institutional structure that these principles justified consisted of a legal framework to protect private property rights and enforcement of contracts. These principles also supported the policies of free trade and freedom to enterprise. Classical political economists believed that if such institutions do not exist in any country, and existing value systems and habits of thoughts of the society are constraints in evolving these institutions, government should create them through legislations. Classical political economists laid more faith on the working of the ‘invisible hand’ of the market, which gives freedom to economic agents to make choices, rather than on ‘visible hand’ of the state.

Accepting the logic inherent in the classical political economy, the British Raj followed the policy of free trade in India, while all other independent nation states of the world were imposing tariff walls to protect their infant

manufacturing enterprises. Bismarck raised tariffs in Germany in c.1879, and tariffs were raised in France c.1881, Russia c.1882, America c.1890 and Canada c.1897.¹³ The British Raj in India followed the policy of non-intervention by state. The absence of the role of state in providing protection to local enterprises has been described as 'night watchman role of the state';¹⁴ the objective being to protect the interest of Britain manufacturers in disguise.¹⁵ It is also an historical fact that while imports from Britain were without tariffs, exports from India were subject to tariffs. This is how the colonial government was carrying out free trade, which has been described as 'one-way free trade'.¹⁶

Despite the fact that during the British Raj, the role of state was insignificant, its indirect influences on the economy were quite significant. Indirect role of the state emerged as a consequence of public spending and through the mode of earning revenue. Due to the insignificant direct role of state, it was believed that if modern manufacturing did not emerge rapidly during the British Raj, then its reasons should be located in the lack of opportunities or constraints on investment decisions. This is believed because 'during the century and half of British rule, the market was given its head. British India was the great social experiment in letting interest and market forces do virtually everything'.¹⁷ Hence, scholars who believe in the argument attribute the reasons for delay in the emergence of modern manufacturing in India to endogenous factors that restricted the efficient working of the market. These restrictions existed on the supply side (like lack of means of transportation and communication, economic and social infrastructure, availability of skilled manpower and managerial talent), and demand side (like the fragmented markets and inequalities of income, which did not provide necessary conditions for the production of standardized goods on a mass scale).

The discrimination inherent in the policymaking became quite obvious when British government intended to develop railways in India. The railways were introduced in India during the rule of the East India Company in c.1845, when the first railway line was constructed between Bombay and Thane. However, the railways were strategically used to protect colonial interests. For example, the revolt of c.1857 prompted the British Raj to develop railways on a massive scale for the purposes of defence, so that the movement of troops, as well as military hardware to locations where military operations were required, could be facilitated. Moreover, by c.1857, traditional flexible manufacturing had experienced decline and India had emerged as an important supplier of raw materials for British manufacturing

enterprises. Railways had to play an important role to establish connectivity between the centres of production of raw materials and port cities. Initially railway lines were constructed to link important port cities with hinterlands, which supplied important raw materials, such as Bombay city in c.1853, Calcutta in c.1854 and Madras in c.1856. In addition to these strategic needs, railways helped distribute British manufactured goods to different markets in India. Hence, railways assumed strategic importance for the British Raj to achieve its political as well as commercial interest.¹⁸

To maximize the strategic advantage of developing railways, British government intended to expand network of railways across the Indian sub-continent in the shortest possible time. This necessitated encouragement of private investment in railways. To encourage private investment from Britain, the British government evolved the policy of guaranteeing a 5 per cent rate of return to private railway companies. In case a private company failed to achieve this 5 per cent rate of return on its investment, the government promised to compensate the railway company. This policy flooded the railway companies with requisite finance from the British investing public. However, a similar advantage was not extended to the investing public in India. The guarantee of return scheme gave to the British government the right to purchase the railway lines after twenty-five years had lapsed. This was perhaps the first example of Private Public Participation (PPP). Through this mode of organization of investment, by the 1920s, the government became the owner of 67 per cent of total railway mileage.¹⁹

As a consequence of the scheme, several private railway companies were established that developed their own networks of railway lines, such as East India Railway Company, Great Indian Peninsular Railway, Sindh Punjab and Delhi Railway, and North Western State Railway. Apart from these big railway companies, some smaller railway companies also emerged that provided railway services to smaller areas, like Rajputana Malwa Railway, East Coast Railway, Bengal Nagpur Railway and Madras Railway. Along with these private railway companies, the government of Britain also developed a government-owned railway network to earn revenue. Due to all these efforts, by the beginning of World War I, the aggregate distance covered by the entire railway network, both private as well as public, consisted of around 40,000 km.²⁰

While a large part of investment for the railway was raised in Britain with guaranteed returns, most of the requirements of the railway were procured from British suppliers. Therefore, a large part of investable funds raised from Britain flowed back to Britain by way of payments for imported

locomotives, rolling stock, track materials, sleepers and wages (including salaries of British managers and skilled workers). To buy the equipment for railways, the government floated tenders only in Britain.²¹ Due to these faulty policies, even the development of railways in the Indian sub-continent by the British government did not facilitate the development of its economy; it largely served the interest of British manufacturing and administration of the economy. The benefits that occurred to the Indian economy were incidental. One of most important unintended consequences of the railway network developed by the British administration was on the biography of Gandhi. It is while travelling in a train in South Africa (also developed by the British), that Gandhi learnt important lessons about the value of human dignity. He travelled extensively across different parts of India using the Indian railway after coming back from South Africa in c.1905. These travels transformed Mohandas Karamchand Gandhi into Mahatma Gandhi, and provided added strength to his conviction that India would be best governed by Indians rather than by the British Raj. Therefore, he initiated the Quit India Movement in October 1942.

Indian railways also charged discriminating freight rates. From port cities to inland movement of goods, tariffs were less in comparison to inter-city freight rates. This policy subsidized movement of goods meant for international trade, but increased the costs of movement of goods meant for inter-regional trade. The nationalist leaders provided an important example to make the British government aware of this anomaly. For instance, transporting of imported matches from Bombay port to Delhi cost the same in tariff as transporting them from Ahmedabad to Delhi. This, despite the fact that the distance between Delhi and Ahmedabad was 483 km less.²² Due to its emphasis on facilitating exports of raw materials and movement of troops, the Indian railway network did not revitalize the Indian economy.

Railways might have emerged as a leading sector of the Indian economy if British government had initiated a policy for buying of railway equipment from an India-based supplier. This would have provided immense scope for the growth of Indian manufacturing industries that have strong technological linkages with railways, such as the iron and steel industry, engineering industries, coal mining, and manufacturing of railway wagons and signalling equipment. If the British government had met the requirement of railway suppliers based in the Indian sub-continent, it would have provided an incentive to Indian entrepreneurs to establish these industries, or the policy might have forced foreign manufactures to set up operations in India, in

which case it would have provided learning opportunities to Indian entrepreneurs and workers.

However, circumstances changed significantly during World War I. The wartime needs forced British policymakers to deviate from the policy of *laissez faire* as well as free trade. The departure occurred through the appointment of Indian Industrial Commission in c.1916, followed by Indian Fiscal Commission in c.1922, and later by Montagu-Chelmsford reforms. There exists an alternative strand of thought on the consequences of these events on policymaking in India. Economic historians like Bagchi, Chatterji, Ray and Tomilson believe that these events did not significantly alter the stance of policymaking in India.²³ On the contrary, historians like Dewey believe that through these legislations and reforms, a certain amount of sovereignty was transferred to policymakers in the Indian sub-continent, which opened scope for bargaining by different pressure groups that were functional in India at that point in time.²⁴

A short stint by the Labour Party in the British government between c.1929 and c.1931 slightly benefited the Indian interest because the Labour Party was willing to accommodate the interest of Indian manufacturers. The changes that occurred in the global economic scenario during the Great Depression of the 1930s also compelled the British government to deviate from the policy of *laissez faire* and free trade. The Great Depression began to spread from the centre of the world market to countries that were on its periphery (colonies) like a communicable disease. Once the countries on the periphery caught this virus, the disease became more persistent because virus affects weaker economies for a longer period. By the 1930s, the Indian manufacturing sector, though not very large, had developed needs of its own for its continuous survival. The British government, which had given up the idea of free trade to protect the interest of its own manufacturing, also introduced protective tariffs in India. Therefore, those manufacturing industries that produced largely for the domestic market or produced import-substituting product benefited a lot. The tariffs imposed during the period of the Great Depression helped the growth of cotton textiles, sugar and steel manufacturing.²⁵ Moreover, British government also gave up the policy of gold standards in c.1931. This helped in stabilizing the exchange rate of the Indian rupee.

The end of the Depression almost coincided with the outbreak of World War II in c.1939. This time, cessation of imports was almost totally due to the disruption of sea routes. The entry of Japan brought the war to India's doorstep. India became an important base for military supplies including

arms and ammunition on behalf of the allied forces. The ordnance factories in India were producing 700 types of munition.²⁶ To force Indian manufacturing enterprises into meeting the wartime requirements of the British government, the government began to interfere in the working of Indian manufacturing with the Defence of India Rules, which were promulgated in c.1939. These rules gave far-reaching power to the state to influence the growth of manufacturing enterprises in India. For instance, Rule 81 of the Defence of India Rules gave authority to the government to regulate or prohibit the production of certain articles or things of any description. Similarly, Rule 84 provided to government the power to prohibit imports or exports to control the purchase of foreign exchange. The British government used the provisions given in the Defence of India Rules to regulate Indian manufacturing to achieve its wartime objectives.²⁷

During the British Raj, an important innovation occurred in India in the organization and management of manufacturing enterprises. This innovation was the evolution of the managing agency system. As mentioned in Chap. 4, to accommodate the interest of British manufacturers, the East India Company had permitted the entry of free merchants who acted as agents of British manufacturers to supply products produced by the British mills in the Indian markets. These agents formed agency houses, which were partnership companies founded by free merchants, ex-civil servants and military officials of the company under the patronage of the administration of the East India Company. These companies were generally financed with the earnings of the company officials, from their private trade or their savings.

The managing agency system came into existence in the Indian sub-continent when an agency house first promoted a manufacturing enterprise as a joint-stock company and then acquired the right to manage it. This kind of event, first of all, occurred in c.1836, when one of the agency houses, Carr Tagore & Company, founded by a partnership between William Carr and Dwarkanath Tagore (grandfather of Rabindranath Tagore), promoted Calcutta Tugg Association and assumed its management. At the same time, Parry & Company became managing agents of Proto Nova Steel and Iron Company.²⁸ The managing agency system grew out of the needs of prevailing circumstances, when there existed shortages of managerial and technical skills. It facilitated the financing of manufacturing projects through public investment, through share capital, and protected at the same time the interests of promoters. To protect the interest of promoters, it gave them right to manage the

enterprise as managing agents who earned commission as a fixed per cent of the total sales of the enterprise. The managing agency system created a unique pattern of organization of business enterprises in India where private interest managed public funds. Some of the important managing agency houses of that period were Andrew Yule & Company, Duncan Brothers, Williamson Magor & Company, Birds & Company, Martin Burn & Company, Balmer Lawrie & Company, Shaw Wallace & Company Limited, Parry & Company, Mcleod & Company and Rolli Brothers.²⁹

6.2 EMERGENCE OF MODERN MANUFACTURING

As mentioned, there existed implicit as well explicit discrimination in British policies regarding the emergence of modern manufacturing, especially during the early years of the British Raj. Despite these discriminations, a modern manufacturing sector did emerge in India. This happened because historical circumstances provided opportunities to the Indian entrepreneurs to accumulate capital that was necessary to invest in modern manufacturing. Circumstances also provided them with the availability of modern technology through their interaction with the British manufacturers. The existence of these two important preconditions, which are necessary for the growth of modern manufacturing, helped Indian entrepreneurs to start modern manufacturing enterprises. Initially, they initiated enterprises in two textile manufacturing industries—cotton and jute. In both the manufacturing industries, India had competitive advantage as it had long traditions of craft-based production in these industries, and also had local availability of raw materials.

These two textile manufacturing industries took root at two different locations. The cotton textile manufacturing emerged in the western part of the Indian sub-continent at Bombay, whereas the jute manufacturing industry took root in the eastern part of the sub-continent, at Calcutta. These two locations were separated from each other by a distance of about 1600 kilometers. Prior to the emergence of a railway network and means of communication, there did not exist an integrated market economy in India. In fact it consisted of several fragmented markets unified by only single currency and uniform laws imposed by the British Raj. Therefore, we can assume that, at that point in time, eastern and western parts of the continent existed as separate regional economies.

Bombay had emerged as an important centre of maritime trade after the decline of Surat in the western part of the Indian sub-continent (decline of

Surat has been explained in an earlier chapter of the book). In c.1818, when the Maratha Empire was annexed by the East India Company, Bombay was just a port city. Bombay assumed importance after the abolition of monopoly of trade given to the East India Company in c.1833 and opening up of the market in China by British military in c.1842. These two historical events provided opportunity to Indian merchants who had migrated to Bombay from Gujarat. Some of the communities of merchants that migrated to Bombay were Parsis, Bhatia merchants, Bohras, Khojas, Memons and Marwaris. The most important articles for export from Bombay were cotton and opium. Opium was primarily exported to China and cotton was exported to the textile mills of Manchester and Lancashire. Subsequent to the opening of the Chinese market for opium, Bombay merchants became drug barons of the nineteenth century and Bombay emerged as Medellin.³⁰ This happened because the opium of Malwa was also routed through Bombay to China.³¹

Calcutta, at that point in time, was the capital of the British Raj until c.1911. It had the largest concentration of Europeans and European merchants. In addition, Calcutta had the largest concentration of agency houses floated by British merchants, who enjoyed a strong link with British administration as well as with British manufacturers. Calcutta also attracted Indian business communities; the Marwari merchants of Calcutta especially had earned substantial wealth from the exports of raw silk, jute, sugar and indigo, and by selling the manufactured products of British manufacturing companies in Indian markets. Moreover, coal, which had emerged as a prime mover of modern machines, was also locally available.

The British government gave freedom to British manufacturers of textile machinery to export it to other countries in c.1848. Until then, the export of textile machinery and equipment to other countries had been prohibited to maintain the monopoly of textile manufacturers of Britain. The British government was forced to liberalize exports of textile machinery because textile machinery manufacturers of Germany, France and Belgium had begun to export textile machinery by this time.³² Following the liberalization of trade in textile machinery, standard equipment producers of Britain, like Platt Brothers, Oldham and John Hetherington & Sons, began to supply, to Indian promoters of textile mills, turnkey solutions, which included supply of plants, equipment, skilled persons and managers.³³ Availability of capital and technology for manufacturing cotton textiles provided objective conditions for the Indian merchants of Bombay to establish modern textile mills.

Trading in jute was important since the early days of the East India Company when it was used for manufacturing cordage and ropes. Until the 1830s, Bengal had a monopoly of handloom manufacturing of jute textiles. In c.1838, the Dundee mills in Ireland were successful in transforming the jute fibre into yarn with the help of a modified form of power loom. This led to an increase in the demand of Indian jute. Indian jute achieved near monopoly position during the Crimean War, which cut off regular supply of Russian hemp, which was an important substitute for Indian jute.³⁴ This boom provided considerable earnings to the agency houses of Calcutta that were involved in the exports of jute. These agency houses had strong linkages with the Dundee mills due to their contacts with them. They were able to acquire knowledge about jute textile machinery and equipment necessary to establish jute textile mills.³⁵ Due to these advantages, the agency houses of Calcutta took the leadership in promoting jute textile manufacturing in Calcutta.

The simultaneous growth of two textile manufacturing industries, at these two separate locations, has been described by scholars as '*dual dominance*', because these two locations continued to enjoy significant position in the manufacturing map of the Indian sub-continent.³⁶ These two different manufacturing industries, at two separate locations, were example of two different modes of growth of manufacturing where each mode represented two interrelated but antagonistic elements. In the case of cotton textile manufacturing, entrepreneurship came from Indian merchants, who had made riches from the trade in cotton and opium. In the case of jute textiles, the leadership was provided by ex-civil servants of the East India Company and Calcutta-based agency houses managed by British citizens. Due to this reason, investments in the jute textile industry were partly financed by British capital (i.e., sterling capital) and savings of British civil servants.³⁷ On the other hand, investments in cotton textile manufacturing came from indigenous accumulation of capital by Indian merchants. The attitudes of British policymakers were also different in respect to these two manufacturing industries. Cotton textile manufacturing was slowly emerging as an important competitor to Manchester and Lancashire cotton textile mills. On the contrary, jute textile mills were owned by expatriate British and were engaged in the production of a product that was emerging as a necessary complement to British manufacturing industries.

In the manufacturing of cotton textiles, earlier attempts to start modern mills were made by British and other European entrepreneurs. However,

due to wrong location and financial problems, these enterprises had mixed success. The first cotton textile mill, called Bowreah Mill, was opened by British entrepreneurs near Calcutta in c.1818, by Kettlewell Butler & Company. The company also managed two other cotton textile mills in Bengal, the Durban Mill and New Ring Mill. In the 1830s, another spinning and weaving mill was functioning in Fort Gloucester about fifteen miles from Calcutta. This factory had employed five steam engines to run its machine. Steam engines were operated by bringing coal from Burdwan. Two cotton textile mills were also established by French entrepreneurs in Pondicherry (now called Puducherry) in c.1831 and c.1838, respectively. Most of the equipment and machinery for these cotton textile mills were imported from France, apart from the steam engines, which were imported from Britain. France was exporting blue cloth dyed with indigo to Senegal, where it was exchanged for gum Arabic, which was essential input for the French clothing industry. French mills had taken the services of a master weaver, Thomas Geodefrog, to improve the skills of local weavers, and services of a chemist, Michael Gonfreville, to improve the quality of indigo-dying techniques. In c.1829, the factory management brought one mechanic, two assistant mechanics, a turner for woods and metals and a fitter who was trained in making combs and shuttles for weaving machines. These craftsmen were brought to India to train local artisans and to establish a model workshop. By c.1832, most of the French craftsmen were replaced by Indian workers.³⁸

A British entrepreneur, James Landen, started a cotton textile mill at Broach in Gujarat in c.1853. Landen had been appointed by the British government in c.1840 to help in improving the quality of Indian cotton. He was involved in experiments to cultivate long-staple American cotton in India. He was also instrumental in introducing American saw gins in Gujarat's cotton growing areas. The cotton cleaned with the help of this equipment was more acceptable in British mills.

The first Indian who thought about starting a modern cotton textile manufacturing mill was Ranchhodlal Chhotalal, who was from Gujarat. He worked in British administration and occupied the position of assistant superintendent of customs (the highest position that could be occupied by an Indian at that point in time). However, he was removed from this position on corruption charges. Being an important bureaucrat, he had contacts with several British officials. He was in contact with Captain Fulljames and James Landen. Fulljames had collected plenty of information regarding textile equipment suppliers of Britain while helping a group of

Gujarati merchants who intended to establish a spinning mill at Surat, called Surat Cotton Spinning Association. Landen had already opened a cotton textile mill at Broach and was encouraging local merchants to start cotton ginning factories to supply clean cotton to his mill. Encouraged by Landen, Ranchodlal Chotelal started his cotton gin factory at Broach and planned to establish a cotton textile manufacturing mill at Ahmedabad. However, due to reluctance of native Gujarati merchants to bear the risk of entering into cotton textile manufacturing, he could not start the mill at Ahmedabad. If he had been successful in raising sufficient capital to start the mill at Ahmedabad, Ahmedabad could have been the birth place of cotton textile manufacturing in India.³⁹

Cowasjee Davar floated the first successful steam-powered cotton textile mill at Tardeo in Bombay, called Bombay Weaving and Spinning Company on July 7, c.1854. The equipment for this mill was supplied by John Hetherington & Sons of Manchester and skilled manpower was also sourced from Britain. Sir William Fairbairn, an architect from Britain, designed the building of this factory. The team of British technicians, consisting of Whitehead, Lambert, Newton and Beardsall, acted as erectors. Grean Halm was appointed as carding master and Knott as spinning master.⁴⁰ Maneckji Petit established another cotton textile manufacturing mill, the Oriental Spinning and Weaving Mill also in c.1854, which began production in c.1858. Opening of this mill was followed by starting of Victoria Mill in c.1860 and in the same year, Mangaldas Nathubhai promoted Bombay United Spinning and Weaving Company, and Dinshaw Petit established Maneckji Petit Mill. In the month of August c.1860, Bomanji Wadia opened Bomanji Hormusjee Spinning and Weaving Mill, and in September c.1860, Merwanji Bhavnagar and Kapadia established New Great Eastern Spinning and Weaving Mill. Subsequently, Maneckji Petit started Royal Mills and Petit Mill during c.1861–1862.⁴¹

After great struggle, Chhotalal was finally able to float a cotton textile mill at Ahmedabad. After the success of several cotton textile mills at Bombay, Ahmedabad merchants now began to believe that successful cotton textile mills could be established. By c.1858, Ranchodlal renewed his efforts to open a textile mill at Ahmedabad. This time his efforts received positive response from local merchants. He ordered the equipment for the proposed mill from Britain. However, the first shipment of textile machinery was lost due to a storm at sea and the British engineers who had to establish the factory at Ahmedabad died of cholera. A replacement cargo of equipment was claimed under the provision of insurance. The equipment

finally arrived at a sea port near Ahmedabad, the Cambay port. In the absence of railway between Cambay and Ahmedabad, textile machinery was brought to Ahmedabad on bullock carts, covering distances of more than 100 kilometers.⁴² The establishment of this mill at Ahmedabad led to the promotion of several cotton textile mills at Ahmedabad. Subsequently, Ahmadabad emerged as an important rival to Bombay-based cotton textile mills.

On April 12, 1861, the American Civil War began, which suspended the supply of American cotton to British cotton textile mills. This led to massive demand for Indian cotton by British mills. The exports of cotton from India to Britain were valued at £148 lakhs in c.1862–1863, compared to £93 lakhs in the preceding year.⁴³ This incident created a strong linkage between British Manchester and the Indian Manchester (Bombay). Despite the fact that the Bombay merchant earned substantial profits during the cotton boom, they lost most of the profit earned on speculation rather than on investment. On May 2, 1865, the American Civil War came to an end, which resulted in a sharp fall in the price of Indian cotton. This led to a serious financial crisis in Bombay. The expansion in investments in cotton textile mills stopped, which were renewed only after the Indian business community regained confidence.

Between c.1873 and c.1874, twenty cotton textile mills were added in Bombay. The concentration of cotton textile mills in Bombay provided preconditions for mill owners with common problems to form in c.1875 the Bombay Mill Owners Association. Some of the important mills that were established during this period were promoted by a highly diversified group of entrepreneurs. In c.1870, Morarji Gokuldas converted his jute and wool unit into a cotton textile unit and named it Morarji Gokuldas Mill. With this mill, Kutchi Bhatia merchants entered cotton textile manufacturing. In c.1874, another Bhatia merchant, Maneckji Khatau, opened Khatau Mills. These new mills ended the monopoly of Parsi merchants in cotton textile manufacturing in Bombay. Thereafter, Albert Sassoon founded Sassoon Spinning and Weaving Company at Bombay in c.1874 and c.1893. Kowasji Naik promoted Alexandra Mills in 1892. This was subsequently purchased by Nusserwanji Tata in c.1893. James Greaves and George Cotton, two British entrepreneurs, established Greaves Cotton and Company in c.1879; and Charles Killick and Presto Nixon launched Kohinoor Mills. The managing agency house of Bradburry and Brady opened several cotton textile mills at Bombay. Around the same time, Nowroj Nusserwanji Wadia established Bombay Dyeing and Century Mills. Until the 1890s,

Bombay remained the most favoured location for cotton textile manufacturers. At that point in time, cotton manufacturers of Bombay were primarily exporting yarn to the markets of China and Japan. The location of cotton textiles near Bombay, being an export-oriented industry, was highly appropriate. Even the humid climate of Bombay was suitable for the growth of cotton textile manufacturing. And the manufacturers at Bombay had captured a significant share in the Chinese and Japanese markets. The Indian twist yarn had emerged as such a phenomenal success that the Manchester Chamber of Commerce conducted an enquiry regarding its success in the markets of Southeast Asia.⁴⁴

The dominance of Indian cotton yarn in the markets of China and Japan was short-lived. During c.1860s, the spinning of cotton by machines was introduced in Japan. The spread of modern technology of spinning reduced the demand of Indian yarn in the Japanese market.⁴⁵ In c.1894–1895, Japan defeated China in the war, and the Chinese markets were captured by Japanese mills. Until c.1893, Indian cotton textile mills were supplying 96 per cent of the total demand of Chinese markets. However, after the defeat of China, export of Japanese cotton yarn increased significantly to China, and Indian exports registered a dramatic fall.⁴⁶

These new developments created the necessity for a structural adjustment of the Indian cotton textile industry. It began with targeting the Indian handloom weavers for supplying them yarn. Handloom weaving was still continuing in India at several centres. It also necessitated vertical integration of cotton spinning companies from only spinning yarn to weaving of cloth, also to capture the domestic market of cloth. This led to the emergence of integrated mills. This transformation made Indian cotton textile manufacturing inward looking. At the same time, cotton textile manufacturers realized that to maintain their competitive advantage they had to spread to different cotton growing areas of the Indian sub-continent. All these factors slowly led to the spread of manufacturing of cotton textiles from Bombay to other parts of India. This change occurred because, by now, the cotton textile manufacturing in India had moved from an import-substituting industry to an export-oriented one.

It has already been described how Ranchhodlal Chhotalal made a pioneering effort to establish the first cotton textile manufacturing mill at Ahmedabad in c.1858. Ahmedabad had a long tradition in manufacturing cotton, silk, wool, and silver and gold brocade work. It was also an important market of indigo, which was produced at Surkhejee, a place that is now part of the Ahmedabad district. Despite these advantages, it took several

years for another Gujarati merchant to promote the next textile mill in the town. In c.1876 Chotelal started another cotton textile mill in Ahmedabad. This mill was followed by Mansukhbhai Bhagubhai, a Gujarati Jain entrepreneur, who set up the Gujarat Spinning and Weaving Company in c.1877. Another Gujarati Jain entrepreneur, Karamchand Premchand, launched Ahmedabad Manufacturing and Calico Mills in c.1880. During the decade of the 1890s, several entrepreneurs belonging to the Vaishnav Vania community of Ahmedabad established a number of cotton textile mills. The famous cotton textile baron of Gujarat, Mafatlal Gagalbhai, established his first cotton textile mill, the Ahmedabad Shorrock Spinning and Weaving Mill in c.1905. He took the manufacturing of cotton textiles to other towns of Gujarat, when he established a mill at Nadiad in c.1912 and at Surat in c.1916, to take advantage of incentives given by the Maharaja of Baroda. Consequently, through takeovers of different mills, he established the first integrated empire of cotton textile manufacturing from gin to retailing of cloth. The family of Kasturbhai Lalbhai promoted Calico Mills at Ahmedabad, followed by Kasturbhai mills. This family also established Arvind Mills in c.1931.⁴⁷

The expansion of the cotton textile manufacturing in Ahmedabad created a rival cotton textile manufacturing centre to the Bombay cotton textile mills. The mill owners of the city also established their own mill owners' association called Ahmedabad Mill Owners Association in c.1891. The cotton textile mills of Ahmedabad remained preoccupied with production of mill yarn for a considerable period of time, like the Bombay mills. Unlike Bombay mills, which depended on the export of yarn to Japanese and Chinese markets, the Ahmedabad mills developed a symbiotic relationship with local centres of handloom weaving by supplying them machine-spun yarn.⁴⁸ It is interesting to note that in Ahmedabad close linkages emerged between promoters of the modern cotton textile mills, financiers, money-lenders, traders of cotton and traditional flexible manufacturing. The existence of these linkages provided a distinct competitive advantage to Ahmedabad-based cotton textile mills. Ahmedabad also had availability of skilled manpower from the established centres of spinning and weaving communities.

Contrary to the advantages of Ahmedabad cotton textile mills, the Bombay mills were hiring their workforce from distant locations like Southern Konkan districts of Bombay Presidency and eastern districts of the United Provinces through middlemen known as '*jobbers*'. This system reduced the management's control on workers. Therefore, these workers

using their regional affinities evolved regional solidarity to assert their demands on mill owners. The data on industrial disputes between mill owners and workers shows that the manufacturers of cotton textile mills of Bombay experienced eight general strikes over a one-month duration between c.1919 and c.1940. One of the strikes lasted for more than one-and-a-half years in c.1928–1929.⁴⁹ Another problem Indian cotton textile manufacturing faced was that these mills depended heavily on male, displaced, handloom weavers, who were available after the decline of traditional flexible manufacturing of cotton textiles. Such workers were prone to form unions. This structure was quite at variance with the experience of cotton textile manufacturing mills of Britain and Japan. Here the mills owners depended on women and child labour.

Jamsetji Tata took the manufacturing of cotton textiles to Nagpur, where he established the Central Indian Spinning and Weaving Mills in c.1874. The mill began manufacturing cotton textiles on January 1, c.1877; the date of Queen Victoria's coronation in London. To commemorate the event, the factory was named Empress Mill. For the first time in India, Tata used ring spindles, which were developed in the United States and as yet were not very popular, even in America. Nagpur city was in close proximity to the cotton-growing areas and was also quite near to coal mines of eastern India. Nagpur was also an important centre of handloom production and served as an important market of yarn. It had also emerged as an important railway junction (terminus) of the Great Indian Peninsular Railway, which provided access to all the important markets of the sub-continent. After the opening of the textile mill by Tata, Nagpur attracted several other cotton textile mills. Sarup Chand Hukumchand introduced manufacturing of cotton textiles at Indore.

Before the Sepoy Mutiny or the first war of independence in c.1857, the British administration started a cantonment at Kanpur. This cantonment played an important role during the revolt. Here, the British army established the Central Ordinance Depot (COD). The main work of the COD was to procure supplies for the army. In c.1861, British citizens Hugh Maxwell and David Begg formed Begg Maxwell & Co. and promoted Elgin Mills, which was the first cotton textile mill at Kanpur. Begg Maxwell & Co. later became Begg Sutherland & Company. Elgin Mills produced textiles and tents for the army. Later on, three expatriate British entrepreneurs floated Cawnpore Woollen Mills and Army Cloth Factory. These mills were converted into joint-stock companies in c.1882. It is interesting to note that most of the investment in the cotton textile mills at Kanpur was

made by British entrepreneurs, while the local merchant community remained preoccupied by trade. The only Indian entrepreneur who started a cotton textile mill at Kanpur was Kamlapat Singhania.

Soon, cotton textile manufacturing spread to other towns of northern India. On May 1, 1889, the first cotton textile mill was set up in Delhi by Lala Shri Ram and was named Delhi Cloth Mill (DCM). During World War I, Shri Ram floated another separate unit to manufacture tents. For this, DCM entered into a partnership with a government contractor who had strong liaison with the British administration. After c.1911, when capital of India was shifted from Calcutta to Delhi, there was substantial growth in the demand for tents because at that time some of the government offices were operating in tents, and tents also provided residential accommodation to some of the government officials.⁵⁰ Lala Shri Ram's family had migrated to Delhi from the Jhind district of Punjab (now Haryana). In c.1935, Lala Shri Ram promoted another cotton textile mill at Lyallpur in Punjab in c.1916 called, Lyallpur Cotton Mill. After the establishment of DCM, G.D. Birla promoted a cotton textile company at Delhi, the Birla Mills. Birla also located one of his cotton textile mills, Jiyajirao Cotton Mills, at Gwalior in c.1919. In the 1940s, one of the entrepreneurs of Punjab, Karmachand Thapar, situated Jagatjit Cotton Textile Mills (JCT) at Phagwara in the district of Kapurthala of Punjab. At the same time a British entrepreneur, E. Dyar, established the first woollen textile mill, Egerton Woollen Mills at Dhariwal in Punjab, which later became popular as Dhariwal Mills.⁵¹

At approximately the same time, possibilities of setting up cotton textile mills in the cotton-growing areas of southern India, were also explored. Coimbatore region, which was part of Madras Presidency's Kangaund area, was bestowed with large areas of black soil, which is ideal for the cultivation of cotton. Farmers in this region were cultivating the short-staple local variety of cotton. This variety was suitable for handloom weaving, but not for modern textile mills. James Stance, a British entrepreneur, started the Coimbatore Spinning and Weaving Company in c.1888. He was basically a coffee planter from the Nilgiris, who had come to Coimbatore to establish a curing factory in c.1861. In the Tuticorin area at Valkarts, a British managing agency house, A. & E. Harvey, established the first gin factory in c.1880. A. & E. Harvey also started Tinnevelley Mills in c.1889, Coral Mills in c.1887, Madura Mills in c.1889 and Coimbatore Spinning and Weaving Company in c.1888.⁵² The economic transformation of the region occurred in c.1904–1905, when a new variety of cotton called *Cambodia*

was introduced here for cultivation. This variety improved the quality of cotton produced here and increased its demand for export to Britain. The name Cambodia was given because it was a variety of long-staple American cotton that was introduced in India after experimentation in Indo-China (Cambodia). Due to its demand, the new variety of cotton rapidly replaced the cultivation of the traditional variety of cotton. As a consequence, Tripur, which was located at close proximity to Coimbatore, emerged as an important ginning and trading centre of cotton.⁵³

James Stance was encouraging local rich farmers and traders to start cotton gins to supply cotton to his mill. One local farmer, Kuppuswamy Naidu, set up a small gin unit in c.1905 and promoted Lakshmi Mills in c.1910. However, his dream of becoming the first successful pioneer in the introduction of cotton textile mills in the region experienced a setback when he incurred huge financial losses in the speculation of cotton. The first successful cotton textile mill in this region was started by Peelamedu Samanaidu, Govindaswamy Naidu (P.S.G. Naidu), who opened Peelamedu Sri Ranga Vilas Gin Spinning and Weaving Company in Coimbatore in c.1922. K.K. Naidu, son-in-law of P.S.G. Naidu, promoted Sri Balasubramania Mills in c.1934. Two British managing agency houses, the houses of A. & E. Harvey and Binny's, together promoted Buckingham Mill and Carnatic Mills in c.1940. Following the lead from earlier attempts to float cotton textile mills in Coimbatore, several entrepreneurs of the Naidu community started cotton textile mills here. K.K. Naidu and Venkapatty Naidu started Balasubramani and Kasturi Mills; S.N. Rangaswamy Naidu established Sri Ramakrishna Mills Coimbatore Ltd., and N. Vellapan Naidu opened Sri Ram Narayan Mills. These Naidu entrepreneurs transformed Coimbatore into the Manchester of the south.⁵⁴

The entrepreneurial adventures of the Naidu community of Coimbatore also encouraged another peasant community of Gounders of the Kongunad region to enter into the manufacturing of textiles. The entrepreneurs belonging to the gounder community started only two textile mills during the period of British Raj. V.C. Vellingiri Gaunder and P. Somasundram Chetty established Kaleeswar Mills, and V.C. Vellingiri Gaunder started Granabika Mills.⁵⁵

As has already been mentioned, Tripur, which is located near Coimbatore, became an important centre of production of the cotton knitwear industry after the introduction of Cambodia cotton. Knitting of yarn is different from weaving of yarn and needs different kinds of equipment. The foundation of the knitwear industry at Tripur was laid by three

pioneering entrepreneurs, M. Abdul Rguman Sahib, who founded Azad Knitting Company in c.1926; Pethi Chetty who started Rajendera Knitting; and S.A. Khadar who promoted Khadar Knitting. Tripur became the ideal location for knitwear manufacturing for many reasons. The availability of yarn from cotton textile mills of the region, cheap labour and availability of hard water from the local Noyyal River. Tripur began with the production of *banians* (vests), but in due course, it diversified into the manufacturing of several kinds of knitwear.⁵⁶ Slowly, Tripur became an important cluster of flexible manufacturing units producing knitwear, and established technological linkages with another important centre of manufacturing of knitwear and knitwear equipment, Ludhiana of Punjab. The Ramgarhias, the community of Sikh artisans, were making equipment for knitwear manufacturing units, which were used by local knitwear manufacturers of Ludhiana and also by the companies located at Tripur. Ramgarhia-owned units like G.S.L. Textiles, started by Ghansham Singh Lotey, and Swarup Mechanical works of Narpal Singh, provided carding machines, draw frames, shearing machines and sewing machines.⁵⁷

The emergence of modern cotton textile mills in India, and their rapid expansion, invited the hostility of British textile manufacturers. To protect their interest, they influenced the British government to impose discriminating tariffs on Indian cotton textile manufacturers. The process of discrimination began when Lord Lytton removed custom duties on English textiles imported into India.⁵⁸ This was an important victory for British cotton textile manufacturers. However, cotton textile mills of Britain were not satisfied with this achievement. They expected much more. In c.1890, Manchester secured another victory when the government imposed an excise duty on Indian cotton textile manufacturing.⁵⁹ Imposition of an excise duty further reduced the competitive advantage of Indian cotton textiles. In this way, the Indian cotton textile industry is an important example that explains the hostility between the Indian mill owners and the cotton textile mill owners of Britain.

Despite the existence of several positive conditions for investment in jute textile manufacturing, Bengali merchants did not take initiative to invest in the industry. This happened despite Bengal having an early advantage of modern education. However, the increasing profitability of Dundee Mills provided motivation to Mr George Auckland to start the processing of jute in a country where raw material was available in abundance. He set up the first jute textile mill, called Auckland & Company, at Rishra, near Serampur in c.1854. Auckland was a Scot, who was an ex-officer of the British navy

and had experience working on coffee plantations in Ceylon (Sri Lanka). Thereafter, another Scot, Mr George Henderson started the Borneo Company in c.1859.⁶⁰ Between c.1862 and c.1865, three more jute textile mills were added.

The first jute textile mill, which was a sterling company registered at the London Stock Exchange, was set up by a British entrepreneur in c.1872. The company was named Champadany Jute Mill. The following year, in c.1873, Thomas Duff promoted another sterling company called Sammuggur Jute Company at Hoogly. During the same year, a Scottish mercantile house of Calcutta, Kettle Buller & Company, started Fort Gloster Jute Mill. Richard Macallister, another British entrepreneur, started Oriental Jute Company in c.1875. In c.1876, other important managing agency houses of Calcutta, Jardine Skinner & Company and Gillander Arbuthnot & Co. Ltd., established jute textile mills in c.1883. After this pioneering effort, different managing agency houses of Calcutta set up several jute textile manufacturing companies. The promoters of these jute textile mills used their Scottish relationships to enter the markets of America, New Zealand and Australia. By this time, Calcutta-based jute textile mills had cornered a substantial proportion of markets of coarse bags in America, Australia and New Zealand. Despite the fact that the Indian jute textile mills had entered several markets, the excessive investment in the creation of new capacity resulted in the underutilization of capacity. This stopped the expansion of investment in the jute textile industry during c.1884–1895. The problem of excess capacity was further aggravated by the occurrence of famines in the jute-growing areas of Bengal between c.1895 and c.1900.

As the jute textile mills were able to overcome the problems created by the two aforementioned crises, most of the managing agency houses of the eastern part of India again began to invest in jute textile manufacturing. Managing agency houses like Andrew Yule & Company, Shaw Wallace & Company, James Finlay & Company, Bird & Company, Rolli Brothers, Mcleod & Company and Graham & Company opened several jute textile manufacturing mills. As a consequence, jute textile became an important export from India. Up to World War I, there existed total dominance of European managing agency houses in the manufacturing of jute textiles, and the entire manufacturing of jute textiles remained localized in Bengal. Bengal had advantage in terms of availability of raw material and the Calcutta port provided a suitable location for the export-oriented industry. Even the fuel (coal), which was necessary to run jute textile mills, was available in close proximity.

The dominance of British managing agency houses in the manufacturing of jute textiles emerged because of their complete monopoly in shipping as well as river transport network of Eastern India. Railways, another important mode of transportation, were also under British control. Railway companies like Eastern Bengal State Railway, the Assam Bengal Railway, and the East India Railway were owned by British citizens.⁶¹ Due to their monopoly on all the modes of transportation, one finds that at that time, the offices of all the important managing agency houses existed in all the jute markets of Bengal.⁶² Even the banking sector in Eastern India was totally under British control. Hence, having complete monopoly over finance, transportation, trading and markets in India and abroad provided distinct advantages to British managing agency houses. These advantages reduced the chances of the emergence of native entrepreneurship in jute textiles.⁶³

Contrary to the pattern of ownership of jute mills, which were largely owned by British managing agency houses, Marwari traders of Calcutta were quite important players in the procurement of raw jute required by Calcutta mills, as well as for exports. The Marwari merchants were owners of most of the baling houses of Bengal. Marwari trading houses had been migrating from Rajasthan to Bengal since the sixteenth century. The beginning of ascendancy of the East India Company after c.1757 provided new business opportunities to the Marwari traders, who began to play an important role in the economy of Bengal as brokers, agents, sub-contractors and who got involved in helping British agency houses. The numerical strength of Marwari immigrant community houses had increased significantly and the community had founded the Marwari Panchayat in Calcutta in c.1828. The names of some of the important Marwari trading houses were included in the commercial directory of Calcutta city published in c.1860–1863. By c.1903,⁶⁴ the Calcutta Baled Jute Association, a body affiliated with the Bengal Chamber of Commerce, had 45 Marwari firms as members, out of a total membership of 133. However, by the end of world War I in c.1918, membership of Marwari firms had crossed 63 per cent of the total membership of the association. Some of the important Marwari members of the association were Shri G.D. Birla, Saroopchand Hukumchand, Surajmal Nagarmull and Badridas Goenka.

It is quite obvious from these facts that by the end of World War I, Marwari merchants had accumulated sufficient financial resources. They were familiar with all operations involved in jute textile manufacturing. Moreover, the method of manufacturing gunny was quite simple. Marwari trading houses had well-established links with British agency houses that

owned most of the jute textile manufacturing mills. For instance, Goenkas were associated with Rolli Brothers, Onkar Nath Jatin with Andrew Yule & Co., Surajmull Jhunjhunwala with Graham & Co., Luxmi Narayan with Mcleod & Company and Tarachand Ghanshyamdas with the managing agency house of Shaw Wallace & Company. Given their place in the overall jute economy of Bengal and prevailing historical circumstances, Marwari merchants began to enter into the manufacturing of jute textiles. For this, these merchants followed two different strategies.⁶⁵ The first strategy that was used by the Marwari trading houses was purchasing substantial shares of the companies owned by the British managing agency houses. These managing agency houses had to transfer a large number of shares of their companies to Marwari merchants because they were experiencing shortage of funds to meet the requirement of working capital as well as for investment in fixed capital. British managing agencies borrowed funds from Marwari trading houses against the collateral of blocks of shares of jute mills. This system of getting funds at that point in time was known as '*fatka*'. This gave opportunity to Marwari merchants to become members of the board of directors of the company. Slowly, when the Marwari merchants had accumulated substantial holdings, they took over the companies. The strategy of entering in the manufacturing of jute textile through '*fatka*' was used successfully by the Marwari trading houses of Bajorias, Bangurs, Goenkas, Kanorias, Kedias and Jalans. For instance, Bangurs took over Kettle Buller & Co, Kedias took over Anderson Wright & Company, Bajorias took over Begg Dunlop & Company, Keshav Prasad Goenka took over Duncan, and Radha Kissen Kanoria took over the management of Mcleod & Company.⁶⁶

The second strategy that Marwari merchants adopted to enter in the manufacturing of jute textile was to start entirely new mills. Following this strategy, in c.1922, G.D. Birla and Sarupchand Hukumchand floated wholly Indian-owned and Indian-managed jute mills. Afterwards, during the 1920s, several new jute textile manufacturing mills were started by Marwari merchants—six mills around Calcutta and one by Kamlapat Singhanian in Kanpur. The trading house of Surajmull Nagarmull also opened new jute textile mills. As a consequence of these alternative strategies adopted by Marwari trading houses, by the end of World War II, there were 22 jute textile mills wholly owned by Indians business houses. In 62 mills owned by the British managing agency houses, there were Marwari directors, and five jute textile mills owned by British managing agency houses had been taken over by Marwari trading houses.⁶⁷

Manufacturing of iron and steel was another important industry that also originated during the rule of the East India Company, but assumed importance during the British Raj. The art of smelting iron was known to the people of the Indian sub-continent for ages. It was produced at several locations in the Indian sub-continent. It is believed by historians of technology that India was the pioneer in the manufacturing of carbon steel (wootz iron). The iron produced in India at that time was of good quality. European experts have approved the quality of Indian iron in scientific journals, published by their professional associations like Royal Society.⁶⁸ The famous scientist Michael Faraday was quite fascinated by the quality of India's wootz iron, and conducted several experiments to know its qualities.⁶⁹ In spite of being one of the oldest manufacturers of iron, modern iron and steel manufacturing began quite late in India (for details regarding the history of iron and steel manufacturing during the stage of traditional flexible manufacturing see Chap. 2 of the book).

During the rule of the East India Company, several attempts were made to manufacture iron on European lines. In c.1762, an iron foundry was established in Begpore called Begpore Iron Foundry. This foundry was promoted under the supervision of Mr Andrew Duncan, who had acquired experience for starting an iron foundry in Russia.⁷⁰ But this enterprise did not succeed due to availability of cheaper imported iron, which was imported as deadweight cargo on ships coming from Britain. Due to this reason, it was felt that Indian iron did not have a competitive advantage over imported iron. Therefore, the East India Company never encouraged its production in India.

In c.1825, Josiah Marshall Heath of Madras Civil Services filed a proposal to the directors of the East India Company to set up an iron smelting mill in Madras Presidency, using European techniques of production. Due to the negative attitude of the officials of the East India Company, his request did not receive any response. He repeated his request again in c.1829, along with another request to grant his proposed iron mill monopoly to produce iron in India. To support his demand for monopoly right, he provided the example of monopoly right given to British entrepreneurs who established the first iron foundry in Britain during the rule of King James. This time his request was accepted, and he was granted permission to set up an iron foundry. He was also given exclusive privileges and an interest-free loan by the East India Company in c.1830. The factory was established in Proto Novo in the south Arcot district of Madras Presidency 125 miles away from the city of Madras. The plant was built to use charcoal for smelting

iron and used bullocks for the same. The iron ore for the plant was brought from Salem by boats, through the river Cauvery. This river was navigable for only six months of the year. The ore at Salem was of good quality.

Heath originally established two large furnaces, and afterward added two cupola furnaces and two revelatory furnaces. The mill used puddling and rolling methods to produce wrought iron. Heath had taken the services of two expert British ironmasters to set up and maintain the plant. However, soon Indian workers learnt all the operations of the plant and they replaced the expatriate workers. Thereafter, Proto Nov Mills never experienced a shortage of skilled workers. The iron produced at the Proto Nov plant was of good quality, and soon the plant began to export iron to Britain. In c.1839, the iron produced by that mill helped the British Royal Arsenal, located at Woolwich, to substitute it with imported iron from Sweden.⁷⁰ The iron produced at this plant was also used in the construction of Britannia Tubular Bridge over Menai Strait.⁷¹

Despite the fact that the Proto Nova mill produced good quality iron, it experienced frequent financial problems to not only expand its scale of operation, but even to run its existing facilities. This was happening because by this time, European ironmaking technology was experiencing a revolutionary change due to its shift from using charcoal to coal. Therefore, it became impossible for it to compete in the British market. Due to its structural as well as financial problems, the Proto Nova plant was taken over by Proto Nova Steel and Iron Company. Even the new company could not cope with its financial problems. Finally, in c.1853, the Proto Nova Steel and Iron Company was taken over by the East India Company. The plant met its ultimate fate when it went into liquidation in c.1874. It is believed that when Heath began to construct his factory at Proto Nova, one of his close British friends had advised him to shift his factory to the Burdwan district of Bengal Presidency, which had abundant supply of coal.

Similar attempts were made by Jessop & Company, when it set up an iron smelting factory near Calcutta in c.1839. In c.1855, Mackay & Company started Birbhum Iron Works, and in the same year, iron foundries were established at Kumaon, Indore and Chanda. These units also did not survive for long.⁷² In c.1874, Bonker Iron Works was set up at Kulti. Soon this plant also experienced financial problems, and in c.1882, it was taken over by the government and resold to a company, Bengal Iron and Steel Works, which was registered in Britain. Bengal Iron and Steel Works was able to get support from the government when it agreed to buy back 10,000 tons of pig iron, every year for ten years, at a price fixed at 5 per cent below the price

of imported steel. The government had begun to support iron and steel manufacturing in India because by this time Belgian and German steel was replacing imported steel from Britain.⁷³

While one plant after the other was meeting with failure in the Indian sub-continent, the European iron and steel manufacturing was experiencing revolutionary transformation with the introduction of the puddling furnace devised by Henry Cox in c.1783, and by c.1830, coal had replaced charcoal as the main fuel. In c.1856, Henry Bessemer evolved a new method to convert molten pig iron in steel known as the Bessemer converter. In c.1869, Siemens Martin devised the open hearth furnace.⁷⁴ These changes in the manufacturing of iron and steel altered the characteristics of iron and steel making. The new combination of raw materials required to produce iron and steel was coal, limestone, iron ore and water. These new inputs influenced the location pattern of iron and steel manufacturing from being near woods to near coal and iron ore mines. Since the new materials were bulky as well as *weight losing*,⁷⁵ and accounted for around 80 per cent of the total cost of manufacturing of iron and steel, their geographical location began to determine the location of its manufacturing.⁷⁶ Hence, the most important determinant of location of steel plants became the objective of minimizing transport costs, when two important materials coal and iron ore are located at different places, separated from each other. For instance, in the Pillsbury steel plant, ore moves towards coal. In the steel plant located at Lake Superior, coal goes to ore, and at Lake Erie, the plant is located at the meeting place of the two.⁷⁷

The technological changes experienced by European iron and steel manufacturing also influenced the manufacturing of iron and steel in India. Decisions regarding appropriate location became more decisive in determining the success of new steel manufacturing plants. Due to these important factors, the next steel mill established by Jamsetji Nusserwanji Tata took several years between conception and building of the plant. Tata had to spend several years, as well as substantial financial resources, to identify the appropriate location of his proposed steel mill and to shortlist the services of a consultant to establish the new plant.

The idea behind entering the business of manufacturing iron and steel originated in the mind of Tata when he read about the presence of iron ore and coal deposits in Chanda district of Central Provinces (present-day Madhya Pradesh), prepared by a German expert, Ritter Von Schwarz. This report appeared in c.1882. After reading the report, Tata visited Chanda district and met the chief commissioner of the district. He discussed

with him his intention of setting up a steel manufacturing plant in Chanda. He even promised that in case he decided to set up a steel mill in Chanda, his company would take the responsibility of constructions the railway line between Wardha junction and Warora, where coal deposits were located. However, Tata did not receive positive response from British authorities because at that point in time, British government was not allowing private sector companies to exploit natural resources of the country.

In c.1899, under Governor-General Lord Curzon, the British government formulated its policy regarding prospecting of minerals. Under the new policy regime, the government was prepared to grant permission to prospect minerals to private companies by giving mines on lease. Moreover, Curzon had also begun the practice of buying steel from India, when the government entered into contract with Bengal Iron and Steel Works to buy steel from it.⁷⁸ These policy changes were accompanied by an encouraging report prepared by Mr. R.H. Mahon on the manufacturing of iron and steel in India. In his report, Mahon had suggested Bengal as an appropriate location for the manufacturing of iron and steel. His suggestion was based on the fact that coal available in the mines of Bengal Presidency could be converted into coke, which had emerged as an important fuel for blast furnaces. These intertwined events again motivated Jamsetji Tata to enter into the manufacturing of iron and steel.

In order to realize his dream of setting up a company to manufacture steel, Tata visited London and met George Hamilton, who was at that time, secretary of state of India. Hamilton promised to provide all necessary support in starting a steel mill. After receiving this positive response, Tata went to the United States in search of the best possible technical support to set up a steel plant. After travelling to several centres of steel manufacturing in America, he identified Kennedy Sahlin & Company of Pittsburgh to help him achieve his dream. The company consisted of two partners, Julian Kennedy and Alexander Sahlin who advised Tata to spend more time in identifying the best location for the plant before they commenced the work of building it. For this purpose, they suggested the name of Charles Page Perin who sent his partner C.M. Weld in c.1903 to help Tata to find a suitable location.

C.M. Weld, along with the son of Tata, Dorabji Tata, and his nephew Shapurji Saklatvala, visited Chanda mines. Weld rejected Chanda as a suitable location for the proposed plant because coal deposits of Chanda district were not of good quality, and iron ore deposits were too small to last for a longer period. Tata did not give up his dream and asked Weld to explore

other possible places in India. Soon Weld's attention was drawn to Durg district of Central Provinces, where a geological survey had indicated the availability of good-quality iron ore. This report was prepared by P.N. Bose in c.1898. The team sent by Tata found that the hills of Dhali and Rajhara were indeed endowed with good-quality iron ore, but this place did not have regular supply of water. At this point in time, P.N. Bose wrote a letter to Tata, in which he mentioned the discovery of good-quality iron ore near Jharia and Ranigang coal deposits. Since the place was near to Calcutta, Weld, his senior partner Perin, and Bose reached Gorumahisani Hills, located in the princely state of Mayurbhanj. Here, Perin and Weld identified a place called Sini, which was quite close to sources of three important raw materials—iron ore, coal and limestone. The selection of this site also received support from the government, when John Hewitt of the department of commerce and industry promised to link Gorumahisani by railway line with the Bengal-Nagpur line. Tata's proposed site also received support from Maharaja of Mayurbhanj because he expected that the new plant would help the entire princely state to get railway connectivity. However, Sini was also rejected by the team, because the place had a shortage of water.

The team of experts began its search for an alternative location where it could identify a source of adequate supply of water. For this purpose, Weld and his team travelled on horses until they reached near the village of Sakchi where two rivers, Subarnarekha and Korkai, met. The village was very near to the railway station of Kalimati. Thus, Sakchi became the final choice for locating the steel plant. After identifying the appropriate location for the proposed mill, Tata formally appointed Kennedy Sahlin & Company for building the steel mill.

After finalizing technical details of the plant, the next problem that Tata faced was to raise necessary financial resources for the project. Tata initially tried to raise capital from the London financial market, but he did not get support from the key players. However, a group of London financiers, who had shown some interest in the project, sent Charles Stoddart, who was chairman of the Parkgate Iron and Steel Company, along with William Selkirk, a mining engineer, to India. Their purpose was to assess the potential of Tata's project. Despite the fact that both the experts gave encouraging report about the project, London financiers did not provide finances.

This was the period when the Swadeshi movement had emerged in Bengal as a consequence of Lord Curzon's policy of dividing the Bengal Presidency (c.1905–1906). Nationalist leaders viewed the partition of Bengal as a strategy to create a wedge between Hindus and Muslims of the presidency. One

of the important methods of protest adopted by the nationalist leader was to boycott the use of imported goods and buy only goods produced in India. This movement had encouraged several entrepreneurs of Bengal to set up new enterprises. Under such historical circumstances, Tata also thought to raise funds in India. On August 26, c.1907, Tata Iron and Steel Company was registered in Bombay, and within three weeks, the entire initial capital needed by the company, £23 million, was fully subscribed. The construction of the plant began in c.1908, and in the winter of c.1911, the first piece of iron was made at the plant.

Tata's project received government support also, because by c.1900 continental steel had made inroads in the Indian market and had substantially replaced British steel from most of the private sector needs. Therefore, British policymakers had realized that Tata steel would act as substitute for continental steel, especially imported from Germany and Belgium.⁷⁹ Under these circumstances, Tata's plant received government support, when it guaranteed the purchase of 20,000 tons of steel rails for the next ten years at the price that was fixed equal to the price of imported steel. However, outbreak of World War I in c.1914 forced the government to buy the entire output of steel produced by Tata's plant. In the process, Tata's mill evolved a close symbiotic relationship with the British government's war effort. During the period of World War I, Tata Iron and Steel Company supplied to the British government 1500 miles of rails made of 3 lakh tons of steel for the construction of railway networks in Mesopotamia, Egypt, Salonica and East Africa.⁸⁰

Subsequently, after World War I, Tata's steel plant expanded its manufacturing capacity manifold. It also made efforts to produce different variety of steels for specific products. To achieve its objective, Tata's steel plant set up a research and development laboratory in c.1932. This laboratory helped in developing several new kinds of steel products. The centre developed high-tensile alloy steel (TISC ROM), which was used in the construction of the Howrah Bridge in Calcutta. It also developed a corrosion-resistant steel (TISCOR), which was used in the manufacture of steel coaches for Indian railways.⁸¹ The most important innovation of Tata's research laboratory was the steel that was used for the manufacture of armoured cars, called Tatanagars, for the army, which were used in World War II in North African war theatre.⁸²

In c.1918, another company was founded to manufacture iron and steel in India at Burnpur in Bengal called Indian Iron and Steel Company (IISCO), which was associated with the Bengal Iron and Steel Works

through the managing agency firm, Martin Burn & Company. In c.1936, Bengal Iron and Steel Works was merged with IISCO to form a new company—Steel Corporation of Bengal. During the same period, a small iron works was also established by Maharaja of Mysore in c.1923. The name of this company was Mysore Iron and Steel Works.⁸³

Sugar has been one of the important consumer products of India, which is also considered the house of sugarcane, as has already been described in Chap. 2 of the book. The traditional flexible manufacturing of the Indian sub-continent mainly produced either *gur* or *khandsari*. These two products were able to meet the entire domestic demand of sugar and also for export. Manufacturing of white crystal sugar originated in India, initially, during the rule of the East India Company. At that time, British expatriates managing agency houses were making white crystal sugar in the West Indies. The West Indies-based sugar mills were using sugarcane cultivated as a plantation crop with the help of slaves. This sugar was much cheaper in comparison to sugar produced in India, which was produced from the sugarcane cultivated by small farmers. Therefore, British markets were totally dependent on sugar imports from the West Indies. The requirements of white sugar for the Indian market were met by imports of white sugar from Java, which at that time was a Dutch colony. The beginning of manufacturing of white sugar in India can be attributed to the killing of a very large part of the white expatriate population in a rebellion that occurred in c.1791 in Hayati and San Domingo. During this rebellion, several manufacturers and exporters of white sugar were also killed. This historical event disrupted the supply of white sugar in Britain because of which the prices of sugar increased substantially.⁸⁴ In c.1834, British government removed slavery in the West Indies. Liberation of slaves from the sugarcane plantations in the West Indies altered the availability of workers. Therefore, cost of cultivation increased substantially. The emerging gap in the supply of sugar in Britain encouraged the East India Company to promote manufacturing of sugar in the Indian sub-continent.

As white sugar was meant for export only to Britain, initial investments in the manufacturing of sugar were made by the British managing agency houses. Binny & Company set up a sugar manufacturing mill in Madras Presidency, and Parry & Company established its first sugar mill and distillery at Nallikupam in the district of Cuddalore in c.1845. At that time, only one other sugar mill, called Rosa Sugar Mill, was working at Shahajanpur in the United Provinces (present-day Uttar Pradesh). After a gap of several years, another managing agency house, Begg Sutherland & Company,

established Kanpur Sugar Mill in c.1884, which began to refine *gur* by a new method, which did not use bone charcoal. This new method was used to encourage the consumption of white sugar by the Hindu population of the country. Subsequently, Begg Sutherland & Company promoted several sugar mills in different parts of United Provinces and Bihar—in district Saran, in c.1905, by the name of Champaran Sugar Mill; Samastipur Sugar Mill in district Samastipur in c.1906; and Ryan Sugar Mill in district Darbhanga of Bihar in c.1913. Before the beginning of the Great Depression, many more managing agency houses also entered in the business of manufacturing of sugar. For instance, Octavious & Company had started two sugar mills, and James Finlay & Company and Marshal & Company had also established two sugar mills each.^{85,86}

However, when supplies of sugar resumed from the West Indies, these managing agency houses that had established sugar mills in India primarily to export sugar to Britain, were highly disappointed because they could not compete with the sugar manufacturers of the West Indies and other British colonies because in these locations, mills were getting sugarcane cultivated as a plantation crop. Moreover, British government had imposed discriminating tariffs, which discriminated against the Indian manufacturers of sugar.

In order to plead their case and make the British government aware of their problems, all the managing agency houses that were engaged in the manufacturing of sugar in India sent a petition to the British Parliament in c.1931. At the same time, British officials in India were also worried about the increasing imports of sugar from Java. Due to these reasons, the British government provided, for the first time, protection to Indian sugar manufacturers under the Indian Sugar (Protection) Bill of c.1932. The government also appointed a sugar technologist in India in c.1933 from the Imperial Council of Agriculture. The Sugar Bureau of Britain, at the same time, opened a department of sugar technology in the Harcourt Butler Institute of Technology at Kanpur. Around the same time, the British government constructed the Sarda Canal in the United Provinces (UP). The Tariff Commission submitted its report in c.1930 and suggested imposing a tariff of Rs 6 per quintal on imported sugar (this rate was equal to 120 per cent *ad valorem* on the existing prices of imported sugar). In March c.1931, the duty was further raised to Rs 7 per quintal (which was about 190 per cent *ad valorem* on the existing prices of imported sugar). In September 1931, the duty was further raised to Rs 9 per quintal. These protective rates of tariff, especially at that point in time

when the European economies were experiencing recession, gave enormous advantage to the sugar manufacturers of India. This was also the time when plants and equipment, and consultants, were available at lower prices in the European markets.

Sugar manufacturing, by its very nature, is characterized by raw material orientation, because the basic input of sugarcane is weight losing. Therefore, transporting sugar is cheaper than transporting sugarcane. Moreover, after harvesting, sugarcane should be crushed within twenty-four hours, to maximize the production of sugar. Due to these reasons, spread of sugar manufacturing in India followed the geographical location of sugarcane cultivation. This suggests why sugar manufacturing remained localized in United Provinces, especially the regions irrigated by the Sarda Canal, Sangli and Ahmednagar in Maharashtra, Bihar, Parts of Andhra Pradesh and Madras Presidency. Moreover, the Coimbatore agricultural station started by the government also helped in improving the quality of sugarcane in India.

The changed favourable conditions motivated several Indian entrepreneurs to enter into the business of manufacturing sugar. It is important to mention, soon after the Great Depression of the 1930s, that Indian business houses became dominant players in sugar manufacturing. Jamlal Bajaj entered in the manufacturing of sugar in c.1932, when he started Hindustan Sugar Mill at Gologokarnath in UP; Karam Chand Thaper established Deoria Sugar Mill in c.1935 and Sri Sita Ram Sugar Mill in c.1830 at Baitalpur in the Gorakhpur district of UP. He also set up Jamuna Nagar Sugar Mill at Jamuna Nagar in District Ambala of Punjab. Gokulchand Narang started the Basti Sugar Mill in c.1927. Subsequently, he floated seven other sugar mills and emerged as the sugar baron of India. At the same time, Ramkrishan Dalmia opened five sugar mills in Bihar under the name Rohtas Mills. Gujarmal Modi opened Modi Nagar Sugar Mill in c.1933 at Begamabad in UP near Delhi. Soon, manufacturing of sugar also spread to Maharashtra. Walchand Hirachand opened Ravalgaon Sugar Mill, Karanishi bhai Jethabhai Somaiya started Godavari Sugar Mill, Radha Krishan Ruia established Kohlapur Sugar Mill, and V.S. Apte floated the Phatan Sugar Mill. The most important characteristic of all these sugar mills was that all of them had their own captive sugarcane farms.⁸⁷

A similar trend also emerged in the sugarcane-growing areas of Southern India. For quite some time, Parry & Company had a monopoly of manufacturing sugar in Southern India, which was soon broken by native entrepreneurs such as Yardagedda Sriram Prasad, known as Raja of

Chellapali, in the Krishna district, who established his first sugar mill in c.1934, followed by another in Rayagada. Despite the fact that the manufacturing of sugar dispersed to several locations in the Indian sub-continent during this period, UP, Bihar and Maharashtra remained more important. These facts clearly show that the imposition of tariffs on imported sugar in India initiated the process of import substitution in the production of sugar. This process was so rapid that the economy, which used to meet most of its requirement of sugar through imports, became self-sufficient by c.1942–1943. In fact, it developed capability to export sugar.

Manufacturing of paper also began in India during the British rule. Most companies that were manufacturing paper in India before World War I were started by managing agency companies managed by British expatriate entrepreneurs. This is because the technology to manufacture paper was only available abroad. Moreover, most of the important inputs required, such as paper pulp, Sabai grass pulp, caustic soda, and chloride, for the manufacturing of paper were also imported. The managing agency houses of Helger & Co. and Balmer Lawries had opened Titagarh Paper Mill and Bengal Paper Mill before World War I. With this, native entrepreneurs were also encouraged to start small paper mills like Upper India Paper Mill and Deccan Paper Mill. Despite increased demand and profitability in the manufacturing of paper, the industry did not attract investment during World War I. This was because the war had disrupted trade flows, making it difficult to import plants and machinery, as well as other important inputs that were necessary for the manufacturing of paper. During the war, only one new paper mill was established by Andrew Yule & Company in c.1916.

Boost to invest in the manufacturing of paper occurred during the 1930s when economies of Europe and America were experiencing the Great Depression. This was the time when plants and equipment and important raw materials were available at substantially low prices. Moreover, by this time there had emerged possibilities of using substitute local raw materials. Successful experiments had been conducted to use bamboo pulp for making paper. In the development of this technology, Forest Research Institute located at Dehradun played an important role. Tata began to manufacture caustic soda and soda ash in c.1939 at the Mithapur plant near Dwarka in Gujarat. This plant was opened in Gujarat after considerable help from the Maharaja of Baroda. During the same period, several units were opened to produce chemicals that were required by paper manufacturers. In c.1937, Kasturbhai Lalbhai had opened Mettur Chemical Industrial Corporation. The Imperial Chemical Industries set up their plant in 1941, followed by

the plant established by Dalmias. Around the same time, Shri Ram Group established Delhi Chemical Works to manufacture chemicals.⁸⁸ Once the technological requirements necessary to open paper mills were largely met by indigenous resources, investment in the manufacturing of paper by native entrepreneurs increased. Birlas established Oriental Paper Mill at Sambalpur in Orissa; Thapars' established Shri Gopal Paper Mill at Jagadhari in Punjab; and Bajorias started Star Paper Mill at Saharanpur in the UP.⁸⁹ Maharaja of Mysore opened Mysore Paper Mill, Nizam of Hyderabad started Sirpur Paper Mill, and Harvey & Company set up Punar Paper Mill.⁹⁰

Manufacturing of Portland cement in India did not start for quite some time due to lack of threshold demand, which would have motivated entrepreneurs to venture into its manufacturing. Due to lack of demand, the first cement manufacturing mill, the South Indian Industries Ltd., which was established in c.1904, could not sustain itself. Almost eight years later in c.1912, Tata sons started the Indian Cement Company at Porbandar near Kathiawar in Gujarat and Sahabad Cement Company in c.1915. Immediately afterwards, managing agency houses of McDonald & Company started Katni Cement Company and Killick Nixon & Company opened Bundi Portland Cement Company.

As information about the availability of basic inputs required to manufacture Portland cement plants in Southern India spread, it encouraged several entrepreneurs to set up cement plants. Kistna Cement Company came into existence in c.1920, followed by Coimbatore Cement Company at Madkurai in Coimbatore district in the same year. In c.1922, Bezwada Cement Company was started in Vijaywada in Andhra Pradesh, and in c.1936, Andhra Cement Company was established.⁹¹

It is important to mention that cement industry, since its inception, continuously experienced the existence of excess capacity. Moreover, this industry also suffered from intense price competition amongst different companies that were involved in the manufacturing of cement. This occurred because of lack of product differentiation amongst different cement producers. These two objective conditions forced F.E. Dinshaw to initiate the merger of ten out of twelve cement manufacturing companies that existed in c.1936. The ten companies that merged together formed Associated Cement Companies (ACC) in c.1936. The merger of these companies provided respite to these units from price competition. However, this advantage was short lived. In c.1938, Dalmia entered into the manufacturing of cement. The companies started by Dalmia gave stiff

competition to the ACC group of cement companies. Subsequently, Dalmia also became part of the cartel in c.1941.⁹²

The Indian manufacturing sector also attracted foreign investment during this period. The motivations of foreign investors were different to enter the Indian sub-continent. One set of colonial firms entered into the Indian sub-continent with the intention of monopolizing export-oriented manufacturing industries. These firms heavily invested in jute textiles, tea and manufacturing of sugar. Another set of foreign firms that entered into the Indian markets were those firms that were forced to open their establishments due to changes in the stores policy of the government. Just before World War I, the government began to buy stores through tenders, filed by only by those enterprises that were located in India. To take advantage of the change in the government policy, those foreign firms that were supplying their products to the government opened their establishments in India. Companies like John Thompson, which entered in India in c.1919, Harry Williams in c.1921, Alfred Herbert in c.1919 and Guest Kean Williams in c.1931, came to India to take the advantage of changes in the stores policy of the government.

After the 1920s, when government began to impose tariffs on imported manufactured products, those foreign companies, which viewed India as an important market, also opened their subsidiaries in India to avoid tariff restriction. These companies were either exporting consumer goods or industrial inputs, which were essential for the Indian manufacturing firms. Siemens, a German multinational firm, opened its subsidiary in India in 1923. Dunlop Rubber Company opened its subsidiary, Dunlop Rubber (India) Ltd, in c.1926; Braithwaite Company established its subsidiary unit in 1930; Jenson and Nicholson Ltd. in 1922; ICI in 1923; Goodlass Walls Ltd. in 1933; International General Electrical Ltd. in 1931; Metal Box in 1933; Crompton and Parkinson opened their subsidiary Greaves and Greaves Cotton in 1934; and Union Carbide in 1934. All these companies were making products that were needed by other companies.

Another set of foreign companies established their subsidiaries in India in the manufacturing of consumer goods to overcome the tariff barriers imposed by the government. Swedish Match Company, which was the largest supplier of safety matches in India, opened its subsidiary Western India Match Company (WIMCO) in c.1923 at Bombay, and Assam Match Company Ltd., in c.1926. Associated Biscuit Manufacturing Company of Britain started its subsidiary, Britannia Biscuit Company, in c.1924. Colgate-Palmolive Company came to India in c.1930. Unilever established

its subsidiary Lever Brothers in 1931 and Hindustan Vanaspati in c.1931. Bata Shoe Company of Czechoslovakia opened its subsidiary Bata India Ltd. in 1931. Philips Company set up its subsidiary Philips India Ltd. in c.1931. Imperial Tobacco Company and Godfrey Philips entered India in c.1908 and c.1936, respectively.

It is important to mention here that these foreign firms, which entered in the manufacturing sector in India during this period, adversely affected the growth of some of the companies that were started by Indian entrepreneurs. Those enterprises that were established by Bengali entrepreneurs in response to the Swadeshi Movement that emerged after the partition of Bengal in c.1905 suffered the most.

The partition of Bengal in c.1905 by Viceroy Lord Curzon gave rise to nationalist feelings amongst the Bengali elite and motivated them to enter into manufacturing of high-end technology products. Two Bengali entrepreneurs established Bande Match Factory and Oriental Match Factory in Calcutta in c.1906. Profull Chand Roy, who had received a doctorate degree from the University of Edinburgh, along with Jagdish Bose, opened Bengal Chemicals and Pharmaceutical Company. Similarly, Kiron Shankar Roy, who completed his education at Oxford University, promoted Bengal Lamps. Two prominent families of Mitra and Dasgupta set up Calcutta Chemical Company to manufacture soap, toothpaste and herbal cosmetics, and Bengal Waterproof Company to manufacture *Duckback* brand of rain-coats and gumboots. At the same time, Mandira Chandra Nandy, the Maharaja of Kasimbazar, started Bengal Pottery, and Kolay & Sons, a company floated by another Bengal entrepreneur, began to manufacture biscuits. All these companies were owned by families that had limited financial resources. Moreover, all of them were manufacturing products that were produced by foreign companies that entered the Indian market after the 1920s. Therefore, most of them were not able to sustain themselves for a longer period.⁹³

Manufacturing of matches in India also began before World War I. There existed several units for manufacturing safety matches in different parts of the Indian sub-continent. Amrit Match Factory was started in c.1894 at Kota in Bilaspur; Islam Match Factory was functioning in Gujarat since c.1895. Two Bengali entrepreneurs had opened Bande Match Factory and Oriental Match Factory in c.1906 in Calcutta. During the 1920s when the government imposed tariffs on imported safety matches, it encouraged the process of import substitution in the manufacturing of safety matches. This process led to the opening of Esavi India Match manufacturing Company in

Calcutta in c.1923. In c.1925, Mahalakshmi Match Factory began to produce safety matches at Lahore, and in c.1926, Bareilly Match Factory was started in the United Provinces.⁹⁴

Despite the fact that there existed several safety match factories in India at that time, their combined production capacity was not sufficient to meet the domestic consumption needs. Due to this reason, India was importing large consignment of matches from a Swedish company called Swedish Match Company (which was described previously). Imposition of tariffs in the 1920s reduced the volume of imports. This motivated Swedish Match Factory to open its subsidiaries in India. One of the subsidiary units was located at Ambarnath near Bombay and another at Calcutta.⁹⁵ The entry of this company affected the future growth of safety match manufacturing in India.

Two young persons from Sivakasi, P. Ayya Naidu and his cousin A. Shanmuga, learnt the method of making safety matches while working in Bande Match Factory at Calcutta. They worked in the factory for six months during c.1922. On their return, they established an enterprise to manufacture safety matches in Sivakasi. However, soon they realized that the imported technology and imported inputs would not make the manufacturing of safety matches successful. Therefore, they adopted a labour-intensive, handmade method of making matches, using local cheap labour. They also used wood veneers obtained from local trees to make matches. They began to produce handmade safety matches using the brand name *Bengal Light*. Their pioneering effort created a cluster of several units for producing handmade matches in Sivakasi. These two cousins also pioneered the manufacturing of fireworks at Sivakasi. P. Ayya Naidu opened Ayyan Fireworks and A. Shanmugam Naidu established Kaliswari Fireworks in c.1926. They were selling their fireworks using Peacock and Cock brands respectively. After their pioneering effort, there emerged several units that started manufacturing fireworks.⁹⁶ Now Sivakasi is known as the fireworks capital of India.

The imposition of tariffs provided opportunities to several entrepreneurs to start manufacturing units for consumer as well as producer goods, because the market was starving for manufactured goods. Therefore, this period can be considered as the period of great opportunity. Few Indian entrepreneurs responded to take advantage of prevailing circumstances and helped in creating a highly diversified manufacturing base in India.

The first glass manufacturing company was started by Antaji Damodar Kale and Ishwar Das Varshnei in c.1905 at Talegaon near Pune, known as

Paisa Fund Glass Work. Ishwar Das Varshnei had studied engineering at the Massachusetts Institute of Technology. This enterprise was promoted under the patronage of Bal Gangadhar Tilak, and was established from a public contribution of one paisa each. The main objective of setting of this unit was to train people in the methods of glassmaking.^{97,98} One of the apprentices of this company, Prabhakar Ogale, started Ogale Glass Works at Satara in c.1919. It is not surprising that in post-independent India, Maharashtra emerged as an important place for the birth of community-owned cooperative sugar mills.

Laxman Rao Kirloskar, who acquired technical skills while working as mechanical drawing instructor at the Victoria Jubilee Technical Institute located at Bombay, became the pioneer of several enterprises. He began to manufacture iron ploughs in a small factory in the princely state of Aundh in district Satara of Maharashtra. The son of the Raja, Balasaheb Pant Pratinidhi, donated a plot of land to him. This piece of land subsequently became the location of Kirloskar enterprises. He diversified his unit into the manufacturing of other agricultural implements also like chaff-cutters, windlasses and pulleys to lift water from wells. In 1920, the Kirloskar Brothers Company was incorporated. By c.1926, the company started manufacturing diesel and centrifugal pump sets. In c.1941, Mysore Kirloskar Ltd. was opened to manufacture machine tools at Harihar in district Davangere under the patronage of Dewan of Maharaja of Mysore, Sri Visvesvaraya. Laxman Rao Kirloskar's son did his engineering from MIT. He developed a specific type of sugarcane crusher, which the company began to manufacture under the brand name *kamal*. Subsequently, Kirloskar group entered into the manufacturing of electric motors, generators and transformers. In c.1946, Kirloskar Oil Engine Ltd. was founded.

Ardeshir Burjoria Godrej founded the Godrej & Boyce manufacturing company in c.1897 in Bombay, to make security locks with the help of modern machines. He also started Godrej Soap Company in c.1919 to manufacture soaps.⁹⁹ Alambic Chemical works was established in c.1907 by a professor of chemistry of Baroda College, his student Tribhuvandas Kalyandas and a rich landowner Mr. B.D. Amin in Baroda. The company experienced several problems, partly financial and partly emanating from government policies of that time of Maharaja of Baroda, and British administration.¹⁰⁰ This company survived by producing country liquor manufactured from the *Mahua flower*.^{101,102} Kasturbhai Lalbhai group, which was mentioned while discussing textile manufacturing in India, opened Atul Chemical and Atul Glass Factory in Gujarat in c.1937.

Around the same time in c.1938, two Danish engineers, Henning Holk Larsen and Soren Kristin Toubro, founded the Larsen and Toubro Company in Bombay. These two Danish citizens had come to India as representatives of a Danish company, F.L. Schmidt & Company, which was supplying equipment for cement manufacturing plants. Visualizing scope for business opportunities, they stayed back in India. In c.1946, they promoted Indian Crown Cork Company Ltd. to manufacture crown corks for bottles, and Alu Capsules Ltd. to manufacture aluminium bottle caps.

Walchand Hirachand group of companies, which were engaged in the manufacturing of sugar, decided to make aircrafts in India. This decision was taken in a chance meeting between Walchand and William D. Pawley, head of the Harlow Aircraft Manufacturing Company of the United States. Walchand entered into a contract with Harlow Aircraft Manufacturing Company in 1942 to manufacture their aircraft in India. Walchand approached the British government and his proposal was promptly accepted because, during war, the British government was not able to provide air defence cover to the Indian sub-continent. Therefore, they permitted the government machinery in India to make arrangements for aircraft needed to meet the defence needs of India. After obtaining permission from the government, Walchand, along with Dharamsey Mulji Khatau and Tulsidas Kilachand, formed a managing agency company, Walchand-Khatau-Kilachand. The company also received patronage from the Maharaja of Mysore. They promoted Hindustan Aircraft Company Ltd. in c.1940 at Bangalore. The company began to assemble Hawk P36S and Harlow 5S aircrafts in India. The company immediately received a bulk order from the government to supply seventy-four long-range Vultee Attack bombers, forty-eight Curtis hawk fighters, and thirty Harlow trainers to be delivered by c.1942. In August c.1941, the company delivered its first Hawk to the government. However, after the attack on Pearl Harbor and the attack on Rangoon in c.1942 by the Japanese, the government got the excuse to nationalize the company, stating that it would become an important target if World War II spread to the Indian sub-continent.

As industrialization progressed, there emerged a demand for producer goods also. Realizing that P.N. Dutta & Company of Calcutta started the production of machine tools in c.1930, Birla also entered in the making of textile machinery and founded Textile Machinery Corporation (TEXMACO) at Calcutta and Central India Machinery Manufacturing Company (CIMMCO) in Bharatpur in c.1940. Again, to meet the wartime

production needs, TEXMACO's plant was taken over by the government. In c.1943, the government allowed the company to move a certain amount of equipment of the company from Calcutta to its textile plant at Gwalior. Here the company began to manufacture looms. Only in c.1945 did TEXMACO receive its Calcutta factory back from the government, and in c.1946 it produced its first ring frame.¹⁰³ Even before the attempts of Birla to manufacture textile machinery, Alcon Ashdown & Company and Jost Engineering Company were engaged in the manufacturing of equipment for textile mills. Similarly, the expansion in sugar production led to increases in the demand for plants and equipment required to establish sugar mills. This was met by Butler & Company located at Muzaffarpur and Joran Engineering Company located at Saran district of Bihar. In the meantime, the United States also became an important supplier of equipment to Indian manufacturing, using lend-lease delivery mechanism.¹⁰⁴ It is estimated that the total cost of equipment supplied to Indian manufacturing enterprises during World War II was \$913 million.¹⁰⁵ It is also essential to mention here that when the Tatas began to establish Tata Iron and Steel Company, they took consultancy from the most renowned consultancy firm located at Pittsburgh founded by Alexander Sahlin and Julian Kennedy called Kennedy, Sahlin & Company.¹⁰⁶

It is also interesting to mention that, soon after the beginning of the British Raj in India (approximately after two decades), Britain was losing its status as the 'workshop of the world'. Modern manufacturing spread to other countries of Europe (like Germany) and America. Especially, after the end of the nineteenth century, German and American manufacturing began to give stiff competition to British manufacturers. After the unification of Germany by Otto Von Bismarck in c.1871, modern manufacturing grew quite rapidly. Between c.1870 and c.1900, Germany not only established manufacturing enterprises in the mainstream manufacturing products like textiles, it pioneered the manufacturing of entirely new products, which assumed importance in the twentieth century. Germany evolved these new products using coal, which was available in abundance in the country. These products were synthetic products, like chemical dyes, synthetic fibres and fertilizers. Germany also introduced new pharmaceutical products, based on inorganic chemistry, like aspirin, antibiotics and chemicals used in photography. These products were developed by two German firms, Bayer and Hoechst. Germany also became a leader in the manufacturing of electrical goods after the development of electric dynamo by Ernst Warner Von

Siemens. The production of automobiles was also perfected by Germany during this period.¹⁰⁷

Spread of modern manufacturing in the United States began through transfer of technology from Britain and other European countries, which was facilitated by the immigrant population. One of the famous immigrants from Britain, who made significant contributions in introducing modern manufacturing in the United States, was Samuel Slater. He had acquired knowledge of establishing textile mills while working in the cotton textile mill established by Richard Arkwright. In c.1793, he established that first cotton textile mill at Pawtucket in Rhode Island. He formed Samuel Slater & Company in c.1798 and opened several textile mills. In c.1814, Francis Cabot Lowell founded the Boston Manufacturing Company at Waltham in Massachusetts.¹⁰⁸

The competitive advantage of United States manufacturing over British manufacturing began when Eli Whitney, a gun-making factory in New Haven, Connecticut started using assembly-line method of production to produce standardized products from interchangeable parts. This became a unique contribution of American manufacturing. The same process was used by Samuel Colts in gun making, by Cyrus McCormick in manufacturing of reapers, by Isaac Singer to manufacture sewing machines, and Henry Ford to manufacture automobiles. The use of a running assembly line to produce standardized products, in large volumes, using interchangeable parts in vertically integrated large manufacturing enterprises, emerged as an American system of organization of production. This was accompanied by raising of large volumes of capital, using the joint-stock form of ownership of companies run with the help of a hierarchy of professional managers. These became an important characteristic of US manufacturing. These unique manufacturing practices are now popularly known as *Fordism*.¹⁰⁹

The American automobile manufacturing companies, after consolidating their market shares in Europe and America, began to establish their manufacturing facilities in India. In c.1928, General Motors Company established its assembly unit at Bombay, where it began to assemble its brand of trucks and cars with the help of imported knock-down kits. The Ford Motor Company established its assembling units at Madras, Bombay and Calcutta in c.1931. In these facilities, it assembled its own brand of automobiles. Around the same time, Addison & Company had also established its assembly unit in Madras in c.1936. At this facility, it assembled trucks and cars.

During this period, the Indian army was the largest buyer of automobiles, followed by the British administration. At that point in time, the army was buying automobiles only from Ford Motor Company and General Motors. The army did not want to buy automobiles from other companies because it would have resulted in buying a variety of spare parts, which would have increased inventory costs. On the other hand, American automobile companies were not interested in entering into collaboration with Indian entrepreneurs, as they had already cornered a substantial part of the market. In fact, they actively lobbied with authorities to create entry barriers for new entrepreneurs. Due to these reasons, Indian entrepreneurs, who intended to enter into the manufacturing of automobiles, faced stiff entry barriers.

Walchand Hirachand dreamed about manufacturing automobiles in c.1935. In the same year, when the Congress Party formed the provincial government, Walchand was able to negotiate an interest-free loan. However, by the time the idea of the project took concrete shape, World War II began in c.1939. In the wake of the non-cooperation movement, initiated by the Congress Party, the provincial government led by the Congress resigned. Walchand approached the British administration of the Bombay Presidency to honour the agreement that he had entered with the elected government. British administration refused to honour the agreement. This development forced Walchand to approach Maharaja of Mysore, who had helped him earlier in starting Hindustan Aircraft Company at Bangalore. However, under the influence of automobile lobby of American automobile manufacturers, Maharaja did not help Walchand. Despite the fact that he had received positive response from Maharaja of Baroda, he decided to promote the company through his own effort. Therefore, under the same managing agency company, Walchand-Khatu-Kilachand, which he formed to launch Hindustan Aircraft Company, he promoted Premier Automobiles in c.1944 and located his company at Kurla near Bombay. He entered into contract with Chrysler Corporation to assemble Plymouth cars and with Dodge Company to assemble their trucks. At the same time, Birla was also exploring the possibilities to enter into the manufacturing of automobiles. Birla took advantage of the interest shown by Maharaja of Baroda in helping to establish automobile manufacturing company at Baroda. Birla promoted Hindustan Motors in c.1942 and entered into contract with Nuffield Organization to assemble Morris ten cars and Studebaker trucks from knock-down kits.¹¹⁰

Mahindra and Mahindra, the company that has expanded manifold since independence, originated in Ludhiana in 1945 as Mahindra and Mohammed Company, to assemble automobiles. The company was promoted by Keshub Mahindra and Malik Ghulam Mohammed as M&M Company. After partition of the country, Mohammed quit his business in India and migrated to Pakistan. He became Pakistan's first finance minister, and later on governor-general in c.1951. Strangely, the company retained its original name M&M Company after independence also. However, now it is known as Mahindra and Mahindra Company.¹¹¹

The account given here regarding the growth of Indian manufacturing shows that by c.1940s, India had emerged as the most industrialized amongst all the colonies of the British Raj. This happened because there had emerged a national market for a number of goods. Some of the markets also got integrated due to safety and security in interregional travel and transportation. British Raj also established rule of law and created legislations to enforce contracts and protect private property rights. These conditions, accompanied by competitive advantage of Indian manufacturing in the production of certain goods, provided conditions for the emergence of modern manufacturing in India. During this period, a substantial part of income and employment in modern manufacturing was generated by cotton and jute textile manufacturing enterprises. As has been described, modern manufacturing enterprises also emerged in the production of sugar, cement, paper, steel, safety matches, chemicals and some general engineering products. This shows that India at that time had evolved a well-diversified manufacturing base. Modern manufacturing had also spread to several locations in the Indian sub-continent, but it remained mostly localized at Bombay and Bengal presidencies. Madras Presidency has emerged as an important location of modern small enterprises.

Through the growth of modern manufacturing, the Indian economy had achieved the stage of primary import substitution, whereby it had developed capability to process most of the primary raw materials that it had been exporting earlier. Despite all these achievements, the growth of the manufacturing sector was not sufficient to transform a continental-size, predominantly agrarian economy, into a manufacturing nation of the world. On the eve of independence, only 9.6 per cent of its working population was engaged in various forms of manufacturing activities. These forms consisted of modern large, medium and small enterprises. In certain segments, traditional flexible manufacturing continued to exist and in some others, traditional manufacturing assumed different patterns of

organization of production. Amongst all these forms of manufacturing enterprises, the share of workforce engaged in large, modern manufacturing enterprises was just 1.8 per cent of the total working population, and share of all other forms of manufacturing was 7.8 per cent.¹¹² In terms of their contribution to national income (which shows their productivity), the aggregate contribution of the entire manufacturing sector was 17 per cent in c.1946. This shows that despite the fact only 9.6 per cent of the working population was employed in the manufacturing sector, it contributed 17 per cent to the national income of the country. This clearly reveals that productivity per worker was higher in the manufacturing sector compared to productivity of workers in the other sectors of the economy. However, when we see disaggregated pictures of the manufacturing sector, we find that despite the share of modern, large manufacturing enterprises in employment was just 1.8 per cent whereas the shares of small enterprises in employment was 7.8 per cent, their contribution to national income was 6 per cent.^{113,114}

The existence of duality in the structure of the Indian manufacturing sector was not unique to India. It is described in Chap. 3 of the book that even in Britain's modern manufacturing, there evolved a symbiotic relationship between its preexisting forms of traditional flexible manufacturing. The symbiosis between the two provided to modern manufacturing some of the flexibilities that are built into the organizational structure of traditional flexible manufacturing. However, duality in the structure of Indian manufacturing emerged partly as a consequence of it being a colony of Britain and partly due to different supply-side and demand-side factors, which affected the composition of Indian manufacturing. On the supply side, these factors were lower rates of accumulation of capital accompanied by underdeveloped capital market. This made capital costly and scarce. Shortages of skilled manpower and managerial talents necessitated the use of expatriate workers. At the same time, there existed excess supply of unskilled labour and a labour force trained in traditional skills. The impact of these supply-side factors was complemented by the narrow size of the market for standardized products, which were produced by modern, large-scale manufacturing enterprises. The limited size of the market for standardized products existed due to widespread poverty amongst the Indian population.

During the period of British Raj, land revenue was the major source of financing government expenditure. To meet the requirements of mounting government expenditure, British government had imposed on the peasantry

high rates of land revenue. This left very little savings with the peasants, either to invest in improving methods of cultivation or to consume products produced by the manufacturing sector. Therefore, backward agriculture and poor peasantry sustained the continuity of traditional, as well as modern, small-scale enterprises. On the other hand, there also existed traditional crafts-based manufacturing, which produced high-quality products with better designs and craftsmanship that were patronized by rich consumers, and also enjoyed demand for exports. These products also reduced the demand for standardized products produced by large modern enterprises. Indian markets were also fragmented along caste lines, religious affiliations, and regional diversities in customs, tastes, and climates. The fragmented markets reduced the demand for standardized goods and provided conditions for the existence of *niche markets*, which could sustain traditional, as well as modern small manufacturing enterprises.

High cost of capital and availability of labour at less than subsistence level of wages provided competitive advantage for the modern as well as traditional small scale enterprises. The factor prices that existed at that time as a consequence of supply of factors of production provided unique advantage to small manufacturing units that used modern methods of production. The existence of a railway network had facilitated the mobility of labour, including the migration of craftsmen from rural areas to new towns, trading centres and near the centres of modern manufacturing. This process became more pronounced in the case of weavers who migrated from different parts of India during the 1940s to some of the towns of Western India. The towns that attracted these migrant weavers were Sholapur, Malegaon, Bhiwandi, Burhanpur and Surat. Some of these weavers purchased second-hand power looms, which were being discarded by modern textile mills. These weavers not only used their own labour, but also used available cheap labour and laid the foundation of small textile enterprises using power looms. This sector is now popularly known as the 'power loom sector'.

The preceding description about the structure and composition of the Indian manufacturing sector challenges the received understanding regarding the expansion of modern manufacturing. The received understanding is based on the premise that modern manufacturing grows by substituting fixed capital for working capital and labour. Instead of this process, in India, traditional flexible manufacturing as well as modern and traditional small units survived by retaining a competitive advantage by following different strategies. For instance, some of these enterprises used better division of labour to improve their efficiency. Some others replaced family labour with

wage labour, which was more efficient than family labour. These enterprises also organized production in cluster of units using division of labour across firms, developing inter-firm networks and relations to evolve *flexible specialization*.¹¹⁵ These firms survived by maximizing 'external economies' rather than 'economies of scale'. One can give an example of clustering of lock-making firms and firms manufacturing scissors in Aligarh and Meerut, units manufacturing handmade safety matches, *bidi* makers, firework manufacturers at Sivakasi, cluster of firms manufacturing knitwear at Coimbatore and Ludhiana, brassware manufacturing at Moradabad, carpet-weaving at Kashmir, Murshidabad, and Agra. Following same strategies, some of the centres of traditional flexible manufacturing have also survived at different locations. Economists and business historians are generally familiar with only two forms of organization of production, market and hierarchies (i.e., stand-alone, small, single-proprietor owned company or vertically integrated firm run with the help of hierarchy of managers). The driving force in both forms of organization is *competition*. The existence of inter-firm network rests on the proposition that there exists a certain amount of cooperation between firms. This cooperation emerges either due to prevalence of trust and goodwill amongst them, or due to the possibilities of interaction between them.¹¹⁶ Therefore, the motive for forming of inter-firm network lies beyond market and hierarchy. In the inter-firm networks, units that form a network enjoy more autonomy in respect of ownership, control, and decision-making. Hence, inter-firm networks emerge between independent and loosely held firms. Inter-firm networks provide advantage to its members in terms of sharing of information, knowledge and strategic resources, like in Japan where it exists as organization of firms in *Kigyō Shudan*. Sometimes, inter-firm cooperation can also emerge amongst a group of firms, where they are linked with each other through supply of inputs or as buyers of output. This format is like the organization of *Keiretsu* in Japan.¹¹⁷

The analysis given suggests that the expansion of modern manufacturing from Britain to the already inhabited regions, where traditional manufacturing already existed, created hybrid structures, part developed as an enclave and the other part maintaining its old characteristics. Indian manufacturing, at the time of independence, exactly manifested the phenomenon of dualistic existence. The idea of dualism rests on the premise that there exist concurrently two levels of technology, two different kinds of economies, two different kinds of cultures. These dualistic structures have been variously conceptualized in the literature of economic development viz.

capitalist and non-capitalist sectors,¹¹⁸ modern and traditional sectors,¹¹⁹ or industrial and pre-industrial sectors.^{120,121} In these conceptual works on dualism, modern sector, capitalist sector, or modern manufacturing seems to have emerged as a consequence of colonial inheritance. It was the dualistic structure of the Indian manufacturing sector that postponed the birth of industrial revolution in India because it prevented the transformation of the economy into a manufacturing one. The existence of this dualistic structure posed the most important challenge to policymakers in post-independence India.

NOTES

1. See Dalrymple (2006).
2. For literature on c.1857 revolt, see David (2002), Mukherjee (1988 [2007]), Joshi (ed) (2007) and Hibbert (1978).
3. See Stein (1998), p. 239 and Bayly (1988a, b).
4. See James (1997 [2003]), p. 316.
5. See James (1997 [2003]), p. 308.
6. To date, scholars working on the history of the period refer to the writings of Darling (1926), Tod (1829) and Hunter (1888 [1974]).
7. For this, read Ambirajan (1987), p. 13.
8. Bhattacharya (1965) and Hoznetey (1972).
9. See Chap. 2 on the Mughal Empire and traditional flexible manufacturing in this book.
10. For the trial of Nandkumar see Beveridge (1886) who used the term; judicial murder and the quotation of Tilak has been taken from Kolsky (2010), p. 4; and the book also provides several instances when the legal system evolved by the British Raj ignored the act of violence of British citizens against the native population. For details regarding these aspects of British judicial system in India. See Kolsky (2003) and Singh (1998).
11. See Mukherjee (2010) and Cassel (2010).
12. See for this, Dutt (1956), p. 103.
13. See New Cambridge Modern History, vol. IX pp. 56–57.
14. See Morris (1982), pp. 553–676.
15. See Rajat Kanta Ray (1982), p. 66.
16. Morris (1987), fn. 4, p. 154.
17. See Macpherson (1955), p. 180.
18. See Morris and Dudley (1975).
19. See Tomilson (1981, 1993) and Sarkar (1983).
20. See Hurd (1982), p. 758 and writings of Thorner (1951) and Astha (1976).

21. See Lebman (1965).
22. See Rungta (1970).
23. For details regarding the ideas of these economic historians, see Tomilson (1979), Bagchi (1972) and Chatterji (1983).
24. For the arguments given by Dewey, see Dewey (1988).
25. Rothermund (1992) and Latham (1981).
26. See Seth (1987), Chap. II.
27. For Defence of India Rules, see Government of India (1939) and Mohan (1992).
28. See King (1969).
29. For details regarding the working of managing agency system, see Nigam (1957), Basu (1958), Singh (1966) and Sethia (1996).
30. Maikovits (2008), p. 130.
31. Kosambi (1986) and Hunter (1888 [1974]).
32. For these facts, see Tripathi (2004).
33. See Gandhi (1930) and Morris (1965), p. 12.
34. The Crimean War began in c.1854 and continued until c.1856; see Williams (1975), p. 224.
35. See Hunter (1888 [1974]).
36. Hunter (1888 [1974]) observed in the early 1880s that Calcutta and Bombay emerged as two nodal centres of trade, without parallel in any other century. For how these two port cities enjoyed double dominance in manufacturing, see Markovits (1985).
37. See Bagchi (1972).
38. For these important historical facts, see Roberts (1960), Roy (1999), Riello and Parthasarathi (eds) (2009), Riello and Ray (eds) (2009) and Parthasarathi (2011).
39. See Tripathi and Mehta (1990a, b).
40. For details regarding these facts, see Gandhi (1930), p. 52.
41. See Mehta (1954).
42. For these historical facts, see Mehta (1954) and Tripathi and Mehta (1990a, b).
43. See Mehta (1954), pp. 27–29.
44. See Gadgil (1924), p. 76.
45. See Koh (1966), p. 23.
46. See Koh (1966), p. 14.
47. Kasturbhai Lalbhai's family traces its long lineage of being merchants and bankers. Their famous ancestor, Shantidas, was jeweller to the Mughal Emperor Akbar. Another ancestor saved the city of Ahmedabad from the plunder by the Maratha Peshwa army by paying them a huge tribute. This act earned him the title of Nagar Seth.

48. The process of integration of traditional flexible manufacturing and modern textile mills has been described in greater detail by Ray (1982).
49. See Bagchi (1972), p. 143 and Chandavarkar (1994), Chaps. I, VI, and VII.
50. For the details regarding the birth of Delhi Cloth Mill, see Arun Joshi (1955), p. 58.
51. Ray (1979), pp. 281–284.
52. See Mehta (1954).
53. For the transformation of Coimbatore region, see Baker (1984).
54. For the contribution of Naidu entrepreneurs, see Mahadevan (1984, 1992, 1999) and Damodaran (2008).
55. Damodaran (2008), p. 153.
56. For the growth of Tripur as an important centre of knitwear manufacturing, see Vijayabhaskar (2001) and Chari (2004).
57. For details regarding Ramgharia community, see Damodaran (2008), p. 2.
58. The removal of import duties on British imported cotton textiles was embodied in the Notification, Sea custom No. 43, Calcutta March 18, 1878.
59. For discrimination against Indian cotton textile manufacturing firms, see Mehta (1954) and Morris (1965).
60. For details, see Buchanan (1966) and Wallace (1928).
61. See Wallace (1928), Bagchi (1972) and Buchanan (1966), Investor's India year Book of relevant year and the section on railway of the chapter.
62. See District Gazetteers of Eastern Bengal, Dacca, Pabna and Mymensingh.
63. See Gadgil (1924), Chap. 15, and Levkovsky (1965).
64. See Tripathi (2011).
65. For understanding alternative strategies that were followed by Marwari trading houses of Calcutta to enter into the manufacturing of jute textiles, see Lokanathan (1935).
66. For details regarding the use of fatka by Marwari merchants, see Goswami (2011), pp. 235–257.
67. For details regarding the ownership pattern of jute textile mills by the end of World War II, see Inverters India Year Book (1942), Goswami (1982, 1985, 2011).
68. See for details, Heath (1839).
69. For this fact, see Biswas (2001), pp. 120–122.
70. See, Parthasarathi (2001), p. 237.
71. See for this fact, Parthasarathi (2001), p. 237.
72. For this important fact, see Bhardwaj (1982), pp. 222–237.
73. See, Leidholmes (1972).
74. See for details, Rungta (1970).

75. For details regarding inventions that occurred in the manufacturing of iron and steel in different parts of Europe, see Singer et al. (eds) (1958), vol. IV.
76. The term weight-losing materials was used by Alfred Weber to describe those materials that lose their weight during processing, e.g. coal loses 100 per cent weight in the manufacturing of steel because its weight is not part of the final product. Similarly, when sugarcane is used in the manufacturing of sugar, the weight of 100 kilograms of sugarcane helps in producing only 10 kilograms of sugar; see for details Weber (1929) and Seth (1987), Chap. IV.
77. See Estall and Buchanan (1946), p. 172.
78. See Seth (1987), p. 42.
79. See Rungta (1970).
80. See Bagchi (1972) and Ray (1982), p. 82.
81. For these facts, see Mukherjee (2008), p. 90.
82. Piramal (1998).
83. For Tata's story in steel manufacturing, see Lala (1981), Harris (1954), Mukherjee (2008).
84. For details regarding the Indian iron and steel manufacturing industry, see Bagchi (1972) Johnson (1966), Harris (1954) and Mukherjee (2008).
85. See Gandhi (1934), pp. 2–8.
86. For details regarding these events, see Ray (1982), pp. 142–144.
87. See Dey (1933), pp. 238–282.
88. For these facts, see Damodaran (2008).
89. Bagchi (1972), pp. 406–409, Piramal (1998).
90. See Mehta (1991), pp. 233–248.
91. See Mehta (1991), pp. 189 and Ray (1982), p. 132.
92. See Bagchi (1972), pp. 353–358, Ahuja (1992).
93. See for details, Rosen (1958), pp. 20–23.
94. For details regarding these companies, see Ray (1982).
95. See Ray (1982).
96. See Kidron (1965), Tomlison (1978) and Bagchi (1972).
97. See Damodaran (2008), pp. 138–142.
98. See Damodaran (2008) and Mazumdar (2012), p. 106.
99. See Tripathi and Mehta (1990a, b) and Tripathi (2004), p. 157, 186, 234 and 293.
100. Kranjia (1997), Vol. I and Vol. II.
101. For details regarding these problems faced by Alembic Chemicals Ltd., see Tripathi (1987), pp. 293–295.
102. See Tripathi and Mehta (1990a, b), Tripathi (2004) and Desouza (1961).
103. See Khanolkar (1969) and Piramal (1998).
104. Piramal (1998), Piramal and Herdeck (1986) and Tripathi and Mehta (1990a, b).

105. See Thorner (1980), p. IX.
106. See Shrikov (1973) and Hall (1955).
107. See Lala (2007), p. 19.
108. See Clapham (1968), Henderson (1975) and Maddison (1991).
109. See Lichet (1995).
110. For the American method of organization of production, see Chandler (1977).
111. Fateh (2012).
112. Government of India (1952).
113. Roy (1999).
114. See for these processes, Piore and Sable (1984) and Seth (2003).
115. For the concept of flexible specialization, see Amin (1989, 1995), Storper and Christopherson (1987), Christopherson and Storper (1989) and Seth (2000).
116. For understanding regarding the role of trust and goodwill in forming inter-firm networks, see Dore (1986).
117. For the existence of inter-firm networks based on scope of interaction, see Bordien (2005) and Davis (2003).
118. For the knowledge regarding the contemporary forms of networks of firms, see Fruin (1983, 2008).
119. The Conceptualization of dualism into capitalist and subsistence sector was evolved by Lewis (1954).
120. For the idea of dualism based on modern and traditional sector, see Rostow (1963). For alternative models of dualism, see Jorgenson (1961).
121. The conceptualization of dualism sector, see Jorgenson (1961) pp. 309–334.

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Lessons Learnt from *A Story of Indian Manufacturing*

Understanding of the process of economic development in historical perspective reveals that only those economies that have achieved industrial revolution have been able to maintain high rates of growth, sustained over a longer period. It is because revolution in the manufacturing sector brings higher growth rates in all other sectors of the economy. However, scholars who have been studying the pattern of economic development of the Indian economy have observed that under the compulsions of its socio-economic and political circumstances, it has deviated from the historically known path of development. It has followed a path of economic development in which an economy skips the stage where the manufacturing sector dominates in terms of its contribution to income and employment. This has happened because the Indian economy has missed industrial revolution. Accepting that it is generally the ‘past’ of an economy that determines its present, we began to explore the roots of this historical exception in *A Story of Indian Manufacturing*.

Our explorations revealed that the Indian economy had become an agrarian economy much earlier than other economies of the world. The crafts-based methods of manufacturing products were used for ages. Despite the fact that the division of labour had occurred between cultivators and craftsmen, their functions remained embedded in the village economy. The division of labour between different occupational groups was organized on caste lines.

It is also a historical fact that, despite the existence of division of labour for a considerable period, craftsmen were generally producing manufactured

products to meet the needs of the local village economy. At this point in time, production of manufactured products was not meant for market-mediated exchange. This phenomenon existed due to the prevalence of a unique relationship between different occupational groups. Created by a distinct social institution called the *jajmani* system. The *jajmani* system was based on a 'gift exchange' relationship amongst groups of people pursuing different occupations in the village economy. The consequence of this form of organization of production and exchange was that the manufacturing remained an 'integral part of the self-sustained village economy'. Along with the craftsmen who were part of the village economy, there always existed a number of craftsmen who produced luxury handicrafts for rulers, nobles and gentry living in urban areas of the Indian sub-continent, and also for those living in other parts of the world.

The equilibrium in the economy and society, which had emerged as a consequence of integration between manufacturing and agriculture, came to an end when the autonomy of the village economy was slowly eroded by several exogenous forces. This process began with the emergence of a new set of rulers, who began to collect land revenue in cash. This led to the monetization of the village economy. This process was also accompanied by increasing urbanization, which necessitated the migration of craftsmen to urban areas. On one hand, these new circumstances created larger markets of manufactured goods, and on the other hand, they established market-mediated exchange between different occupational groups and their consumers.

The process of transformation of the economy of the Indian sub-continent from production for distribution amongst households based on customary payments, to an economy where a market-mediated exchange relationship emerged, occurred around c.1500. The process was galvanized when two intertwined forces of globalization impacted the economies of the Indian sub-continent. One was the entry of European merchants through a sea route, after the discovery of a sea route to the Indian sub-continent by Vasco da Gama in c.1498. The other was the beginning of the Mughal rule in c.1526, with the entry of Mughals through a land route. These two concurrent events set in motion necessary pre-conditions for the emergence of a new form of organization of production of manufactured products. This new form developed the capability of the Indian manufacturers to supply crafts-based manufactured products to mass markets, and came to be known as traditional flexible manufacturing.

These two interconnected episodes of globalization created new socio-political and economic forces, which conditioned the pattern of growth of

manufacturing in the Indian sub-continent. The Mughal Empire created an integrated economy of continental size, and arrival of European trading companies expanded the commercial horizon of the economy of the Indian sub-continent to European economies. The increasing size of domestic market and integration of the Indian economy with a global trading system provided favourable conditions for the growth of traditional flexible manufacturing. To meet the requirements of the growing market, there was a need to expand the scale of operation of production of manufactured products because growing demand for manufactured goods could not be met by household workshops of craftsmen, as these did not have the resources to expand the scale of operation. These prevailing conditions necessitated structural transformation in the organization of production in manufacturing.

This transformation was initiated by merchants who had substantial financial resources. To meet the growing demand of manufactured goods, merchants evolved networks of several craftsmen through the putting-out system. This not only provided to the craftsmen necessary working capital and their subsistence needs, but also took the responsibility of marketing and selling of their products.

The traditional flexible manufacturing form of organization of production emerged as a consequence of loss of independence of craftsmen to merchants, who supplied them raw materials and working capital along with their subsistence needs in lieu of controlling the marketing of the final output of manufactured goods. During Mughal rule, this form of organization of production was known as the *dadni* system. This system of production of manufactured goods created a dispersed household workshop economy, based on vertically disintegrated inter-industry and intra-industry specialization, localized in clusters in specific areas. Such clusters of household workshops had emerged in different parts of the Indian sub-continent during Mughal rule. Each cluster specialized in the production of specific manufactured goods. These clusters have emerged in locations such as Dacca, Patna, Murshidabad, Kasimbazar, Sonargaon, Assam, Balasore and Banaras in Eastern India; Surat, Baroda, Ahmedabad and Jaipur in the Western India; Agra, Aligarh, Gwalior, Moradabad and Lucknow in Central India, Amritsar, Lahore and Ludhiana in northern India; and the Coromandal and Malabar Coasts in Southern India.

This book has told us that the historical circumstances that were prevalent in India during Mughal rule transformed Indian manufacturing. The transformation was made possible because the Mughal Empire facilitated

this changeover by establishing law and order, integrating fragmented markets, monetizing the economy, increasing the volume of market-mediated exchange of goods and services, and introducing single currency. Increases in the urban population, urban culture through lifestyle consumption needs of nobles and elites, existence of several communities of merchants, and emerging linkage of the domestic economy with the rest of the world, were some other factors. These forces collectively helped in the spread of traditional flexible manufacturing. This form of manufacturing evolved through the formation of a nexus between craftsmen and merchants. The nexus provided capability to Indian manufacturers to supply quality manufactured goods to not only domestic markets but also to meet the needs of markets scattered around the world.

Though Mughal emperors were interested in promoting the growth of traditional flexible manufacturing, there were variations in the conduct of *subedars* of different *subas*. There were instances when these local governors indulged in extortion, coercion and intimidation of merchants to amass private wealth. The existence of absolute monarchy provided scope for this kind of opportunistic behaviour. This was at odds with the prevailing situation in Britain at that time. In Britain, the power of absolute monarchy was made limited by the emergence of Parliament. Limited monarchy had facilitated the birth of the rule of the law, which protected private property rights of individuals.

The slow and systematic decline in the authority of the Mughal state, after the death of Aurangzeb, resulted in changes in the conditions that facilitated the continuity of traditional flexible manufacturing. The markets again were fragmented with fragmentation of polity. This led to the emergence of inter-regional trade barriers accompanied by re-emergence of multiple currencies. Due to these changes in the circumstances, some scholars believed that the economy of the Indian sub-continent experienced decline of traditional flexible manufacturing. This is also viewed as the beginning of the process of de-industrialization.

The research conducted by scholars on specific regions that enjoyed autonomy after the death of Aurangzeb, suggest that the preconditions that are necessary for the existence of traditional flexible manufacturing continued to prevail in several autonomous regions. Therefore, the process of de-industrialization did not begin with the death of Aurangzeb. Traditional flexible manufacturing continued to exist in regions like Hyderabad, Punjab, Rajasthan, Oudh and southern parts of India. New evidence suggests that the decline of the Mughal Empire did not result in decline

of traditional flexible manufacturing. This also happened because traditional flexible manufacturing is just only one form of organization of production. The handicrafts-based mode of production of manufacturing goods can be embedded in several kinds of organizational formats, namely, the standalone family workshop catering to local needs, and the household workshop part of a craft guild. Hence, associating de-industrialization with the decline of the Mughal Empire needed re-assessment. Our story revealed that scholars generally do not realize that the decline of the Mughal Empire (which began in c.1707) was accompanied by a slow and steady rise of the rule of the East India Company after the Battle of Plassey in c.1757. Historians have established that India remained one of the largest exporters of manufactured goods up to c.1750. The post-1750 period coincides with the period of political ascendancy of the East India Company. Therefore, in our story, we explored the role of the East India Company in affecting the pattern of growth of traditional flexible manufacturing.

Our analysis revealed that to know the role of the East India Company in affecting the growth of traditional flexible manufacturing, it is essential to understand the process of transformation of British traditional manufacturing into modern manufacturing. The emergence of industrial revolution in Britain significantly altered the nature of the relationship between the East India Company and the traditional flexible manufacturing of the Indian sub-continent. The emergence of a new class of manufacturers or industrialists in Britain slowly eroded the paramountcy of the merchants in the British society and polity. This change in the nature of the dominant class altered the political economy of policy formulation in Britain. Due to these changes, the East India Company was entrapped between the interests of merchants and the interests of industrialists. Therefore, we realized the need for evaluating the role of the British Industrial Revolution in affecting the pattern of growth of traditional flexible manufacturing of the Indian sub-continent.

Similar to the prevalence of traditional flexible manufacturing in the Indian sub-continent, Britain also had a crafts-based traditional manufacturing industry around the same time. In European history, this stage of manufacturing defined as a stage of 'proto-industry'. The characteristics of the European proto-industry and traditional flexible manufacturing that existed in the Indian sub-continent were the same. However, unlike the dominance of production of cotton textiles, British proto-industry specialized in the production of woollen textiles. This form of organization of production remained dominant in Britain because it provided several advantages to small household workshops available in the form of economies in

costs, as a consequence of division of labour. It also helped in reducing cost of production resulting from economies of scale and scope to the merchants, who were organizing networks of craftsmen into the putting-out system. The expansion of this form of organization of production was facilitated by the existence of demographic dividend, which occurred due to demographic trends in the British economy. Moreover, this form of organization of production of crafts-based products was compatible with the behaviour of household economy of the family workshops.

Since traditional flexible manufacturing of Britain provided different kinds of benefits to British manufacturers, these benefits ensured its continuity for a considerable period. However, this form of organization of production of handicrafts contained seeds of its own transformation into modern manufacturing. The traditional flexible manufacturing helped in accumulation of capital in the hands of merchants, which is an important precondition for the birth of modern manufacturing. Moreover, there also existed an 'agency problem' between merchants and craftsmen. The prevalence of the agency problem forced merchants to organize the production process in such a way that ownership and control were integrated. This could emerge only under the condition where merchants invested in the equipment and craftsmen worked as workers under merchant supervision. The other important condition, which was essential for the birth of integration between ownership and control was that the new organization should have the capability to outcompete low-wage, low-capital intensive, household workshops of traditional flexible manufacturing.

This was made possible when there sprang up, within a short duration, a series of inventions regarding processing of cotton. These inventions became more useful with the invention of the steam engine. The competitive advantage was created when a source of inanimate power was harnessed with the help of the steam engine and was used to run tools. The integration of tools and the source of inanimate power gave birth to 'machines'. This technological integration changed the meaning of the word manufacturing from 'made of hand' to 'made of machine'. The new paradigm of manufacturing that emerged as a consequence of integration of inanimate sources of power with tools transformed the nature and characteristic of British manufacturing. This process of transformation is described as the beginning of the Industrial Revolution in Britain.

Introduction of machines created a new class of people, who specialized in the manufacturing of machines and equipment. Some of these machines were general-purpose machines and some of them were dedicated to help

manufacturing in specific industries. In new circumstances, some of the machine and equipment producers themselves became manufacturers of products, and the availability of machines provided opportunities to merchants to buy these machines to establish enterprises. Ownership of capital became an important characteristic of new manufacturing, because it facilitated the emergence of the factory form of organization of production. The birth of factories forced craftsmen, whose household workshops could not compete with factories, to come out of their family-owned workshops to work in factories. However, to establish factories or mills, entrepreneurs had to invest a substantial proportion of their circulating capital into fixed capital. Therefore, in order to achieve convergence between ownership and control, entrepreneurs had to become slaves of their own investments in fixed assets.

The most pertinent lesson that we learnt from the story was that the industrial revolution of Britain—instead of transforming its manufacturing of woollen textiles in which Britain had competitive advantage—transformed manufacturing of cotton textiles. Why did Britain transform manufacturing of cotton, where it did not have competitive advantage? It is while seeking answer to this question that we realized that there exists a very strong connection between the story of Indian manufacturing and the British Industrial Revolution.

The manufacturing of cotton textiles in Britain began with its interaction with the Indian sub-continent. Britain began earning bullion through trade in Indian cotton textiles. Looking at the advantage of fostering the manufacturing of cotton textiles, British manufacturers initiated the process of import substitution of Indian cotton textiles. The process began in the sixteenth century in Britain with the manufacturing of a variety of cotton textiles called ‘fustians’ in the East Anglia region of Britain. Fustians were manufactured by combining linen and cotton. Their production spread to various regions of Britain. The expanding home market for cotton textiles along with the possibilities of exporting it to other parts of Europe initiated this demand-led process of import substitution. Subsequently, most of the technological changes that occurred in the manufacturing of cotton textiles cannot be explained without accepting the fact that the process of industrial revolution of Britain began with the emergence of its trading relationship of with India.

The process of import substitution received further impetus by the introduction of cotton plantations in southern parts of America by people who had migrated to America from Britain. In these cotton plantations,

they were cultivating cotton with the help of slaves brought from the African continent. This made cotton available at much cheaper prices to the British manufacturers of cotton textiles than the cotton available to Indian manufacturers of cotton textiles. These intertwined processes of technological changes in the manufacturing of cotton textiles, along with the availability of cheaper cotton, shifted the competitive advantage of manufacturing cotton textiles from the Indian sub-continent to Britain. British machine-made cotton textiles began to replace Indian cotton textiles not only in the global markets but also even in the Indian markets. This episode shifted advantage of manufacturing from India to Britain. This happened because it led to decline of Indian traditional flexible manufacturing. Cotton textile manufacturing was one of the most important manufacturing industries of the Indian sub-continent, which had provided income and employment to a very large proportion of the working population. This episode has been described by Indian nationalists as well as by Marxian historians as the process of de-industrialization.

At that point in time, when Britain was experiencing the emergence of modern manufacturing in the Indian sub-continent, the authority of the Mughal Empire was slowly declining after the death of Aurangzeb. This led to fragmentation of polity into several regional centres of power, competing with each other to fill the political space vacated by the Mughal state. After the Battle of Plassey (c. 1757), the East India Company began to fill the empty space created by the decline of the Mughal Empire. The Battle of Buxar (c. 1764), which led to granting of diwani right to the East India Company on Bengal Suba changed the character of the East India Company. The arrangement laid the foundation of transformation of the trading company into a territorial empire. Thus, our story told us that the period during which the Indian sub-continent witnessed the territorial expansion of the East India Company coincided with the period when Britain was experiencing industrial revolution. This historical coincidence resulted in a situation where the interest of Indian traditional flexible manufacturing got entangled with the basic conflict between the merchants and manufacturers of Britain.

The transformation of the East India Company from a trading company to an agency of the British Empire created new objective conditions, which led to restructuring of the relationship between the company and the economy of the Indian sub-continent in general, and Indian flexible manufacturing in particular. In the new relationship, the most important macro-economic consequence was that the East India Company began to

use income that it earned from land revenue on financing its purchases of products manufactured by the Indian traditional manufacturing for exports without making payments in bullion. This form of trading arrangement has been described as 'unrequited trade'. The bullion earned through foreign trade was important for the functioning of the economy of the continent because it provided supply of metal for minting coins. Therefore, new arrangements created by the East India Company resulted in shortage of currency, which caused virtual stagnation of business activities in the sub-continent.

The story also revealed that once the East India Company's political ascendancy began in India, it used its political power to consolidate its monopoly over centres of traditional flexible manufacturing to get unrestricted access to their best products. To achieve this goal, the East India Company used market as well as non-market strategies to establish its paramouncy in trade of products produced by traditional flexible manufacturing. This strategy necessitated that it had to marginalize the role of Indian merchants from the process of production to break the nexus that existed between Indian merchants and craftsmen. It was this nexus that had provided to the Indian manufacturing sector the capability to supply unlimited volume of quality, manufactured goods; not only to meet domestic needs, but also to meet their global demand. The strategies followed by the East India Company to break this nexus intended to create dependence of Indian craftsmen on the agents of the company to sell their products. This strategy led to the decline of traditional flexible manufacturing, which has been described by historians as the process of de-industrialization. This process took the economy of the Indian sub-continent one stage backward from industrial revolution. Therefore, the analysis of the process of de-industrialization amounts to the understanding of factors that destroyed the seeds that are essential to give birth to industrial revolution.

To break the nexus between Indian traders and craftsmen, the East India Company declared its direct monopoly of trade in certain products. The process began with assumption of monopoly of trade in saltpetre, followed by salt and opium. In such products, the company eliminated the role of Indian merchants and became the sole buyer or monopsonist. Since the company became the sole buyer, it acquired the capability to manipulate the prices of these products. To reduce the role of Indian manufacturers in the production of handicraft products, the East India Company reduced its dependence on Indian merchants for procurement of merchandise. It instead appointed its own *gomashtras* (agents) for the purposes of

procurement. Finally, the East India Company banned the *Dadni* system in c.1770, which had given competitive advantage to Indian traditional manufacturing to sell its products globally. Moreover, under the pressure of British manufacturers, who wanted to sell their products produced by their modern manufacturing sector, the East India Company gave them access to Indian markets. This happened when the East India Company was forced to allow the entry of free British merchants, who acted as agents of British manufacturing companies in India. These agents formed agency houses, which in due course of time, became wealthier and developed their own network of influence in the Indian market due to the patronage given to them by the officials of the East India Company. These agency houses also reduced the significance of Indian merchants.

The East India Company, along with marginalizing the role of Indian merchants, also imposed several kinds of regulations on the Indian craftsmen. Like indenture regulation (*khatbandi*), which helped in binding Indian craftsmen exclusively to the agents of the company. Through this regulation, craftsmen were prohibited from selling their products to the Indian merchants. This regulation converted Indian craftsmen into bonded labourers of the company. The East India Company also introduced a *motarfa* tax on weavers, which was levied on the basis of number of looms employed in the household workshop of the weaver. The company also established its own centres of manufacturing, where craftsmen were forced to work at lower wages and for longer hours. These regulations provided immense bargaining power to the officials of the East India Company in terms of buying better quality products at cheaper prices and hiring Indian craftsmen at lower wages.

The aforementioned strategies and regulations used by the East India Company created a disconnect between Indian merchants and craftsmen. The disengagement of merchants in the process of production of crafts-based traditional flexible manufacturing exposed craftsmen to several kinds of risks and uncertainties. This occurred due to altered circumstances when craftsmen lost the support of merchants in the organization of production.

Traditional flexible manufacturing, which was engaged in the production of luxury handicrafts, also experienced significant decline because of the emergence of the East India Company as the ruler of India. The East India Company replaced the hierarchy of *mansabdars*, nobles and Mughal aristocracy with salaried administrators. The elites created by the Mughal Empire supported the demand for luxury handicrafts; the new elites were more adept to the use of manufactured products produced by the British

manufacturers. Even regional rulers, who occupied positions of power in the successor states of the Mughal Empire, intended to differentiate themselves from the Mughal aristocracy. To these new power elites, the availability of British and European manufactured goods provided alternative choice. This practice further reduced the demand for products manufactured by traditional flexible manufacturing.

The story revealed to us an important aspect of the East India Company, which has not been analysed by scholars in greater detail. We learnt that the opportunistic behaviour of its management of the East India Company was embodied in the DNA of the company. The East India Company was perhaps the first joint-stock company of the world. It had a continuous existence as a commercial corporation from c.1600 to c.1833, and from c.1833 to c.1857 as an agency of the British Empire. The company was formed by royal charter granted by Queen Elizabeth I. The chartered status given to companies gave them monopoly of trade with specific territories. The justification for giving chartered status to companies was based on the premise that the opening of trade in new markets and products is as important as innovation and therefore, such companies should enjoy monopoly right for certain periods of time. Therefore, granting of royal charter was considered to be equivalent to granting intellectual property right. Moreover, granting of royal charter by the Crown gave the company quasi-sovereign rights, like the right to mint its own coins, exercise law and order and provide justice in its own overseas settlements. These quasi-sovereign rights made it possible for the East India Company to occupy territories in India, despite being a trading company.

The East India Company was a joint-stock multinational company. It was a unique innovation in organization of business at that point in time. The joint-stock form of business organization gave it capability to pool resources from thousands of stockholders as well as source talent from thousands of inspiring persons to run its management, without relying on hereditary managers. However, being a joint-stock form of business organization, it was perhaps the first company that experienced separation between ownership and control. To understand the consequences of this separation we studied the nature of corporate governance in the case of the East India Company. One of the important consequences of separation between ownership and control is that it results in the 'principal-agent problem'.

In the case of the East India Company, there existed multiple layers of management. For instance, the management was based at the head office of

the company in London. It had managers working at different presidency towns and field managers working at different markets in the Indian sub-continent. The multiple layers of management created several kinds of principle-agent problems. The most serious was between the management and staff located at the head office of the company at London and managers and employees working in the Indian sub-continent. The degree of seriousness of the principal-agent problem can be appreciated if one realizes the quantum of information asymmetry, which existed because of spatial distance that separated these two sets of company managers. The enormity of the information asymmetry had also increased between these two separate managements because company employees working in the Indian sub-continent were also permitted to conduct business on their own account. Therefore, the story also dealt with the principal-agent problem that existed between the management of the company and its overseas employees. This necessitated the analysis of the organizational structure of the East India Company and the nature of the contract between the company and its overseas employees.

The story revealed that given the historical circumstances of the period, the East India Company had devised an appropriate contract between the company and its overseas employees. The contract consisted of paying low wages (to minimize cost to the company), permission to conduct private trade to supplement low wages as a 'carrot' and threat of dismissal as a 'stick'. Despite the formulation of an appropriate contract, the story told us about several instances of opportunistic behaviour on the part of overseas employees, which compromised the quality of corporate governance in the East India Company.

To minimize the chances of opportunistic behaviour on the part of company officials working in the Indian sub-continent, British Parliament evolved several regulations. However, at that point in time, the British polity was struggling to arrive at a new balance of power between the Crown and the Parliament. In these circumstances, to overcome the threats imposed by the Parliament on its autonomy, the company evolved nexus with the Crown. Over time, several executives of the company got involved in acts of financial irregularities in order to enhance their private wealth. These executives came back to Britain after accumulating substantial amounts of wealth. They used the power of their wealth to enter into Parliament. The top executives of the company, like Clive and Warren Hastings, were reprimanded by the British Parliament on account of serious charges levied against them. Despite these attempts made by the British

Parliament and by the civil society, none of the executives of the company was punished. This happened because these executives were considered national heroes who had helped in laying the foundation of British Empire in the Indian sub-continent. British authorities ignored them as minor irritants in the process of empire building. It is also true that, at that point in time, there was absence of necessary legal institutions and provisions to regulate the opportunistic behaviour of the executives of the East India Company. The inability of the British Parliament to regulate the behaviour of the overseas executives of the East India Company reflected the character of British democracy of the period, when the electorate consisted of a very narrow social base that did not reflect the ethos of common British citizens.

The story made it evident that the chartered status of the East India Company provided it ample scope to fight wars and participate in local conflicts and occupy territories in the Indian sub-continent. It was the chartered status of the company that facilitated it to gain political power in the Indian sub-continent. The company used its political power to break the nexus between Indian merchants and craftsmen, which was the basis of the emergence of traditional flexible manufacturing. Thus, the story revealed that the East India Company was uniquely placed at that time, due to prevailing historical circumstances, as well as due to its organizational structure to emerge as a ruler of a vast part of the Indian sub-continent and cause decline in its traditional flexible manufacturing.

The story also made it clear that while the East India Company was expanding its political control over the Indian sub-continent, the polity, society and economy of Britain was undergoing structural transformation, after the Industrial Revolution. Manufacturers were slowly gaining prominence in the British society, economy and polity. The emerging importance of manufacturers as creators of wealth and employment to masses resulted in the birth of manufacturers as a new power elite in Britain. The ideas propagated by this new power elite laid the foundation of a new economic philosophy. This philosophy was expressed in the writings of classical political economists who advocated for *laissez faire*, private property rights and free trade. These new ideas replaced the worldview created by the mercantilist school. The new ideology changed the attitude of the state and society against companies like the East India Company, which was forced to cease its commercial functions in c.1833. However, it remained the agency of the British Empire until c.1857.

At the same time, several socio-economic and political forces were aligning themselves against the rule of the East India Company in the

Indian sub-continent. The rule of the company had affected the interest of different groups and strata of society in the Indian sub-continent. The collective discontent of these diverse sections of the society were expressed in the form of the Sepoy Mutiny (as described by British historians) or first war of independence (as projected by the nationalist historians), which began on May 10 c.1857. The important consequence of the first war of independence was that the rule of the East India Company came to an end and the rule of the British Crown, which is being described as the British Raj, began. Direct rule of the British Crown meant that the interests of the British manufacturers came in direct conflict with the interest of Indian traditional flexible manufacturing. This is because a buffer that existed between the conflicting interests of British and Indian manufacturers disappeared. This important transformation of circumstances necessitated the need to study the impact of the transfer of power from the East India Company to the British Raj on Indian manufacturing.

The advent of the British Raj created a new form of governance of the Indian economy. The transfer of power from the company to the Raj created a political entity called India. The entire governance structure created by the East India Company was reflected by the office of the secretary of state and office of the viceroy. In the new governance structure, the involvement of British Parliament became most important. This facilitated the role of several pressure groups that existed in the British polity to influence the process of policymaking.

At this point in time, the dominant influence on policymaking in Britain was the ideas evolved by classical economists. It was generally accepted that the understanding of principles established by classical political economy will provide appropriate answers to policymakers. As a result of this acceptance amongst policymakers, there had emerged a consensus on wider areas of governance. The objective of policymakers was to facilitate the efficient working of the market economy. To facilitate this process, the British Raj believed in (i) free trade, (ii) *laissez faire*, and (iii) establishment of the rule of law to protect property rights and enforce contracts.

The policy of free trade was compatible with the interest of British manufacturers because it reduced the costs of production. By reducing the prices of imported raw materials, it reduced the costs of production, and by reducing the prices of imported food grains, it helped in maintaining low wages. Influenced by the interest of British manufacturers, the British Raj followed the policy of free trade, despite the fact that at that point in

time the Indian manufacturing sector needed protection from British machine-made manufactured goods.

The intentions of the British Raj became quite apparent when it initiated the process of development of railways in India after c.1845. The British government purchased all the equipment and materials to develop railways from British manufacturers. It raised capital from borrowings from the British public by giving them a guarantee of a 5 per cent return on their investments. This policy mitigated the advantages of forward and backward linkages that might have resulted from the development of railways.

However, policies based on the principle of *laissez faire* and free trade could not be sustained for a longer period because historical circumstances made these policies incompatible with the interests of the British Raj. The circumstances created by World War I (c.1914–c.1918) forced the British government to deviate from these policies. Subsequently, the Great Depression of the 1930s also compelled the British administration to deviate from the policies of *laissez faire* and free trade, when it became necessary to impose tariffs and regulations.

The end of the Great Depression coincided with the beginning of World War II in c.1939. After the entry of Japan to the war, the threat of war came much closer to Indian territories. This forced the British government to initiate the process of industrialization in India to obtain necessary supply of materials and equipment, which were necessary to fight the war. Moreover, wartime compulsions compelled the British administration to impose regulations on the Indian manufacturing sector to make it serve the wartime needs of the administration. The regulatory practices began with the Defence of India Rules, which empowered the British administration to prevent entry of Indian manufacturers in certain industries. It also gave authority to the British administration to take over existing enterprises to produce wartime supplies. The British administration took control of enterprises like Texmaco and Jay Engineering Works. Tata's steel plant began to produce shells for the bombs and Tatanagar an armoured car, which was used by the British army. The Hindustan Aircraft Manufacturing Company, which was established by the Walchand-Hirachand Group, was taken over by the British government.

We came to learn from the story that during the British Raj, the Indian manufacturing sector evolved a new form of organization and management of businesses, which was known as the *managing agency system*. This innovation in the organization of businesses occurred when agency houses, which were formed by free merchants, ex-civil servants and military officials

of the East India Company to sell the products of British manufacturers in India, floated enterprises in India as joint-stock companies and acquired the right to manage them. This innovation helped in financing of manufacturing enterprises on the one hand, and helped in overcoming the shortages in managerial skill on the other.

Despite the existence of several types of implicit as well as explicit discriminations in the policies followed by the British Raj, modern manufacturing enterprises did emerge in India. The existing discriminatory policy could not prevent the birth of the modern manufacturing sector in India, because historical circumstances provided the availability of all the important preconditions that are necessary for the successful emergence of modern manufacturing. There always existed a substantial supply of entrepreneurial talent in India, in the form of several communities of merchants. These merchants had earned experience in organizing networks of craftsmen to manage traditional flexible manufacturing. Some of them had also accumulated substantial financial resources from long-distance trade to invest in capital needed to establish modern manufacturing enterprises.

Communities of merchants like Parsis, Gujaratis, Bhattias, Bohras, Khojas, Memons and Marwaris had migrated from Surat and other parts of Gujarat to Bombay Presidency and had accumulated wealth by trading in cotton and opium. There also existed a large concentration of entrepreneurial talent in the form of agency houses in Calcutta, which were established by expatriate British merchants. These managing houses had also accumulated vast financial resources by exporting jute to Dundee mills.

These two groups of merchants operating at two different locations initiated two different modern manufacturing industries in India. The Bombay-based communities of merchants floated several enterprises to manufacture cotton textiles, and agency houses of Calcutta established enterprises to manufacture jute textiles. Both sets of merchants used the managing agency system to organize production. The concurrent growth of two textile-manufacturing companies in two different places has been described by scholars as '*dual dominance*'. We learnt from the story that these locations represented two different modes of growth of manufacturing. The cotton textile mills located at Bombay were promoted by native merchants, while jute textile mills of Calcutta were opened by British expatriate merchants. Due to this difference, the attitude of British policymakers was also different towards each of them. Moreover, while native merchants were manufacturing cotton textiles, which were substitutes for Manchester- and Lancashire-made cotton textiles, the jute textiles

produced by the British expatriate merchants were complementary to the manufacturing interests. Both of these manufacturing industries began in the year c.1854, when Cowasjee Davar established Bombay Weaving and Spinning Mill at Bombay, and George Aukland started Aukland & Company to manufacture jute textiles at Serampore near Calcutta.

It is a historical fact that most of the cotton textiles mills located at Bombay were initially promoted by Parsi merchants like Maneckji Petit, Dinshaw Petit, Bomanji Wadia, Merwanji Bhavnagar, Tata and Kapadia. The growth of cotton textile mills was arrested by the American Civil War (c.1861–c.1865), which had suspended the availability of cotton to British cotton textile manufacturing mills. This led to massive export of Indian cotton to Britain. Despite the fact that the Indian cotton traders made substantial amount of profits, most of these profits were lost on speculation, which created a financial crisis.

The new investments in cotton textiles were made only after c. 1873. In fact, the new investment opportunities led to the entry of new entrepreneurs belonging to different communities of merchants in the manufacturing of cotton textiles. Kutchi Bhatia merchants like Morarji Gokuldas, Maneckji Khatau, Kowasji Naik, British entrepreneurs like Jams Greaves, George Cotton, Charles Killick and Presto Nixon and Baghdadi Jew, Albert Sasoon, promoted several cotton textile manufacturing units at Bombay. Ranchhodlal Chhotlal opened the first cotton textile mill at Ahmedabad.

The cotton textile mills that were located at Bombay were initially spinning mills, which were exporting cotton yarn to the markets of South-east Asian countries, especially to cater to the markets of Japan and China. Therefore, at that point in time, cotton textile manufacturing was export oriented. However, after the adoption of modern equipment by Japanese cotton textile manufacturers after c.1860s, and Japanese occupation of China after war c.1894–1895, Indian cotton textile manufactures lost these markets for exporting yarn.

The new circumstances forced Indian cotton textile mills to restructure themselves. The restructuring reoriented the strategy of Indian cotton textile manufacturers towards a domestic market. Thus, cotton textile manufacturers became inward looking. As a consequence of the reorientation of cotton textile manufacturing, Indian mills adopted alternative strategies like (i) supplying cotton yarn to Indian handloom weavers, (ii) beginning the process of vertical integration by establishing composite textile mills, and (iii) spreading cotton textile manufacturing to new locations wherever cotton was cultivated, in the Indian sub-continent. The cumulative effect of these

changes was that cotton textile manufacturing became an import-substituting industry from an export-orienting one. The rapid expansion of cotton textile manufacturing in the Indian sub-continent, and its emergence as an important import substitute for cotton textiles produced in Britain, invited hostility of British cotton textile manufacturers. This led to the imposition of several kinds of discriminatory regulations on the manufacturing of cotton textiles in India. The British administration introduced discriminating tariffs and excise duties on the manufacturers of Indian cotton textiles. Perhaps due to the experience of discriminating tariffs by cotton textile manufacturers in India, these manufacturers actively participated in the struggle for India's independence.

There existed several preconditions that are necessary for the successful promotion of manufacturing of jute textile in Calcutta. Despite the existence of these preconditions, native entrepreneurs ignored this industry. Therefore, manufacturing of jute textile was initiated by Scot entrepreneurs. The Scot merchants were involved in exporting jute from India, and had made the necessary capital required to enter into manufacturing of jute textiles by acting as agency houses. Scot entrepreneurs like George Aukland, who started Aukland & Company, and George Henderson, promoted Borneo & Company to manufacture jute textiles in Calcutta Presidency. These entrepreneurs demonstrated to other Scottish merchants the advantages of setting up jute textile manufacturing firms. Following the footsteps of these promoters of jute textile manufacturing units, several agency houses established mills to manufacture jute textiles in Calcutta Presidency. Some of these agency houses were Kettle Buller & Company, Jardine Skinner & Company, Andrew Yule & Company, and James Finlay & Company. Jute textiles manufactured in India remained largely for exports.

This book told us that during this period, Marwari merchants of Bengal were dominant players in procurement and supplying of raw jute to jute textile mills. Being an important part of the jute textile manufacturing economy of Bengal, they had established a strong association with the managing agency houses that were managing jute textile mills. These Marwari traders had accumulated substantial financial resources through trade in jute. Slowly these merchants took advantage of their knowledge about jute textile manufacturing and began to enter into the manufacturing of jute textiles. Marwari merchants followed two different strategies to enter into the business of manufacturing of jute textiles, where expatriate managing agency houses dominated. The first strategy was by lending to British managing agency houses to meet their working capital needs against

collateral of blocks of shares of their jute textile manufacturing companies. This was known as the *fatka* system. Over time, these Marwari merchants became owners of a substantial percentage of stocks of the companies and became either members of the board of directors of the companies or owners of the company. Some other Marwari traders promoted their own jute textile mills. As a consequence of these alternative strategies, Marwari merchants owned twenty-two jute textile manufacturing companies, five jute textile mills owned by British managing agency houses were taken over by Marwari merchants, and in sixty-two mills owned by British agency houses, there were Marwari directors by the end of World War II.

The method of smelting iron was known to Indian craftsmen for ages. However, the manufacturing of iron and steel using the European system of manufacturing began during the rule of the East India Company (c. 1757–c. 1857), when an iron foundry called Begpore Iron Foundry was established at Beypore Inc. 1762. After this attempt, several units were started at different locations to manufacture iron and steel in India during the rule of the East India Company. These units were located at Proto-Novo (in Madras Presidency), Calcutta, Birbhum, Kumaon, Indore and Chanda. However, these units did not survive for a long period. The inventions of Bessemer converter in c.1856 and the open hearth furnace in c. 1869 changed the character of the British manufacturing of iron and steel in terms of materials required for the manufacturing of steel. These technological changes changed the location pattern of iron and steel manufacturing.

The story narrated the struggle made by Jamsetji Nusserwanji Tata to identify an appropriate location for the steel manufacturing unit that he established. He enlisted the help of Kennedy Sahlin & Company of Pittsburgh, PA to find an appropriate location for his proposed steel manufacturing firm as well as to construct his mill. This consulting firm identified the location of the proposed mill at Sakchi, which is now known as Jamshedpur. Finally, on August 26, c.1907, Tata Iron and Steel Company (TISCO) was registered at Bombay. The success of this steel mill can be attributed to the choice of suitable location, and government support in terms of purchase of substantial part of the output of the plant. Subsequently, circumstances that emerged as a consequence of the World Wars compelled the British administration to buy the entire output of steel produced by the plant. The steel manufactured by TISCO was used to construct bridges, rail roads, railway wagons and engines, bomb shells, and armoured cars known as Tatanagars, which were deployed in World War II. It is perhaps due to its appropriate location that this steel mill is

still going strong. Steel mills were also started at Burnpur in Bengal (by Martin Burn & Company) and at Mysore (by Maharaja of Mysore).

It has been described in the story that the traditional flexible manufacturing produced large volume of *gur* and *khandsari*, which were consumed as sugar in the Indian sub-continent as well as in some of the neighbouring countries. British entrepreneurs introduced the cultivation of sugarcane in different British colonies with the help of indentured workers from India. British expatriate entrepreneurs began to manufacture white crystal sugar in the West Indies; the sugar that monopolized the British market. To meet the requirements of British expatriates living in the Indian sub-continent, white sugar was imported from Java, which at that time was a Dutch colony. Manufacturing of white crystal sugar began in India as a consequence of a rebellion that occurred at Hayati and San Domingo in c.1795. During this rebellion, a large proportion of the white expatriate population was killed. This rebellion paved the way for the removal of slavery in the West Indies in c.1834. Due to these reasons, supply of sugar from the West Indies to Britain was suspended. The new circumstances encouraged some of the British managing agency houses operating in India to promote sugar mills in India. Managing agency houses like Binny & Company, Parry & Company and Begg Sutherland & Company opened sugar mills in Madras Presidency and United Provinces (now known as Uttar Pradesh). However, as soon as situations in the West Indies normalized, the British government imposed discriminating tariffs in favour of sugar mills there.

Partly to prevent the import of sugar from Java, and partly in response to the demand of managing agency houses, which were engaged in the manufacturing of sugar, the British government imposed tariffs on imported sugar in India in March 1931 for the first time. The level of protection further increased following the Great Depression of the 1930s. In the new protected environment, several native entrepreneurs like Jamnalal Bajaj, Karamchand, Thapar, Gokul Chand Navrang, Ramkrishna Dalmia, Gujarmal Modi and Walchand Hirachand opened several sugar mills in different sugarcane growing areas spread across the Indian sub-continent. The process of import substitution in the manufacturing of sugar was so rapid that by the end of World War II, India was able to not only meet the demands of domestic markets, but also developed capacity to meet export demands. Apart from modernization of manufacturing of products, which were manufactured by traditional flexible manufacturing, certain entirely new manufacturing industries were also established by Indian manufacturers. These industries include paper, cement, chemicals,

electric bulbs, automobiles, aircrafts, capital equipment required by cotton textile and sugar manufacturers, and chemicals that were needed by cotton textile and paper manufacturers.

We also learned that the Indian economy also attracted foreign investors. However, these investors entered the Indian markets due to different reasons. Some of the foreign investors established manufacturing units in export-oriented manufacturing industries like jute textiles, tea and sugar. Some other foreign investors entered the market to take advantage of changes in the stores policies of the British administration in India. The changes in the stores policies occurred when British government decided to procure all the requirements of their administration in India from manufacturers who had manufacturing units located in India. Companies like Alfred Herbert and Guest Kean Williams entered the Indian market especially due to this reason.

Another group of foreign manufacturing companies that established their manufacturing facilities in India were those that anticipated the requirements of plant and equipment and industrial materials by the local manufacturers. Companies like Siemens of Germany, Dunlop Rubber Company, Jenson and Nicholson, Goodlass Walls Ltd., Crompton and Parkinson, and Union Carbide entered the Indian market for this purpose. Similarly, some of the foreign investors also established their manufacturing firms to manufacture consumer goods on which the British administration had imposed tariffs. These manufacturing companies were Western India Match Company (WIMCO), Britannia Biscuit Company, Colgate-Palmolive, Lever Brothers, Bata Shoe Company, Imperial Tobacco Company, Philips, and Godfrey Phillips.

The long story of Indian manufacturing industries told us that the process of transformation of traditional flexible manufacturing into modern manufacturing occurred initially in those manufacturing industries in which India had competitive advantage. These industries were cotton textile and jute textile. Modern manufacturing also emerged in the production of sugar, cement, tea, paper, steel, safety matches, chemicals, automobiles and some of the general engineering products. We also learnt that modern manufacturing also spread to several locations in the Indian sub-continent, but it remained highly localized in Bombay and Calcutta presidencies. Madras Presidency remained the location of modern small and medium enterprises. Despite all the achievements, the size of the manufacturing sector was not sufficient to transform a continental-sized, predominantly agrarian economy into a manufacturing nation of the world. On the day of

independence, only 9.6 per cent of India's working population was engaged in various forms of manufacturing activities along with modern, large, medium and small enterprises. This happened because in certain segments, traditional flexible manufacturing continued to exist, and in some others, traditional manufacturing assumed a different form of organization of production. Amongst all these different formats of manufacturing enterprises, the share of workforce engaged in large modern manufacturing firms was just 1.8 per cent, and share of all other forms of manufacturing was just 7.8 per cent.

The existence of dualistic structure in the manufacturing sector was not unique to India. Even in Britain, modern manufacturing evolved a symbiotic relationship with the earliest forms of manufacturing. However, subsequently, the entire manufacturing sector was modernized. The idea of dualism rests on the premise that there exist, concurrently, two types of technology, two different levels of economies, and two different kinds of organizational structures. The dualistic structure of the manufacturing sector emerged as a consequence of the existence of segmented markets. Segmented markets were a manifestation of social and economic segmentation of population in terms of income levels, social differentiation accompanied by religious and regional variations in consumption and tastes. The kind of consumer demographics that existed in India during this period had a very narrow base of rich and middle-income consumers, which had capability to buy standardized goods manufactured by modern manufacturing. Highly differentiated consumer demographics could not be served by products of modern manufacturing alone; they had to be complemented by other forms of manufacturing enterprises. Despite the fact there existed a narrow base of consumers who could buy the products of modern manufacturing, even this segment was made narrower by discriminatory policies of the British administration, which intended to make space for the imports of British manufactured goods. This suggests that prevalence of differentiated markets and the imposition of discriminating policies of the British Raj did not allow the modern manufacturing to be transformed into industrial revolution. These different segments of manufacturing, which co-existed concurrently, posed constraints on the process of transformation of the Indian economy into a manufacturing nation of the world, even after independence.

The analysis regarding the affairs of the Indian manufacturing sector with different political regimes that occupied political power after independence is subject matter for a separate book, which the author is writing currently.

However, one is presenting here a glimpse of the narrative as an appetizer. India achieved independence in c.1947. The independence of India was accompanied by the partitioning of the polity into India and Pakistan. Independence of India occurred in the circumstances when the global environment was highly influenced by the trauma of the Great Depression of the 1930s and the World Wars. It was the period when developed market economies were under the spell of Keynesian economics, and socialist economies of the USSR and other East European countries were following the strategy of developing their manufacturing sector within the framework of planned development.

Despite several options that were available to the political regimes that occupied political power in independent India, choices made by all of them were constrained by the prevalence of the segmented structure of the manufacturing sector. After independence, a new form of political economy emerged, where different political entities adopted different segments of the manufacturing sector for their support. Gandhians with the ruling party, which has ruled Indian polity for a substantial period of time, became supporters of traditional as well as modern small-scale enterprises. They influenced the policymakers to provide several kinds of support to these enterprises. The support was given in terms of concession in taxation and subsidies on land, fixed capital and priority sector lending. These enterprises were also facilitated by providing them well-developed infrastructure in industrial estates developed by the government. Moreover, to insulate them from the competition of large-scale enterprises, several manufacturing products were reserved especially for this sector. Most of the stringent labour laws were not imposed on this sector. The consequence of these supply-side supports was that this segment of the manufacturing sector never had incentive to transform itself into modern large-scale enterprises.

Nehruvians, within the ruling party, dedicated a very large proportion of the remaining products to be manufactured by the government enterprises under the process of planned development. Whatever residual products remained, were left for large-scale, private sector manufacturing enterprises. Instead of facilitating the growth of private sector, large-scale enterprises, government imposed several kinds of regulations that regulated all types of important managerial decisions, such as decisions regarding entry and exit, location, expansion and diversification of enterprises. These regulations not only arrested the growth of private large-scale modern manufacturing enterprises, but also strangled the spirit of enterprise. Political regimes

created hope regarding liberating the spirit of enterprise after the adoption of economic reforms. However, the reforms were too slow and did not reform labour markets, and have made acquisition of land for establishing manufacturing enterprises difficult and costly. The consequences of this strategy of development of the manufacturing sector have been that India has lost competitive advantage in the manufacturing sector.

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