

CHAPTER 8

Continued Misery or a Change in Fortune?

The Case of the Howrah Foundry Industry

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Introduction

The contemporary literature on industrial development and the manufacturing sector in India acknowledges that both manufacturing sector output and employment have witnessed stagnation in the recent past. We make this observation mainly in terms of manufacturing employment with the backdrop that manufacturing output has also not increased significantly during the period under study (Table 8A.1). At the all-India level, we find that the percentage of manufacturing workers in total employment declined from 11.6 per cent in 2001 to 10.1 per cent in 2011. In 1991, this share was 9.5 per cent; so over two decades, there was hardly any change in the share of manufacturing in total employment (Table 8A.2).

At the state level, most of the major states showed a decline in the share of manufacturing in total employment. For some of the major states, the share even went below the level in 1991. For West Bengal, the share of manufacturing workers as a percentage of total workers declined from 18 per cent in 2001 to 15.3 per cent in 2011, marginally below the 1991 level of 15.9 per cent (Table 8A.2). Alongside employment, West Bengal's ranking in terms of real per capita total manufacturing net state domestic product (NSDP) also consistently declined between 1990–91 and 2011–12 (Nagaraj 2016). In 1990–91, West Bengal ranked sixth amongst the 17 major states considered,

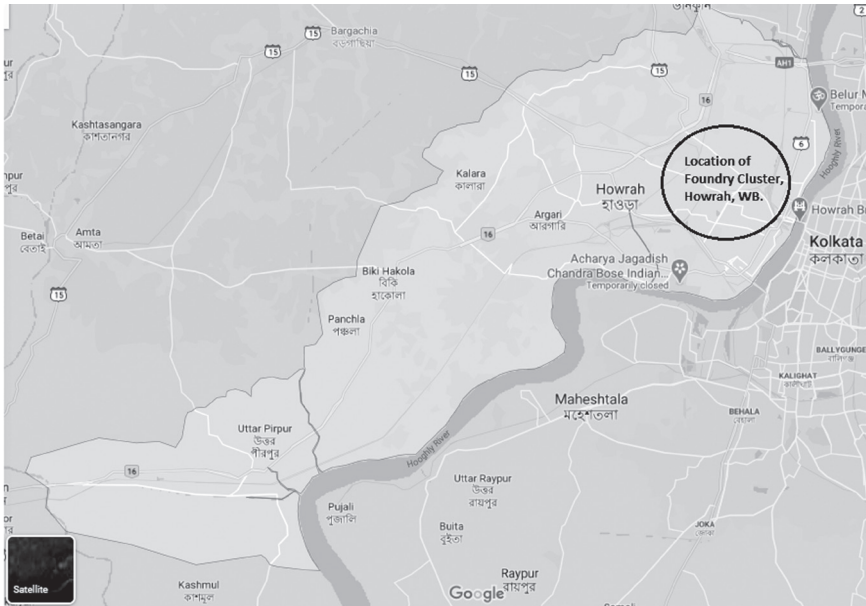
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and in 2011–12, it ranked 12th in terms of real per capita total manufacturing NSDP. The state ranked fourth in the year 1970–71. Therefore, there is enough evidence of industrial stagnation for the state of West Bengal in terms of both manufacturing employment and output.

In this chapter, we try to study an industrial cluster in the state and illustrate the macro stagnation by searching for similar evidence at the micro level and analyse a few reasons behind the stagnation of the chosen industrial cluster. We choose West Bengal as it was one of the leading states in the manufacturing sector but has over time failed to sustain its position. Within West Bengal, we choose Howrah district. With nearly 40 per cent of its workers in manufacturing, Howrah has remained one of the top industrialised districts in the state and in the country for more than two decades. Howrah does not show any sign of expansion; in fact, there is evidence of stagnation in the district in terms of its share of manufacturing in total employment. We choose the foundry or the cast iron industrial cluster in Howrah for the micro-study. The cast iron industry is a relatively labour-intensive industry and comes under the Basic Metals and Fabricated Metal Products industry group. The share of manufacturing workers as a percentage of total manufacturing workers in this industry group marginally increased to 9.6 per cent in 2011, from 8.8 per cent in 1991. This industry group, along with the machinery and transport equipment industry, had played a major role in the fast industrialisation of the East Asian economies such as South Korea and Taiwan. Therefore, it is of strategic importance for us to separately study divisions such as the cast iron industry under the Basic Metals and Fabricated Metal Products group.

Alongside the evidence of industrial stagnation, it is also observed that the distribution of manufacturing employment is highly unequal across states and districts,¹ and this distribution has hardly changed over two decades (Tables 8A.3–8A.6). To understand how this macro observation gets reflected at the micro level and within an industrial cluster which itself is large, one needs to study the units across the lanes and by-lanes of the industrial cluster. Is the distribution of manufacturing output and employment even more skewed and unequal within a district or industrial cluster? Therefore, we present this micro-study through a field survey of the foundry industry in Howrah (Map 8.1).

The foundry cluster in Howrah, West Bengal, was one of the four major hubs along with Agra in Uttar Pradesh, Coimbatore in Tamil Nadu, and Rajkot in Gujarat. The foundry cluster in Howrah once mainly served the railway industry. It even exported manhole covers to Paris (Rajeev 2003). However,

Map 8.1 Howrah cluster map

Source: Google Maps.

with a major fall in demand from the railways and a lack of alternative sources of demand, the foundry industry in Howrah was hit badly. Currently, the cluster is in a state of stagnation, while the foundry clusters in other parts of the country have expanded and are continuing to perform relatively better than the Howrah cluster. Therefore, in this chapter, we present an enterprise-level micro-study on the Howrah foundry cluster. We try to understand and document the changes in the labour, input and output markets, production organisation and the various institutional and technological challenges within the cluster. We also study the general perception around the upcoming foundry park, where the foundry industry in Howrah plans to shift. To put forward an exhaustive story, we interviewed a sample of owners and partners of the foundry units; we also interviewed few contractors, leaders of the key foundry associations and the government officials at the District Industrial Centre, Howrah.

The rest of the chapter is divided into literature review, data and methodology, observations from the field where we discuss the (a) micro insights to macro trends, (b) labour, input and output market, (c) production

organisation, (d) institutional and technological challenges and (e) perceptions on the foundry park, followed by the conclusion of the chapter.

Literature Review

There are two main papers in the literature on the Howrah foundry industry. The first paper to our knowledge, which was a comparative study of the Howrah (West Bengal) and Coimbatore (Tamil Nadu) foundry industry, is of Rajeev (2003). Rajeev (2003) reports a significant difference in the kind of technology used for production in Howrah and Coimbatore. For example, the study observes that in Coimbatore 90 per cent of the small foundries have at least two induction furnaces compared to Howrah where the modern and high precision induction furnace is completely missing.

Rajeev (2003) mentions that a distinguishing feature is the presence of intermediaries in Howrah. The contract labour system emerged out of the labour-led lockouts in the 1970s. These contractors or intermediaries were workers in this industry before. The contractual system was preferable to the owners of the factory, as it gave them greater flexibility and control over operations, with the intermediaries now having complete control over the labour supply. However, with shrinkage in demand from the railways, a large section of the original entrepreneurs sold off their foundry units. According to the author, the new entrepreneurs had little experience of the backward linkages of demand of the foundry industry, and therefore it was a 'welcome situation' for them when the contractors or the intermediaries bought business orders and managed the labour. This led to the intermediaries (labour contractors) bringing in the business for the enterprise and managing the operations. On the other hand, the actual owners rented out the factory floor and other crucial inputs and equipment for production to the intermediaries. In this system, 'the intermediary is playing the role of an entrepreneur with the important deviation in that s/he has no control over investment (Coarse 1937). S/he is basically leasing capital and coordinating between different factors of production' (Rajeev 2003). The issue with this system is the 'non-entrepreneurial attitude' of the owner of the enterprise. The information gap arising out of this system has crucial long-run effects in terms of capital investment and overall quality of work, which further pushes the enterprise towards a low-level equilibrium.

On the contrary, in Coimbatore, the actual owner plays a pivotal role in fetching demand from the market themselves and in deciding on the production

process, the backward and forward linkages. The role of the labour contractor is limited to the supply of labour to the units for daily operations. The direct link of the entrepreneurs with the market has helped them adapt to new technologies and changing market conditions. For example, the growth of the textile and pump machinery industry has given a considerable boost to the cast iron industry in Coimbatore. Many foundries were even started by the textile mill owners to vertically integrate the production process. Along with the absence of intermediaries, the availability of technical and advisory assistance from different associations and research organisations also helped the Coimbatore cluster immensely, something which was completely missing in the Howrah cluster.

The second paper, Roy (2013), studies the Howrah foundry cluster in the context of the new institutionalist theory. The theory assumes complete rationality of all economic agents and ignores the underlying social structures that are at the core of organisational and institutional changes (Roy 2013). Roy (2013) confirms with the findings of Rajeev (2003) concerning the role of the labour contractors. The labour contractors continue to do more than just supply labour to the enterprise, as they also bring business and manage other operations for the enterprise. On the other hand, the actual owners of the enterprise continue to simply rent out the factory floor and other essential inputs and capital equipment for production. This process is viewed as a 'mixture of both labour and industrial subcontracting' (Roy 2013).

Through observations from the field, Roy (2013) shows that the wages of the unskilled labourers are much lower than the minimum wages under the Minimum Wage Act. It is also shown that labour productivity in the Howrah foundries is almost three times compared to any average directory manufacturing establishment in West Bengal and 117 per cent higher than any establishment in India.² The same is the case for profitability in the foundry units in Howrah. With these observations, Roy (2013) shows that the sluggishness in the foundry industry in Howrah cannot be attributed to labour market inflexibility, nor the profitability of the firms. This is because with contractual labours, a flexible wage rate and a non-binding minimum wage regulation, the labour market in Howrah is quite flexible and the firms are profitable.

Further, studying the changes in backward and forward linkages around the foundry industry in Howrah, Roy (2013) observes that the market demand has considerably moved away from the cast iron products in favour of plastic pipes, steel items, and so on. Alongside this, there was a shock to the raw material

prices with the decontrolling of prices and entry of a few private players in the supply of the essential pig iron, which was previously supplied by the government. The effect of this was a very volatile input market. For example, within a period of four months, the price of pig iron increased by 31.6 per cent (Roy 2013). These changes hit the small enterprises hard as they faced losses and difficulty in planning their production alongside a volatile input market. Finally, the decline of major ancillary industries such as textiles, jute mills and engineering industries within the state and the growth of automobiles, valves, pumps, and so on, away from the state led to a complete cut-down in derived demand for the foundry units in Howrah. However, having made these points, Roy (2013) argues that liberalisation and higher competition affected all industries, and this is not something unique to the foundry industry of Howrah alone.

Therefore, finding no major shortcomings in the labour process, market and policy-based factors, Roy (2013) turns to investigate the organisational and institutional aspects to explain the non-responsiveness of the industry to stagnation. Roy (2013) reiterates the underlying owner–trader–contractor relation in the foundry industry in Howrah and expands on the challenges associated with it, such as information gaps, ‘impersonal management’ and lack of ‘systematic assessment of observations’. Further, in terms of institutional challenges, Roy (2013) mentions the lack of formal credit, lack of inter-sectoral linkages for research and innovations and no sign of cooperative efficiency within the cluster, which is in contrast to the stylised fact of ‘bonding’ over social capital between the enterprises of the industrial cluster.

Apart from these two main papers in the literature, Das (2013) reports a series of case studies studying production conditions in 18 foundry units. This study brings forward evidence on the awkward and static posture of work in all foundry units. In addition to this, the work environment for the labourers is highly risky as they are exposed to manual handling of heavy and dangerous materials. It is also documented that almost all the units in this study cater to the low end of the value chain. The highly volatile raw material prices, scarcity of labour with alternative opportunities, eroding domestic and international market and lack of collective action in the raw material market are identified as the major weaknesses of and threats to the Howrah cluster. Alternatively, the capability of the workers to produce high precision output using traditional technology, the past reputation of the cluster and the scope of exports due to the closure of foundry units in Western countries were seen as some strengths of and opportunities for this cluster.

In recent times, the foundry cluster in Howrah has not been studied, and therefore very little literature exists around it. In this chapter, we attempt to fill in this gap and document the changes (if any) in the Howrah foundry cluster. Therefore, our main objectives are as follows:

1. Do we find evidence of industrial stagnation and inequality in the distribution of manufacturing output and employment at the micro level?
2. Does the peculiar and inefficient owner–contractor relationship discussed in the literature still exist or has there been a major change?
3. What are the existing challenges in the input market? Has there been any major change in the product mix and hence is there any new forward linkage?
4. What is the general perception of the new foundry park among the entrepreneurs? Are they willing to move to this new park; how do the entrepreneurs look at this venture? Is there any fear of major closures in the transition to this new foundry park?

The above research questions will help add to the literature and will give a fresh perspective on state-led policies, especially on the new foundry park and the probable future of the cluster that was once a hub of cast iron in India.

Data and Methodology

We conducted fieldwork in the foundry cluster in Howrah between mid-April and mid-May of the accounting year 2018–19, with the above-mentioned research objectives. We studied 30 foundry units through a simple random sample; this is about 10 per cent of the total population of foundry units. We tried to cover small, medium and large units to have a sample that is closely representative of the population. We developed a questionnaire to collect information related to the history of the foundry unit; background of the owner; information related to labour, inputs and the output market; information related to credit and technology-related aspects; and a general perception about the overall state of the Howrah foundry industry, its future, the upcoming foundry park, and so on. However, during the survey, a lot of the owners were not very keen to share raw quantitative information, and for that reason, we also kept alternative open-ended questions (in a qualitative form). Therefore, we followed a mixed method (both quantitative and qualitative) to collect the relevant information that would suit our purpose. Apart from the owners or the partners of the foundry units, we also interviewed a few contractors, leaders of

the key foundry associations and government officials at the District Industrial Centre, Howrah, to get a holistic view of the foundry cluster.

Observations from the Field

Micro Insights to Macro Trends

Through our fieldwork, we collected data on the output and employment of the foundry units studied. We asked the entrepreneurs their output and employment figures for the previous accounting year and the same five years earlier. This helped us to validate both the macro findings of industrial stagnation and the inequality in manufacturing output and employment as stated earlier.

We observe that in the last five years, both output and employment have reduced significantly across almost all the units studied. For only a few large foundry units, both output and employment have increased; this is mainly attributed to the growing exporting opportunities. There is strong evidence of industrial stagnation for the units solely catering to the local and domestic markets, both in terms of output and employment. Second, we also observe that, within the cluster, there is great inequality across the foundry units in terms of both output and employment. And most often these units are just a lane apart. In the survey, we interviewed an exporting foundry unit that produces about 6,600 to 7,200 tonne output per annum and employs around 300 direct and indirect workers. Moreover, in this unit, the furnace is used six days a week, and it makes an average weekly wage payment of nearly ₹250,000 to ₹300,000 – this information adequately signals the extent of production in this unit. This unit also has its own machining and finishing division and exports 80 per cent of its output and hence serves at the high end of the value chain. Another enterprise just on the adjacent lane is in a complete state of contrast. It produces 400–500 tonnes per annum and employs around 15–20 workers, most of whom are indirect labour. This unit only carries out job work and only supplies the rough or unfinished casting output in the local market and has consistently served in the low end of the value chain. These two examples show very different trajectories of industrial development within the same cluster and on two adjacent lanes. One can find many such contrasting examples across the entire foundry cluster in Howrah. Thus, the evidence of inequality in manufacturing output and employment at the macro level can

be also observed and validated at the micro level within an industrial cluster spread within an average radius of 40–50 kilometres. Therefore, through the survey of the foundry cluster, we were able to make micro validation of the macro findings – industrial stagnation and inequality in the distribution of manufacturing output and employment.

Labour and Input–Output Market

Labour

All the units studied employ contractual labour and hold very few direct workers. Using contract labour is easy as it is flexible and does not require a fixed cost. The indirect workers in the foundry units studied are paid in different ways – per day, per week, per month and piece-rate (per kilogram) basis. The per-day wage ranges between ₹200 and 250 and the piece-rate wage ranges between ₹3 and 8 per kilogram. The piece-rate can be higher depending on the complexity of the cast iron output and other factors. Overall, labour is used predominantly on need basis and is therefore highly flexible.

The fieldwork revealed that the cumulative number of workers working in the units studied has fallen considerably in the last five years. All the foundry units studied complained about the shortage of labour and stated that the new generation workers are not willing to come to the foundry industry for work. This is mainly because the working conditions inside the foundry unit are extremely difficult and other employment opportunities are also easily available. Through our survey, we observed the labour within the foundry units working under extreme heat and taking very few safety measures. They also continue to have an ‘awkward and static work posture’, as observed by Das (2013) in his case studies. Foundry owners complain that alternative employment programmes such as the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) and the permission to drive electric auto-rickshaws (which is called a *toto* in local language) within the Howrah municipality area have significantly eroded the availability of labour in the foundry cluster in Howrah. However, it is important to acknowledge that the labour shortage problem is not something unique to the Howrah cluster alone and is a consistent issue across the foundry industry. There is enough evidence of labour shortages in other major foundry clusters such as Coimbatore too. The Coimbatore cluster is heavily dependent on migrant workers from eastern states.

Input market

The essential raw materials for the cast iron industry is pig iron, scrap and coke. Earlier the government was the only supplier of pig iron in the market, but later it allowed the entry of private players and decontrolled the prices. Allowing the entry of private players in the market without a regulatory authority enabled these private enterprises to supply at high prices and hoard the supply to reap higher prices. The entry of private players in the pig iron market and the government's decontrolling of prices have only led to a volatile input market and distress among the small and medium foundry units. This has been discussed in the literature (Roy 2013) and comes out very clearly through our fieldwork. All the foundry units surveyed expressed concerns about the price volatility in the input market. For almost all the units studied, the frequent increase in pig iron prices has been a major problem, as they cannot plan production activity and quote prices accordingly, thus leading to a heavy drop in the margin and sometimes even losses. Among all the foundry units surveyed, only one unit responded that the frequent price rise of important inputs hardly affects their planning and production activities as they keep sufficient stock of raw materials covering a considerably larger period. With the time series data collected on prices through the fieldwork, it is observed that the pig iron prices increased by 11.5 per cent between December 2017 and April 2018. (On 22 December 2017 it was ₹29,600 per tonne, and this increased to ₹33,000 per tonne by 16 April 2018.) Along with this, allegations of hoarding were also quite widespread across the cluster. Therefore, this observation of rising input prices for the recent period, when seen in conjunction with the findings from earlier literature, shows that there is hardly any change in price volatility in the input market within this cluster in the last 10 to 15 years.

The fieldwork revealed that the pig iron suppliers are more interested in making steel-based pig iron rather than foundry-based pig iron, as the demand for steel-based pig iron is very large as compared to foundry-based pig iron. Also, the pig iron suppliers are facing a continued increase in iron ore prices, which is an essential raw material for pig iron production. Some of the senior entrepreneurs of the foundry cluster felt that there is a serious need to study the pig iron market itself and conduct research on iron ore availability and prices. However, it is important to note here that the increase in input prices is not something unique to the Howrah foundry cluster. During the same period as of the fieldwork in the Howrah cluster, there were reports of an increase in the prices of essential raw materials in the Coimbatore foundry cluster too.

Reports showed a 'decadal high' in pig iron prices at ₹36 per kilogram, while the prices of scrap and coke increased by 15 per cent and 30 per cent, respectively (Allirajan 2018). The foundry informatics centre also reported an increase in the pig iron prices led by low demand and a rise in iron ore prices during this period. Therefore, there is ample evidence to show that the input price increase is an industry-wide issue and nothing exclusive to the Howrah cluster.

Product mix

The majority of the units (mostly small and medium) predominantly produce hand pumps, agricultural equipment, jute mill parts, tea machinery parts, rice mill parts, cotton mill parts, sawmill parts and railway items. Only a few, the larger foundry units, produce exporting items such as different kinds of valves, pipe fittings, manhole cover, thermal power plant machinery, counterweights, industrial equipment, and so on.

The Howrah foundry cluster has failed to generate any major derived demand from the automobile industry as all major automobile industries are outside the state. Entrepreneurs from the Howrah cluster have failed to penetrate the markets of other states too. The automobile industry, on the other hand, generates a lot of demand and has been a major driving force behind the expansion of other foundry clusters in the country such as those in Pune, Coimbatore and Belgaum. Therefore, it seems that the Howrah foundry cluster has lost out on the opportunity to expand on the derived demand generated by the boom in the automobile industry. Additionally, there has hardly been any major change in the product mix of the Howrah foundry cluster if compared with the findings of Das (2013). For example, Das (2013) observes that only 1 out of the 18 foundry units studied produce automobile items, while we find only 2 units producing automobile items (one of which is the same as that of Das [2013]). This shows that there is a complete absence of any new forward linkage in the recent past, especially a linkage that can generate and account for a major share of the demand for the foundry industries in Howrah. Even leaving aside the growing automobile industry that is most predominant in other states, the foundry cluster in Howrah has no relations with the industries growing in the same state of West Bengal in which it is located. For example, although Howrah is one of the textile hubs of the country, it has never been a major forward linkage for the cast iron industry in Howrah. Among all the foundry units studied in the survey in Howrah, none of them manufacture textile machine components or parts. This is even consistent with the observations

in Das (2013). However, in Coimbatore, the textile industry has been one of the major sources of demand for its foundry cluster, and there is evidence of strong linkages between the textile and foundry industries (Rajeev 2003).

Production Organisation

Through our field survey, it is observed that one of the most important and peculiar forms of production organisation within the foundry cluster in Howrah is where the owner of the foundry unit rents out his factory floor and other input and capital equipment essential for production. On the other hand, the labour contractors or intermediaries, along with supplying labour, also bring business or manufacturing orders for the enterprise. In our survey, we also observed that there are cases where the contractor and the labour are the same people. In this case, the labour with actual moulding skills brings an iron casting order and uses the floor and equipment of the factory. In this process, the contractor or the labour separately charges for the labour cost plus margins, and the owner of the enterprise who rented the floor for moulding and capital equipment charges the raw material cost plus margins from the reseller or the end-user. However, although this is the most prevalent form of production, it is not the only one. There are cases where the actual owner of the unit or the entrepreneur brings his/her own business either using social networks or years of fixed business relations or by tapping completely new markets (although this is very rare). In our survey, we found that about 37 per cent of the foundry units studied had a structure where the intermediaries played an important role in bringing business to the firm. In about 20 per cent of the units, both the types of structures were prevalent, that is, the intermediaries as well the entrepreneurs themselves brought business, and in 41 per cent of the units, the latter form of production organisation was predominant, that is, where the entrepreneurs bought a majority of the manufacturing orders. Within the set of firms where the entrepreneurs bring their own business more often, close to half of them are exporters. Therefore, it is important to note here that although we do see the prevalence of the intermediaries in the production organisation, which is also consistent with the observations of the earlier studies, there are units within the same cluster that not only bring their own business but also strategically try to enter other markets and reach the high end of the value chain.

The units where the intermediaries play a major role have peculiarly satisfied owners. The owners of these units are simply satisfied with renting out the

floor for moulding and other important capital equipment for production – there is absolutely no urge to innovate and expand the production activities. Additionally, since in this type of production organisation the entrepreneurs are not directly connected to the market, they lack information about potential opportunities or are unable to reap the opportunities fully. We came across responses in which the entrepreneur did not have any knowledge about the exact forward linkage and only identified the contractor or the dealer who bought the order. The problem with this is that they are completely unaware of the value at which their manufactured products are getting sold to the end-user and hence unable to reap the full opportunity. This inadequate information also does not incentivise the unit to move higher up in the value chain. This has direct implications in the areas of innovation and technological improvement. For example, Subrahmanya, Balachandra and Mathiranjana (2004), while discussing two foundry units in Belgaum, mentions the case of Kapeel Foundry, which adopted reverse engineering to understand the details of high-tariff imported cast iron outputs. Further, it used this understanding to promote its own product design and then manufacture it in its own unit. This process helped the unit to expand its product base and enter new markets and hence eventually move higher up in the value chain. It is difficult to come across cases like this in Howrah, and a major reason for this is the ‘impersonal management’ (Roy 2013) of the entrepreneurs and the dominant role of the intermediaries.

However, as mentioned earlier, it is important to note here that the intermediary dominant production organisation is not the only type that exists in the foundry cluster in Howrah. As discussed earlier, we find that there are many units in which the entrepreneurs bring the business themselves. Therefore, although our survey confirms the wide prevalence of the type of production organisation (with the dominant role of intermediaries) discussed in the earlier literature, we also report the successful existence of other types of structures.

Institutional and Technological Challenges

Economic and social institutions and technological improvements play a major role in the development of an industrial cluster. Therefore, while surveying the foundry units in the Howrah cluster, we looked into the challenges associated with institutions and the prevailing technology within the cluster. Interviewing the entrepreneurs in the foundry cluster in Howrah, it was widely

observed that formal credit is not easily available. For availing formal credit, the entrepreneurs face a lot of paperwork and the collateral requirement is also very high. For example, one of the entrepreneurs in need of credit had filed for a loan application with Andhra Bank in the year 2014, and it has been more than four years but his loan application has not been approved. The entrepreneur now prefers to move to a private sector bank. It was observed that most of the entrepreneurs do not have a formal loan, and almost all the entrepreneurs are active in the informal credit market through cash credits in both the input and output markets. The informal sources again become difficult to manage, especially when the entrepreneur must make an instant payment for the inputs (for example, pig iron suppliers such as Tata Metallics do not supply pig iron on credit) but gives the manufactured cast iron output on credit to retain the dealers or the end-users.

In Belgaum, some of the highly qualified foundry owners bought the State Bank of India's 'Project Uptech'³ scheme in the Belgaum foundry cluster, and this helped them modernise their technology and automate the production process (Subrahmanya, Balachandra and Mathiranjana 2004). Success stories like these are completely absent for the Howrah foundry cluster. None of the units surveyed pursue dedicated credit facilities such as collateral-free loans for micro and small enterprises, and so on. The observations related to credit from the survey of the foundry cluster in Howrah has remained invariably the same as the earlier findings of Roy (2013).

One of the major shortcomings of the Howrah foundry units is the technology they use for production. None of the foundry units studied in the field survey used a modern induction furnace. In fact, out of the roughly 300 foundry units, there are only a handful that use an induction furnace. This is consistent with the earlier studies on Howrah (Rajeev 2003) and in complete contrast to the observations from Coimbatore. One of the major reasons behind this technological backwardness can be safely assumed to be the norms of the Pollution Control Board (PCB). The norms of the PCB restrict the foundry units in Howrah to make any sort of capital investments. The foundry industry is labelled as a red category (in terms of pollution levels) industry, and, as per pollution norms, a red category industry cannot expand alongside residential areas. These regulatory norms make it difficult for foundry units to make any capital investments and expand. Also, the areas in Howrah where the foundries are predominantly located do not have the required infrastructure such as high-tension electrical wires that are essential for running an induction furnace. Therefore, to introduce modern induction furnace in the foundry units

in Howrah, apart from large capital requirements, there is a need to relax some of the major pollution regulatory norms and completely overhaul some of the old and primitive infrastructural capabilities.

Further, we could not find any evidence of inter-sectoral collaborations through the survey of the foundry units in Howrah. As already discussed earlier, the foundry industry in Howrah does not work closely with other growing ancillary industries. For example, the textile industry coexisting in Howrah and other parts of West Bengal alongside the foundry industry is one of the big textile hubs of the country and yet none of the foundry units studied produces textile machinery components. This lack of inter-sectoral collaboration is thus an outcome of complete absence of dedicated research and development (R&D) that can be facilitated under local institutions to best suit the market interests of both industries.

It is often believed in theory that there is high cooperative or collective efficiency across firms in an industrial cluster through the use of social capital and networks. With widespread acceptance, the theories of 'collective efficiency' and 'bonding' between enterprises are often put up as stylised facts of industrial clusters. However, while surveying the foundry units in Howrah, we find little evidence of cooperation among the foundry owners. Broadly, the foundry cluster in Howrah has owners from Marwari and Bengali communities, and these two groups do not seem to cooperate to any degree. In the survey, we did not come across a single unit with a Bengali owner who is involved in exporting. All the surveyed units that are engaged in exporting have owners from the Marwari community. Also, the information that a unit with a Marwari owner is exporting and has expanded substantially comes as a revelation to the Bengali entrepreneurs. For example, the president (a Bengali) of the Howrah Foundry Association (an association of more than 150 foundry units) is completely unaware that the vice president (a Marwari) of the same association is exporting to more than 20 countries for the past two years. Also, while surveying the foundry units, we felt that there is a great deal of secrecy around the large exporting units. Therefore, these observations show that the theories of collective efficiency and coordination using 'social capital' cease to exist in the foundry cluster of Howrah. Moreover, not only is there an information gap between the Marwari and Bengali communities of entrepreneurs, but the fact that some units within the cluster are exporting on a large scale took the officials of the District Industrial Centre in Howrah by surprise. Therefore, even the local industrial development bodies are not completely aware of the cluster variations.

Another important issue noted is the lack of transparency in data reporting by the government bodies. One of the leaders of the foundry association mentioned that the local and state industrial developmental bodies simply ask for the signature of the leaders of the association in blank sheets and fill the inflated output and employment numbers themselves.

Perceptions on the Foundry Park

As discussed earlier, the norms of the West Bengal Pollution Control Board (WBPCB) do not allow red category industries to operate and expand in residential areas. The foundry cluster in Howrah is a very old cluster, which is now completely trapped within residential areas. Thus, following the WBPCB norms, the Howrah foundry cluster in collaboration with the West Bengal Industrial Development Corporation (WBIDC) and the Indian Foundry Association has set up a new foundry park, away from the residential areas. The foundry park is in the Ranihati area of Howrah, which is about 50 kilometres away from the present foundry cluster. The newly dedicated foundry park promises to come up with common facility centres for R&D and the long overdue modern technology and equipment. It also plans to accommodate one of the major backward linkages by setting up a pig iron plant within the foundry park. The foundry park upon completion is expected to produce something between 300,000 and 500,000 tonnes of casting output and generate 10,000–20,000 direct and 30,000–40,000 indirect employment in the park. They have also set up a training institute for the workers of the foundry industry, which has a website, but the institute has not yet started. The work related to the foundry park started in April 2009 and was expected to complete its first phase by March 2014. However, as of May 2018, the foundry park was still not complete. Fieldwork revealed that the land allocation process is still ongoing, and the process is extremely slow.

It was observed that only a few units have been allotted land in the foundry park, but most of these units have not yet started the construction of their factories. Only one exporting unit was able to start construction activities on the allotted land, whereas others are finding it difficult to finance the factory construction. The rest of the units studied either have not opted for any land or have not been allotted land yet. These are mostly the small or low-end foundry units, who are finding it difficult to finance the land buying and registration process. On asking these entrepreneurs how they planned to finance the transition, which needs the factories to be rebuilt from scratch, they

mentioned that the only way out was to sell the existing factory and land along with obtaining some subsidised credit or government aid. In this situation, it seems that these small unit entrepreneurs would be much better off selling the existing units to residential promoters and settling down with the lump sum amount, thus making these units highly vulnerable to complete closure. Responses like these have been common among the smaller units serving the low end of the value chain. Additionally, the units which have been allotted land in the foundry park also may sell the land if not properly incentivised with credit or market conditions.

Therefore, it is imperative for the government and other local industrial developmental bodies to carefully study these alternative situations. From our survey and interaction with different owners, it is observed that more than 50 per cent of the existing foundry units bear a medium to high risk of closure in this transition to the foundry park. The building of new units in the foundry park from scratch seems a difficult proposition for the small and medium units. Therefore, the concerned bodies for industrial development must lay down a plan to incentivise these entrepreneurs through cushioning credit schemes and better business opportunities for the units' sustainability in the short-to-medium run to mitigate the large cost of the setting up the new units. The Howrah foundry cluster should take lessons from the leather industry in Kolkata which had to move to a different location for similar pollution-related problems. According to the Indian Leather Products Association, in this transition process, around a hundred small units faced a high risk of closure as their operations did not match up to the cost of setting up a new unit in the dedicated leather complex.

Conclusion

The two broad objectives of this chapter were, first, to illustrate the macro findings at the micro level through a field-based study of an industrial cluster and, second, to study the cluster in terms of its labour market, backward and forward linkages, institutional and technological challenges, and the general perception of the foundry park among the entrepreneurs to identify the micro-level challenges of scaling up production and employment, and further discuss the future prospects of the cluster concerning its transition to the newly dedicated industrial estate. In the context of our first objective, we do find strong micro evidence of the macro trends, as cumulatively both manufacturing output and employment declined significantly for the units

studied in the survey. Also, we observe highly contrasting performance across the foundry units, reflecting inequality in the distribution of manufacturing output and employment. A unit with a manufacturing output of around 7,000 tonnes per annum employing close to 300 direct and indirect workers has on its adjacent lane a unit that produces only 400 tonnes per annum of output employing 15–20 indirect workers. Examples like these make us believe that the distribution of manufacturing output and employment is even more skewed or unstable within the district.

In the context of our second objective, we observe that the foundry cluster in Howrah faces similar challenges like the other major foundry clusters in the country with respect to the labour market and the industry's backward and forward linkages. None of the challenges seem to be unique or specific just to the foundry cluster of Howrah. However, it seems that the foundry cluster in Howrah faces institutional and organisational challenges that are very typical and peculiar to the Howrah cluster alone. These organisational and institutional challenges, such as the wide prevalence of the intermediary dominant production organisation, a weak inter-sectoral linkage, virtually no sign of competitive efficiency, regulations inhibiting technological progress, and poor local governance, all augment the already existing stagnation of the foundry industry in Howrah. This observation of a non-market-led stagnation is similar to the findings in earlier literature; however, our survey reveals that market-based challenges such as the unavailability of easy credit and labour shortage are now impacting the Howrah cluster more than any other foundry cluster in the country. This is essential because the underlying decade-old challenges have augmented the existing stagnation to a stage where even minor fluctuations in the market can have an intense impact on the units. Therefore, we feel that alongside the organisational and institutional challenges, the market-based limitations are now having a deeper impact on the foundry cluster in Howrah.

In the context of the future transition of the natural foundry cluster in Howrah to a dedicated foundry industrial estate, as stated earlier, we feel that about 50 to 60 per cent of the small and medium units bear medium to high risk of closure, as they simply cannot finance the new units in the foundry park. If essential affordable credit and better business opportunities are not available, this transition will lead to the closure of many foundry units. As a workaround, we feel that there is an urgent need for the state to revise some of the regulatory norms concerning pollution and provide the essential infrastructure. It is imperative to allow the units to make necessary capital

investments on the existing units (which is not permitted now because of regulations) for entering new markets and expanding their product base. Local governance will also have a major role to play in this process, along with a dedicated technology fund and a well-planned strategy.

Appendix 8A

Table 8A.1 Manufacturing employment and gross domestic product (GDP) in India

<i>Year</i>	<i>Share of manufacturing in GDP (%)</i>
1977–78	13.7
1983	14.7
1987–88	15
1993–94	14.6
1999–2000	15.1
2004–05	15.3
2009–10	16.2
2011–12	16.3
2012–13	15.8
2013–14	14.9

Source: Chaudhuri (2015).

Table 8A.2 State-wise share of manufacturing in total employment, 1991–2011

<i>States/India</i>	<i>Share of manufacturing in total employment (main + marginal) (%)</i>		
	<i>1991 (%)</i>	<i>2001 (%)</i>	<i>2011 (%)</i>
Andhra Pradesh	8.8	10.3	8.6
Bihar	3.9	7.5	5.5
Delhi U.T.	24.6	25.5	17.6
Gujarat	13.8	14.9	15.3
Haryana	9.9	12.5	11.0
Karnataka	10.2	11.5	11.7
Kerala	14.2	15.7	13.4
Madhya Pradesh	6.5	7.3	5.7
Maharashtra	12.4	12.4	11.3
Uttar Pradesh	7.4	11.3	9.2

Contd.

Table 8A.2 *contd.*

<i>States/India</i>	<i>Share of manufacturing in total employment (main + marginal) (%)</i>		
	<i>1991 (%)</i>	<i>2001 (%)</i>	<i>2011 (%)</i>
Orissa	6.5	8.8	8.3
Tamil Nadu	13.6	16.4	15.8
Rajasthan	6.4	8.2	7.1
Punjab	12.0	15.2	13.5
West Bengal	15.9	18.0	15.3
India	9.5	11.6	10.1

Source: Author's own calculations.

Table 8A.3 State-wise distribution of manufacturing workers (main), 1981–2011

<i>States</i>	<i>1981 (%)</i>	<i>1991 (%)</i>	<i>2001 (%)</i>	<i>2011 (%)</i>
Andhra Pradesh	9.1	8.8	8.1	7.4
Bihar	5.3	3.6	5.6	4.6
Gujarat	6.7	7.8	7.6	8.9
Haryana	1.9	1.7	2.2	2.1
Karnataka	6.6	6.5	6.3	7.2
Kerala	4.3	4.1	3.3	3.2
Madhya Pradesh	6.3	5.9	5.4	5.1
Maharashtra	13.5	14.3	11.8	12.9
Uttar Pradesh	11.6	11.2	12.8	11.9
Orissa	2.4	2.4	2.2	2.5
Tamil Nadu	11.5	11.2	10.7	11.8
Rajasthan	3.7	3.6	4.2	4.4
Punjab	2.6	2.6	3.1	3.0
West Bengal	10.2	11.5	10.9	10.0

Source: Author's own calculations.

Table 8A.4 State-wise ranking, by the share of manufacturing workers, 1981–2011

<i>Rank</i>	<i>1981</i>	<i>1991</i>	<i>2001</i>	<i>2011</i>
1	Maharashtra	Maharashtra	Uttar Pradesh	Maharashtra
2	Uttar Pradesh	West Bengal	Maharashtra	Uttar Pradesh
3	Tamil Nadu	Uttar Pradesh	West Bengal	Tamil Nadu

Contd.

Table 8A.4 *contd.*

<i>Rank</i>	<i>1981</i>	<i>1991</i>	<i>2001</i>	<i>2011</i>
4	West Bengal	Tamil Nadu	Tamil Nadu	West Bengal
5	Andhra Pradesh	Andhra Pradesh	Andhra Pradesh	Gujarat
6	Gujarat	Gujarat	Gujarat	Andhra Pradesh
7	Karnataka	Karnataka	Karnataka	Karnataka
8	Madhya Pradesh	Madhya Pradesh	Bihar	Madhya Pradesh
9	Bihar	Kerala	Madhya Pradesh	Bihar
10	Kerala	Rajasthan	Rajasthan	Rajasthan
11	Rajasthan	Bihar	Kerala	Kerala
12	Punjab	Punjab	Punjab	Punjab
13	Orissa	Orissa	Orissa	Orissa
14	Haryana	Haryana	Haryana	Haryana

Source: Author's own calculations.

Table 8A.5 Shares of the top three and bottom three states in net state domestic product in total manufacturing at constant prices among seventeen major states

<i>Year</i>	<i>Top three states</i>	<i>Bottom three states</i>
1970–71	47	2.2
1980–81	49.3	1.4
1990–91	44.3	1.4
2000–01	42.7	2
2005–06	41.9	2.5
2011–12	45.6	2.1

Source: Nagaraj (2016).

Table 8A.6 Share of the top and bottom 50 districts in total manufacturing employment, 1991–11

<i>Year</i>	<i>Top 50 districts</i>	<i>Bottom 50 districts</i>
1991	46.2	1.7
2001	41.4	2.2
2011	44.5	1.9

Source: Author's own calculations.

Notes

1. The share of the top states and districts accounted for the majority share of manufacturing employment and output, and this has hardly changed over a period of two decades. The share of the top 50 and bottom 50 districts has remained almost unchanged in the last two decades (refer to Tables 8A.3–8A.6).
2. An enterprise that employs at least one hired worker on a fairly regular basis is termed as an establishment. Paid or unpaid apprentices and paid household member or servant or resident worker in an enterprise are considered hired workers. They have been further been categorised into two parts: non-directory and directory (Ramaswamy 2014). A directory manufacturing establishment (DME) is an establishment that employs six or more workers. (Ramaswamy 2014).
3. Project Uptech is a scheme under the State Bank of India (SBI). Through this scheme, the SBI selects an industrial cluster with a 'growth potential, potential for quick technological upgradation and a supporting environment'. It then conducts a unit-level study and collects all the relevant information. Experts then study this information and recommend a 'business plan and suitable financial package for each unit'.

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