IRON FOUNDRIES IN DURESS:
IDENTIFYING IMPEDIMENTS IN
ORGANISATIONS AND INSTITUTIONS

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Market-led reforms are assumed to be sufficient to fill up technology gaps and organisational inefficiencies in a way that would enable small enterprises in developing countries to take the opportunities of higher growth and larger exports. With reference to a traditional cluster of small foundries in Howrah (West Bengal), this article argues that increased competitive pressure does not necessarily lead to adequate adjustments. Responses of firms to increased competition are conditioned by non-market organisations and institutions that may not be favourable to attain competitiveness and do not adjust automatically to altered incentives.

I. INTRODUCTION

In the recent past, the high rate of economic growth has often been accompanied by low employment elasticity, especially in the large organised sectors in most developing economies. The focus of policy-makers and academicians has, therefore, somewhat shifted to small enterprises. The pronounced acceptance of the importance of small firms in policy papers, however, is not only because of the pressing need to provide gainful employment to the ballooning residual labour force, but also stems from the fact of the changing demand pattern, which is more in favour of customised goods, that are produced in smaller batches with multiple styles in the place of standardised goods. Small firms are assumed to have the twin capacities of generating employment by using labour-intensive technologies, and of coping with the emerging challenges of the market with multiple skills and flexible technology. It must, however, be noted that the small firm sector is extremely heterogeneous, wherein sweatshops go alongside highly innovative micro-enterprises, and therefore generalisations about the capacity of small firms to create gainful employment are not tenable.

An approach to development that relies on small firms is in tune with the notions of liberalisation. The standard neo-liberal proposition was: lifting barriers to trade and factor movements would result in a new international division of labour wherein labour-intensive industries, mostly in the informal sector, and more precisely the dynamic small enterprises, would have a significant role to play in the development process, at least in developing economies. It is a corollary from the comparative static Heckscher-Ohlin model. According to this canonical model, trade liberalisation promotes labour-intensive activities in developing countries, where labour is in relative abundance. Further, investment liberalisation makes inflows of technology, information and skills easier. As a result, liberalised regimes help in rationalising activities across boundaries, leading to the efficient allocation of mobile resources and increased competitiveness of local enterprises.

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Besides, success stories of small and micro-enterprise clusters in Europe, especially those of ‘Third Italy’ and some of the Asian and Latin American clusters, have changed the old perception that ‘small’ firms can only cater to the lower echelons of the home market. On the contrary, they have proved to be significant players in the global market. The expansion of activities based on less rigid and more adaptable structures has been documented in the literature on industry district during the last two decades. Marshall (1948), who first coined the term ‘industrial district’, identified three major causes of localisation of industries that generate economic gains. First, sectoral and geographical concentration creates a pool of specialised skills. Second, local suppliers of intermediate inputs and services get support from a cluster of firms. And third, technological spillovers through the rapid diffusion of ideas and innovations create positive externalities. According to the usual notions of economic theory, external economies can never be the deliberate creation of an individual firm. It is always incidental and involuntary, because in these situations, economic agents cannot capture the price of their product or avail of all the benefits of their investment. Schmitz (1999) goes beyond the conventional perception of external economies and recognises an element of consciously pursued joint action as the sufficient condition for a growing cluster. The study of the dynamic relationships among interlinked enterprises recognises the fact that clustering enterprises are both the recipients and providers of external economies and under-investment ceases to be the necessary or dominant outcome. Hence, collective efficiency, which characterises successful clusters, is the outcome of both the incidental external effects of individual action and consciously pursued joint action. The nature of industrial organisation is believed to be appropriate in the context of the rapidly changing pattern of demand because it distributes the risks of investment, stabilises labour redundancies tied to business cycles, and is resilient to external shocks.1

With reference to industrial clusters of small cast iron foundries in Howrah (West Bengal, India), this paper aims at explaining the extent to which liberalisation and the consequent exposure to global markets can infuse competitive efficiency in this cluster and draws attention to the broader contours of non-market institutions that shape responses to changes in the market. The evolution of collective efficiency is critically related to the cumulative growth of joint action, which gives rise to appropriate institutions in order to mend the missing link between the external forces that, in turn, increases competitive pressure and the capability of a cluster to leverage the opportunities created in a liberalised regime. In this context, this paper critically examines the dominant hypothesis of ‘new institutional economics’, according to which institutions adequately emerge as a response to altered incentives and governance structures successfully ameliorate market failures.

The study aims to question the dominant marketist view in the discourse of industrial development, which, in many ways, marginalises the role of industrial policies. Opportunities that are assumed to emerge during the process of liberalisation are often conceived of without taking note of the dynamics of capabilities and institutions related to the functioning of the market. Collective efficiency, as discussed in industrial district literature, presumes the cumulative growth of joint action, which cannot be explained through technological notions of reducing transaction costs alone. Since new institutional economics heavily relies upon the deliberative rationalised action of the economic agents, and ignores its social dispositions in analysing organisational and institutional changes, it often fails to provide an appropriate framework for explaining the inflexible nature of institutions and organisations prevailing in developing economies.

The central argument of this paper is that the expected levels of growth and gainful employment in small manufacturing enterprises cannot be achieved only by increasing
competition. The outcome is conditioned by co-existing non-market institutions and organisations, which may neither be favourable to competitive response nor be able to adjust spontaneously to changing markets. The sole means of selection through the market often strengthens the downward spiral of low growth, lesser earnings and higher exploitation in the small and medium enterprise (SME) clusters of developing countries.

The following section details the methodology of the study. Section 3 discusses the historical perspective and the trajectory of growth of the cluster. Section 4 describes the labour process and some critical ratios related to factor productivities. Section 5 deals with the constraints in forward and backward linkages. Section 6 analyses the typical production organisation in the foundries of Howrah. Section 7 tries to capture how existing organisations and related institutions inhibit competitive efficiency in the cluster. Finally, conclusions are arrived at in Section 8.

II. METHODOLOGY
The methodology followed in this study is essentially the sub-sector approach or branch specific case study, which views enterprises as interacting with other firms in a vertical production/distribution system (Boomgard, et al., 1992). In this procedure, we try to trace the channels of verticality, co-ordination, and competition as well as the inter-relationships among small firms. This entails collection of information about the firms engaged in core activity; the range of suppliers and buyers, related private and public institutions, and of performance trends for the cluster as a whole. The study is based on detailed unstructured interviews of key local informants and on field surveys of the sample units. In the year 1996, the West Bengal Pollution Control Board identified 229 cast iron foundries, of which 196 fall in the of small and medium categories. The population of SMEs enterprises was first stratified according to their locations in the cluster, and sample units were randomly chosen from each location according to their respective share in the total number of units. Several rounds of random choices were tried to achieve a representative sample. In all, 43 units situated in Belgachia, Baltikuri, Bamungachi, Liluah, Benaras Road and Belur were ultimately selected for the survey. Of these, 26 units, covering about 13 per cent of the population, responded to the survey. A questionnaire containing 39 questions was canvassed in the year 2003 to collect quantitative as well as qualitative information.

III. FOUNDRY INDUSTRY IN HOWRAH
Industrial development in India reveals a typical colonial pattern of lop-sided growth where consumption goods industries started with the help of capital goods imported from abroad. The reason behind this is that the pioneers of industrialisation in many lines being non-Indians were interested only in commercial returns and avoided basic industries, which would eventually be potential competitors of industries started earlier in England. Normally, industries relating to casting, forging, stamping need precede or develop simultaneously with the manufacture of machines. But the course of industrialisation was the other way round. Howrah was among the four major districts in the Bengal province of colonial India, wherein industries emerged at the beginning of the nineteenth century, and prior to the First World War, there were only eight foundries in Howrah, as recorded in a report on industrial enquiries (Cumming, 1908). Only during the Second World War when imports became difficult, and partly because of the active assistance rendered by the government, manufacturing industries in different lines improved greatly in India. According to the factory statistics for the year 1939, the number of factories in Howrah was 218, which was 12.8 per cent of the provincial total, and the share of industrial workers was 19.5 per cent of the provincial aggregate. Foundries in Howrah came up to supply intermediate inputs to industries of shipbuilding, jute, textiles, railways, trams, etc., those set
up in the Calcutta-Howrah region in the colonial period. Cast iron soil pipes and manhole covers were also produced, as suggested by the Government of India, to meet domestic and foreign demands (Government of India, 1958). The manhole covers once used on the roads of Paris were all made in the foundries of Howrah (Rajeev, 2004). By the year 1959, the total number of foundries in the district was 92, of which 44 were medium-sized units. The interdependence of industries created external economies, as there were more than 100 engineering units per square mile at that time (Reserve Bank of India, 1964).

Most of the foundry owners in Howrah were local residents, who started their factories entirely with their own resources. There were owners also from the neighbouring districts of Calcutta and 24 parganas, and some from other provinces such as Uttar Pradesh and East Punjab. The majority of the owners were Hindus, and a large number among them belonged to a particular caste, the Mahisyas. Most of the workers belonged to the same caste and were fairly well controlled by their employers, who were the caste leaders.

It was estimated that in the early 1970s, the total production of metal casting in India was about 8 million metric tonnes, of which 75 per cent was accounted for by foundries in West Bengal. At present, the state’s share in the national aggregate has declined to 20 per cent and the estimated production capacity in Howrah is 6.8 million metric tonnes per annum (West Bengal Pollution Control Board, 1997). Most of the units during the survey reported a relative decline in orders in comparison to previous years and the sign of stagnation looms large in the cluster. This has happened in spite of the expectation of an increase in exports caused by the closure of foundries in USA. Since 1980, one in every four foundries was shut down in USA because of environmental concerns, which fuelled the expectation of a larger export share for developing countries in a globalised regime (Gandhi, 2003). However, using this advantage is not automatic and depends largely on how the cluster is capable of meeting the global challenges of quality. In the following sections, this paper aims to explain the trajectory of sub-optimal production in the foundries using under-valued labour, their low response to increased competition, and technological obsolescence together with a survival strategy characterised by ‘low road’ that the production organisation and related institutions reproduce.

IV. LABOUR MARKET AND FACTOR PRODUCTIVITY

We start our investigation with the labour process, since there is a popular notion that inflexibility of the labour market is the culprit behind the non-competitiveness of industries. Since the 1970s, the foundries of Howrah have had to undergo profound changes in the labour processes. Facing a drastic decline in orders for castings, especially from the railway industry, lockouts preceded by labour stoppages brought about changes in the nature of employment in the foundry industry. Thereafter, labour is being employed on contract; only in a few foundries do the owners employ permanent workers in furnace-related activities. In every foundry, there is a panel of contractors who maintain the payroll of employed workers. A contractor in a foundry, is not merely a labour contractor in the usual sense of the term, but something more than that. The owner contracts out the whole process starting from moulding to loading finished castings, and the contractor gets a commission of about Rs.150 per tonne delivered. Although the contractor appears as a separate employer in official statements, he is actually not an outsider in a foundry but is rather very much internalised in the production organisation. The labour contractors secure orders of castings, buy molten metal from the foundry owner, and then organise moulding and casting operations. This kind of sub-contracting is a mixture of both industrial sub-contracting and labour sub-contracting. Beyond that, it also signifies a sharing of management responsibilities in terms of both securing orders as well as transportation and delivery.
There are different grades of skilled and unskilled workers according to their assignment in the production process. Normally the worker works 10 to 12 hours per day, but this varies according to the nature of the work. In a ‘charging day’, that is, a day in which the melting operation is carried out, the cupola runs for four to eight hours, according to the size of the units. In most of the small foundries, there are one or two fixed ‘charging days’ in a week. With decreasing orders, the number of charging days in a month is reduced and as a response, the skilled permanent workers related to the furnace are gradually turned into contract labourers.

<table>
<thead>
<tr>
<th>Occupational grade</th>
<th>Average monthly income (in Rs.)</th>
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<tr>
<td>Headmould-maker</td>
<td>3000</td>
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<tr>
<td>Mould-maker</td>
<td>2000</td>
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<tr>
<td>Charger</td>
<td>1500</td>
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<tr>
<td>Furnace-man</td>
<td>1800</td>
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<tr>
<td>Nail-man</td>
<td>1250</td>
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<tr>
<td>Night-lifter</td>
<td>1250</td>
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Source: Survey Results.

On an average, the labour cost paid by the owner is about Rs.1000/- to 1500/- per tonne of castings, which is disposed of by the contractor to his group of workers according to their occupational grades. The minimum monthly wages of unskilled workers in an iron foundry as declared under the Minimum Wage Act, as on December 31, 1997, is Rs. 1673 per month (Government of West Bengal, 1998). Only the skilled workers in Howrah actually have a monthly income above this minimum level, and the unskilled workers receive much lower than the scheduled minimum wages (Table 1). In most of the units, the periodic wage increment of the workers has been either stopped or reduced to a mere formality with an insignificant increase. The trade unions have not been able to not push workers’ demands even in bigger units in recent times as they apprehend lockouts or closure, which could even destroy their existing opportunity of earnings.

There are several indicators, viz. labour productivity, profitability and so on, those at the very minimum help explaining competitiveness of firms, albeit, foundries in Howrah do not show a dismal picture on that count. Labour productivity in Howrah foundries is 2.7 times higher than that in the average DME units of West Bengal, and 117 per cent higher than that of DMEs in India. The return to capital, as a proxy of profitability, is higher in the foundry units of Howrah, if compared to that of the DME units in West Bengal as well as to that of the

<table>
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<tr>
<th>Area</th>
<th>VK</th>
<th>VO</th>
<th>VL</th>
<th>KL</th>
<th>E/V</th>
<th>(V-E)/K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Howrah</td>
<td>1.51</td>
<td>0.17</td>
<td>46.73</td>
<td>42.54</td>
<td>0.44</td>
<td>0.9</td>
</tr>
<tr>
<td>West Bengal</td>
<td>1.56</td>
<td>0.22</td>
<td>17.22</td>
<td>10.99</td>
<td>0.51</td>
<td>0.76</td>
</tr>
<tr>
<td>India</td>
<td>1.06</td>
<td>0.33</td>
<td>21.54</td>
<td>22.95</td>
<td>0.51</td>
<td>0.53</td>
</tr>
</tbody>
</table>

Note: VK= Capital productivity; VO = Value added per output; VL = Labour productivity; KL = Capital intensity; E/V = Share of emoluments in value added; (V- E)/K= Return to capital.

Source: The ratios in rows (3) and (4) are computed from Unorganised Manufacturing in India: Salient Features, NSS 51st Round.
DME units in India. However, the share of emoluments in value-added is low in the foundry units. The labour in the foundries of Howrah gets a lesser share of value-added relative to the labour’s share in the average DME units in West Bengal as well as that at the all-India level (Table 2).

Hence, the labour market in Howrah can be characterised as being fairly flexible with contractual labour, weak trade unions and no one to execute the minimum wage legislations. Also, the stagnation of the cluster can be explained neither by the low profitability of firms nor by the low productivity of labour. This fact necessitates a deeper analysis of the host of constraints in the forward and backward linkages that these small foundries presently face.

V. CHANGES IN FORWARD AND BACKWARD LINKAGES

The demand pattern of metal castings has undergone a significant shift primarily due to the development of alternative materials and increasing concern about quality. The use of closer substitutes like plastic pipes, fittings, sanitary items, and stainless steel and aluminum pans, has already reduced the demand for iron castings. Nowadays consumers seem to be least concerned about the product lifecycle, and have greater affinity for using sophisticated, better finished, good-looking products made up of light materials. Besides, the prices of these substitutes are usually much lower than those of iron products. These changes in demand limit the scope of iron castings in their conventional uses, specifically in household items. The greatest shrinkage of demand in this sphere, however, has been due to the use of non-metallic railway sleepers resulting in a drastic decline in orders from the public sector.

Second, during the last decade, there has been a marked decline in government investment in the name of fiscal discipline, which has a direct bearing upon the foundry industry. Demand for castings is a derived demand, which originates in the capital goods sector, in particular, and the manufacturing sector, in general. The capital goods industry is mostly dependent upon investment-driven demand in infrastructure or core sector projects. Owing to the decline in government investments, during the period 1990–91 to 1998–99, the compound annual rate of growth of Indian manufacturing shows a downward trend (Chaudhury, 2002). Decline in public investment has also changed the sectoral weightage of Indian manufacturing, which explains the declining trend in demand for casting at least in the home market. If we look at the sectoral distribution of growth, we find that between the years 1990–91 and 1997–1998, more than half, that is 52.5 per cent of the growth is accounted for by consumer goods, while basic intermediate goods and capital goods account for only 16.3 per cent and 11.8 per cent of the growth, respectively (ibid.). Chandrasekhar (1997) also argues that in all probability, there has been a persistent decline in industrial investments and stagnation even in private corporate investment.

Second, studies (Nambiar, et al., 1999; Beri and Rammohan, 1995) show that as an effect of import liberalisation, the weight of manufacturing imports in manufacturing GDP has increased substantially. The import intensity has increased in almost all the industries during the post-liberalisation period. Foundries that grew in a policy regime of import substitution, are presently facing the threat of losing demand due to reductions in customs duty and abolition of quantitative restrictions.

Third, one needs to consider whether the unpredictable fluctuation in input prices has a deleterious effect on the small foundries. Earlier, the government was the only supplier of pig iron, though supply was restricted and the quality of the material was inferior. At present, several private enterprises specialise in producing high quality pig iron. However, the decontrolling of prices and greater concern about profitability in both private and public sector
plants has resulted in an increase in the prices of raw materials, adversely affecting the small foundries. Following the withdrawal of government control over prices and distribution of raw materials, the supply now depends on a few traders. They frequently restrict the supply in order to reap monopoly rents through increased prices. Within a short period between November 2002 and February 2003, the prices of pig iron, steel scrap and coke increased by 31.6 per cent, 26.5 per cent and 33.4 per cent, respectively. During the same period, the prices of diesel oil increased by 36 per cent (Panchal, 2003). The privatisation of a monopoly before an effective competition or regulatory authority was put into place ultimately led to an even more ruthless exploitation of the consumer. Such fluctuations in input prices inhibit planning for future production, especially in the case of small foundries that cannot afford large inventories.

Finally, the historical trajectory of industrial retrogression in Eastern India, and the ‘path dependence’ also shapes the future course of response of these foundries. In this context, path dependence means that the process by which we arrive at today’s situations is relevant and constrains future choices. This is not to say that the past neatly predicts the future but indeed in some sense, the past trajectory conceptually conditions the choice set and link decisions for the future. After the Partition of India (1947), jute mills located in the region were divorced from the supply of raw jute. Later on, industrial sickness, low capacity utilisation in the public sector, textile mills and engineering industries, and deteriorating labour relations, gradually eroded the industrial base. Further, the political decisions of the Union Government that favoured investments in other states changed the future composition of industries (Roy, 1972). With the closure of public sector engineering industries, textiles and jute mills, the foundries of Howrah have become de-linked from the demand of good quality castings. Since the geographical concentration of modern manufacturing industries such as automobiles, machine tools, valves and pumps, and steel rolls as well as other capital goods is away from the state, it is difficult for foundries to compete due to higher transaction costs.

Nevertheless, the policies related to deregulation and increased competition in a liberalised regime adversely affect industries in almost all product lines, especially those that evolved and grew in a protected market during the phase of import substitution. This is not seen in the case of Howrah alone, which raises the question as to why some clusters in the same product line remain buoyant in the face of increased competition, while foundries in Howrah are facing stagnation. This draws our attention to the issues of organisations and institutions related to the cluster.

VI. EXPLAINING RESPONSES TO CHANGE IN DEMAND

There is a growing demand for castings with thin wall sections, high precision in pattern, fine finish, and little machine tolerance. There are about 600 listed variables, which determine the quality of castings and those cannot be maintained through traditional technology, and the experience of workers (Murthy, 2000). The small or medium foundries in Howrah were organised neither for the large volume of production nor for thin walled components with the required quality standard. This is evident from the fact that though the foundries of Howrah were the pioneers in the field of castings, they never met the demand for automobile castings in terms of catering to both consistent quality standards and large volumes. In a neo-classical setting, it is assumed that the technology market works efficiently and if the channels of information flow are kept open, then absorbing new technologies necessitates no cost of search and negotiation. In this static framework, as endowments grow, firms automatically move towards right factor combinations, absorbing the right type of technology without any cost. Hence the question remains: why are foundries in Howrah, which have a large pool of skilled
manpower, not responding adequately to changing markets by upgrading technology? To answer this, we need to look at the organisations and institutions which the market is embedded in.

The organisation of production in the foundry units of Howrah is unique in character. There are three major types of foundries according to their production structure: (a) foundries producing three to four types of finished products; (b) those selling only molten metal and letting out the floor area for moulding; and (c) units engaged in some fixed job work as well as selling molten metal. The traditional production organisation is 'popularly' called *Galamal* and the second category of operation represents the unadulterated version of this typical system. The owner of a foundry owns a cupola and floor-moulding area, employs his own workers for furnace operations, sells liquid metal to intermediaries, and lets out the floor area for moulding. The skilled labourer works as an intermediary, secures orders for diverse castings, purchases liquid metal from cupola owners, employs shop floor workers for moulding, and sells castings as per orders. This situation was well suited to a protected market, wherein orders from engineering industries, railways or textiles and jute mills, after several layers of contracts, fed these foundries with an abundant demand.

With the decline of engineering industries in eastern India and due to a qualitative shift in the demand pattern, this type of production structure faced immense pressure. As the demand decreased, financing of the purchase of inputs and securing orders of castings allowed entry to non-Bengali traders in Howrah, creating a triad of owner-trader-labour contractor as the revised version of the *Galamal* system. The traders would search out orders, often get the pattern made, and then would get the castings cast on a 'cash and delivery' basis. This suited everybody. The risk-averse owner did not have to depend on formal credits and was satisfied with his margin. Since most of the owners had inherited their foundries, to them the efficient running of the unit meant that it at least ensured an earning that was enough to sustain their families. Besides, the trader was happy with a role confined to financing and trading wherein profits could be derived without going into the intricacies of production. For both the owner and the trader, it has become either a survival strategy or entails making money without disturbing the inertia of traditional methods.

Market-inefficiency is not problematic as organisational inefficiency or X-inefficiency may be a more important factor to be reckoned with and helps explain the low response of firms to changing markets. In the schematic view of the X-efficiency theory, it has been suggested that the efficiency route of a firm is activated by two types of environmental pressure—one from the 'bottom', and the other from the 'top' (Leibenstein, 1989). Pressure from the bottom arises when buyers or users of the goods have alternatives, that is, when the market is competitive and everyone is forced to reduce prices to the competitive level in order to survive. The other pressure refers to those from the owners or owner’s representatives, which is a kind of managerial pressure. These two simultaneously determine the choice of efforts at different levels in the organisation of production, which, in turn, implies a certain mode of translation of inputs into outputs. The organisational system is characterised by a feedback arrangement between results and efforts. The feedback mechanism depends on three aspects of the system—the appropriateness of the observed results, the effectiveness of the transmission to the effort source, and the responsiveness of the effort source.

Earlier, since the market was protected, the pressure of competition did not affect these foundries. In the present situation of declining market shares, the foundries do not respond to innovation, but rather try to hide from competition either by confining themselves to the lower end of the market or by evading taxes. Organisational inefficiency persists at a low level due to the absence of impersonal management and systematic assessment of observations. And the
pressure from the top has also turned out to be effective. In the absence of a detailed input-output analysis, for the owner, putting pressure on the existing wages seems to be the only feasible way to reduce costs. The owner’s strategy is to reduce the per unit cost of effort, while the worker, on the other hand, alienated from the entire production process, shows little concern about efficiency goals. This leads to a prisoner’s dilemma kind of situation wherein the pressure exerted from one level is only partially transmitted to the next level. The pressure gets relaxed further due to the loosely connected system of owner-trader-contractor.

In a competitive situation, new capital is normally inclined to introduce the best available technologies in order to take advantage of more cost-efficient production. Besides, investments in fixed capital for technological development involve long-term commitments to particular products and production volumes. This constitutes the regulating capital of the key firms in the industry. In the foundries, however, through gradual transfer of ownership, the commercial capital acquires control over the firms, and the traders who have little long-term commitment to the industry, fail to play the role of regulating capital. Again, because of substantial uncertainty about future demand conditions, it seems plausible to choose production techniques that heavily rely on labour. This is precisely because in a flexible labour market, the owner can easily shed excess labour in situations of depressing demand, while s/he cannot get rid of the fixed investments related to higher technologies in the same way. The availability of under-valued labour also allows old vintages of capital stock to be replaced slowly. It impedes the Schumpeterian process of creative destruction, as flexible wages give an additional option to non-innovative firms (Kleinknecht, 1998; Michie and Sheehan, 2003). In such situations, regulating capital could survive by continuously shifting product market boundaries through adoption of product and process innovations. However, as long as the numerical strength of the regulating capital remains weak, the introduction and diffusion of new technology happen to be slow. As a result, destructive price competition based on lower wages gravitates the industry to a low wage trap, away from the ‘high’ road to development (Banerjee, 2005).

VII. ABSENCE OF APPROPRIATE INSTITUTIONS

The foundries in Howrah are characterised by a low-level equilibrium, because confined, as they are, at the lower end of the market, they survive with traditional technology along with sub-optimal efforts from low-paid workers. In this section, we locate the institutional failures that exist outside the firm and reproduce the low road. Institutions can be defined as organizations which follow certain rules and constraints that are accepted as common perceptions and generate predictability in relations among individuals. Individuals receive signals from market prices, which operate within a complex chemistry of non-market institutions that condition the very process of signal radiation. In that sense, a variety of local institutions become critical determinants of the successful implementation of policies. In the context of industrial clusters, issues of joint action and co-operation relate to the study of institutions.

The technological obsolescence of foundries in Howrah is linked to the absence of appropriate institutions deemed necessary to ameliorate failures in the technology and capital markets. Markets often fail to send signals about the appropriate choice of technology because of widespread information imperfections and missing markets. The owners of foundries are not even aware of the changing patterns of demand, and in a few cases, efforts to upgrade technology have turned out to be futile as they were not market-linked. To the small foundries, the learning process appears to be risky and unpredictable because the firm may not be able to raise finances to cover its losses during the learning period due to capital market failures. Even if some owners of small foundries ever think of technological upgradation, they have to depend upon traders or
other informal sources of credit because access to formal sources normally requires collateral and documents related to the operation of units, which the owners usually avoid disclosing. As mentioned in the previous section, traders are less inclined to invest in such ventures and informal credit sources are also averse to finance technological development because of their lack of knowledge and the risks involved in making such investments.

Second, manufacturing enterprises having strong inter-sectoral linkages cannot acquire new technologies in isolation because they cannot predict the learning curve of their suppliers and sub-contractors. As a result, firms in the same vertical production link may run at different levels of technological efficiency, and passive learning takes a long time to adapt to more demanding situations. This is evident from the fact that the exports of engineering goods from India are growing at the rate of 10 to 15 per cent annually, while those of castings, which are supposed to be vertically linked as intermediate inputs, remain low at about 3 per cent. Thus, in the foreseeable future, it may happen, and perhaps the process has already started, that because of the increasing technology gap, domestic industries producing exportables may not source inputs from the domestic producers of castings. Leaping behind the foundries in India, developing countries like Korea, China and Taiwan are taking the lead with their competence in producing global standards of high-valued castings.

Third, there are a number of technological functions that have features of public goods whose rewards are difficult to appropriate for private firms. Markets usually fail in developing special skills, promoting quality awareness and setting industrial standards. The Indian Foundry Congress, 1998 (Indian Institute of Foundrymen, 1998) admitted that the actual production work done by a foundry operator is only 40 per cent of the total work done. The rest of the time is spent by him in setting his workplace, looking for the materials and tools, and in tackling unanticipated hindrances. Energy conservation is yet another major area that deserves attention. A study of small foundry units indicates that the energy conservation potential is about 9 per cent in coke consumption and 19 per cent in furnace oil and electricity (Kapoor, 1998). Improved heat recovery, better furnace utilisation, recovery and re-use of the bed coke as well as improvement in the coke to metal ratio have largely helped in reducing costs. Pattern making is still in its infancy. Foundries in South Korea take two weeks for a trial casting supply, while those in China take 12 days, and those in Japan, 10 days. In India, on the other hand, the foundries take a minimum of six months to develop a cylinder block, and this is primarily where the race is lost (CII and World Bank, 2002). What is required is facilitating collective indivisible inputs, which the small foundries cannot afford individually. A common technology support agency, a common laboratory, a sand washing and grading plant, and a central marketing cell should be primarily provided by the government. For traditional products, penetrating markets of higher value added depends not so much on developing sophisticated models as on improving the durability, reliability and precision of products. Hence, the resolution of market failures necessitates a co-ordinated effort involving a conscious process of capability building. The endowments of traditional skills and cheap labour are not sufficient to attain a dynamic comparative advantage. New skills, technological competence, proper administrative capabilities and strong support institutions to provide public goods are the essential elements for participating in higher value chains. Development is thus required at all levels, viz. procurement, processes of production, and managerial and organisational efforts.

The technological notion of institutions usually ignores social institutions as a reference of analysis. Nonetheless, the transaction costs characteristics of an industrial institution do not only depend on exogenously given technology. The complex matrix of behavioural
standards embodied in culture and historical realities critically influences those costs. This draws our attention to broader issues at play in the market like the social dispositions of an economic agent, which transaction cost theories usually ignore. Platteau (1994) suggests that markets are not external to society, and can only function in the contexts of appropriate social arrangements. Generalised morality, effective external sanctioning institutions, and a decentralised network of sanctions and co-ordinated public and private institutions, are the preconditions for the effective functioning of the market. The space of exchange relationships and related institutions in Howrah largely falls short of these social preconditions. In the absence of appropriate organisations and institutions, if the forces of competition are left to operate in a vacuum, then development may remain latent. Among the paths that the owners of foundries frequently choose to increase profit are the illegal manoeuvring of raw materials, under-invoicing of outputs, and different modes of evading taxes. Moreover, in such situations, horizontal co-operation among firms becomes weak and as a result, co-operative efficiency suffers in industrial clusters.

The literature on industrial district often underlines the benefits of homogeneous social and cultural identities that facilitate horizontal co-operation in the clusters of developing countries. This is a kind of ‘bonding’ social capital, which facilitates a sense of mutual obligation and reciprocity among small enterprise owners in the cluster. The non-Bengali trading community maintains a dense network of interdependence within their own community, puts an obedient reliable manager as the key person in business affairs and shows little concern about appointing a qualified supervisor to maintain quality. The Bengali owners, who have somehow retained their units, harbour a defeatist attitude with little trust among themselves. Strong feelings of specific identity have at times turned out to be efficient in Howrah when homogeneous caste identity has helped in the forging of close ties between owners and workers. However, in the present scenario, linguistic and caste ties have turned out to be counter-productive as it fragments the social space and prevents market from producing allocative effects over a wide enough domain. In the wake of liberalisation, it was, however, predicted that the more the economy is released from political influence, the more would the rationalities of contract replace custom and acquired characteristics replace ascribed ones. However, Harris-White (2004) has argued that the social institutions, which regulate the Indian economy in significant ways, are resistant or immune to changes in macro-economic policies.

In the context of foundries in Howrah, we put to test the new institutionalist doctrine related to ‘induced innovation hypothesis’, which suggests that institutional changes occur as an adaptive response to altered incentives and that the market in the end drives out institutions that are ill adapted to the changing circumstances (Ruttan and Hayami, 1984). However, in the context of foundries in Howrah, we see that the spontaneous emergence of new institutions is not inevitable. Small foundries in Howrah are trapped in a low level equilibrium-they escape the forces of increased competition by confining themselves to the low end of the market, and depend upon traditional technologies and inefficient organisation so that they can at least ensure minimum returns to owners and traders, and the non-market institutions that condition the functioning of the cluster fit well into the existing role structure. Thus, despite changes in incentives, the emergence of appropriate institutions may not be the necessary outcome. On the contrary, old institutions may persist for a long time while benefiting no one as long as their efficiency remains unquestioned and its sustainability is ensured till there is a favourable rate of return for all and a compatibility with the existing role structure. Furthermore, individual initiatives to initiate joint actions as a response to changes in the market do not come automatically as expected. This is precisely because individual preferences are not pre-formed and static but
are also embedded in the existing dynamics of institutions, that is to say, institutions not only constrain but also constitute human behaviour (Chang, 2002).

VIII. CONCLUSION

In a liberalised regime, foundries in Howrah fall short of the requisite capabilities to cope with the changing markets for castings. Labour cannot be held responsible, as it is often intended to, with heavily loaded notions of labour market flexibility—arguing, in a way, that downwardly rigid wages are the prime causes for the non-competitiveness of industries. Labour productivity and profitability of capital are also high in the cluster as compared to similar size category units. The stagnation of the cluster basically relates to shrinkage in demand from the traditional public sector industries, along with the failure to cope with the changing pattern of demand. The small foundries have had to face increased competitive pressure as a consequence of policy reforms pertaining to government investment, liberalised imports and decontrolling of input prices. However, most of the industries in different product lines have had to face similar kind of problems, especially those that grew under the policy regime of import substitution. Foundries in Howrah have failed to respond to the need for the requisite technological change because of the peculiar production organisation of the cluster, the organisation of capital and consequent inefficiencies inside the firm. The technological obsolescence of foundries in Howrah is also linked to the absence of appropriate institutions that help ameliorate failures in the technology and capital markets. Besides, old institutions and archaic forms of production organisations persist for long amidst waves of economic reforms, as the market cannot drive them out on its own. Therefore, the claims of neo-liberal policies pertaining to the growth and competitiveness of small firms seem incongruent with the fact that the lifting up of trade barriers as also the deregulation of government control in the flow of inputs have not been able to infuse competitiveness in the cluster of small foundries, but have rather brought about closure and stagnation. Neo-liberal claims are based on strict assumptions like the endowments of two factors (labour and capital) in trading countries, perfectly competitive markets and the existence of identical production functions, and they miss the more dynamic elements such as technological lags, capability gaps or enterprise level efforts as well as organisational rigidities. Once those elements are endogenised, we find that the outcome of increased competition becomes very different from what is expected in neo-liberal theories.

Thus, policies heavily relying on choices through market forces would not produce the desired outcomes as the signalling function of the market works through a complex interface of non-market institutions lying in between the market and the economic agent, and they may not be conducive to producing a competitive response. What is required is a remedial intervention that primarily reduces the option of depending upon under-valued labour, along with the generation of an evolutionary process of capability-building through public intervention at the micro and meso levels. This also includes the provisioning of voices for the small units in the broader political process of development. It is, in a sense, bringing back the developmental state at different levels of intervention in order to strike an appropriate balance between the market, capabilities and institutions.

Notes

2. DME, that is, a Directory Manufacturing Enterprise, is an enterprise that employs six or more workers (NSSO, 1998).
3. For a detailed analysis of the dynamics of institutions, see Sengupta, 2001; Cooter, 2002.
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