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IRON FOUNDRIES IN DURESS  
Identifying Impediments  
in Organisations and Institutions

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# IRON FOUNDRIES IN DURESS

## Identifying Impediments in Organisations and Institutions

*Satyaki Roy\**

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*[Abstract: Market-led reforms are assumed to be sufficient to fill up technology gaps and organisational inefficiencies in a way that small enterprises in developing countries could take the opportunities of higher growth and larger exports. With reference to a traditional cluster of small foundries in Howrah (West Bengal) this paper 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.]*

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### 1. Introduction

In the recent past, high rate of growth has often been accompanied by low employment elasticity especially in the large organised sectors in most developing economies. The focus of policymakers 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 needs to provide gainful employment to the ballooning residual labour force, but also it stems from the fact of the changing demand pattern, that is more in favour of customized goods produced in smaller batches with multiple styles in place of standardised goods. Small firms are assumed to have the twin capacity of generating employment by using labour intensive technologies and that of coping with the emerging challenges of the market with multiple skills and flexible technology. It must however be noted that small firm sector is extremely heterogeneous, where sweatshops go alongside highly innovative micro-enterprises and therefore generalizations about their capacity to create gainful employment are not tenable.

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Approach to development that relies on small firms is in tune with the notions of liberalisation. The standard neoliberal proposition was: lifting barriers to trade and factor movements would result in a new international division of labour where labour intensive industries, mostly in the informal sector, and more precisely the dynamic small enterprises would have a significant role 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 rationalising activities across boundaries, leading to efficient allocation of mobile resources and increased competitiveness of local enterprises.

Besides, success stories of small and micro-enterprise clusters in Europe, especially that of Third Italy and some of Asian and Latin American clusters have changed the old perception that the 'small' 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. 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 cluster of firms. And third, technological spillovers through rapid diffusion of ideas and innovations create positive externalities. According to the usual notions of economic theory, external economies can never be a 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, 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 recipients and providers of external economies and underinvestment ceases to be the necessary or dominant outcome. Hence, collective efficiency, that 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 rapidly changing pattern of demand because it distributes risks of

investment, stabilises labour redundancies tied to business cycle, and is resilient to external shocks.<sup>1</sup>

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 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 market. Evolution of collective efficiency is critically related to the cumulative growth of joint action that gives rise to appropriate institutions in order to mend the missing link between the external forces that 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 that institutions adequately emerge as a response to altered incentives and governance structures successfully ameliorate market failures.

The central argument of this paper is that expected levels of growth and gainful employment in small manufacturing enterprises cannot be achieved only by dint of increasing competition. The outcome is conditioned by coexisting non-market institutions and organisations which may not be favourable to competitive response as well as do not adjust spontaneously to changing markets. The sole means of selection through market often strengthens the downward spiral of low growth, lesser earnings and higher exploitation in the SME clusters of developing countries.

In the following section, methodology of the study is stated. 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 made in Section 8.

## **2. Methodology**

The methodology followed in this study is essentially the subsector approach or branch specific case study, which views enterprises as interacting with other firms in vertical production/ distribution system (Boomgard *et al.*, 1992). In this procedure we try to trace the channels of verticality, coordination, competition as well as interrelationships of

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<sup>1</sup> See Schmitz, 1992 and 1999; Brusco, 1982; Schmitz and Musyck, 1994; Humphrey and Schmitz, 1996; Nadvi and Schmitz, 1998; Holmstrom, 1994; Nadvi and Kazmi, 2001; Rabellotti, 2001.



small firms. This entails information about the firms engaged in core activity; 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 survey of the sample units. In the year 1996 West Bengal Pollution Control Board identified 229 cast iron foundries of which 196 are of small and medium categories. The population of small and medium enterprises was first stratified according to their location 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 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.

### **3. 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 Bengal province of colonial India, where industries emerged in 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 enquires (Cumming, 1908). Only during the Second World War as 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, number of factories in Howrah was 218 which were 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 at 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 in the roads of Paris were all made in foundries of Howrah (Rajeev, 2004). By the year 1959, there were a total number of 92 foundries in the district, of which 44 were medium sized units. 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 neighbouring districts of Calcutta and 24 *parganas* and some from other provinces such as Uttar Pradesh and East Punjab. Majority of the owners were Hindus and a large number among them are from a particular caste, *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 tones of which foundries at West Bengal accounted for nearly 75 per cent of total production. At present, the state's share to national aggregate has declined to 20 per cent and the estimated production capacity in Howrah is 6.8 million metric tones per annum (West Bengal Pollution Control Board, 1997). Most of the units during survey reported a relative decline in orders in comparison to previous years and sign of stagnation looms large in the cluster. This happened in spite of the expectation of an increase in exports caused by closure of foundries in USA. Since 1980, one in every four foundries was shut down in USA because of environmental concerns and 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 to meet global challenges of quality. In the following sections this paper aims to explain the trajectory of sub-optimal production in the foundries using undervalued labour, their low response to increased competition, technological obsolescence together with a survival strategy characterized by 'low road' that the production organisation and related institutions reproduce.

#### **4. Labour market and factor productivity**

We start our investigation from the labour process, since there is a popular notion, that inflexibility of labour market is the culprit behind non-competitiveness of industries. Since the 1970s, the foundries of Howrah 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 employed on contract; only in a few foundries, 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 commission

of about Rs.150 per tonne delivered. Although the contractor appears as a separate employer in official statements they are not outsiders in a foundry 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. The kind of subcontracting is a mixture of both industrial subcontracting and labour subcontracting. Beyond that it is also sharing of management responsibilities in securing orders as well as that of 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 work. In a 'charging day', i.e. the day in which 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 furnace are gradually turned into contract labourers. On an average, the labour cost paid by the owner is about Rs.1000/- to 1500/- per ton of castings, which is disposed off by the contractor to his group of workers according to their occupational grades. Minimum monthly wages of unskilled workers in iron foundry as declared under the Minimum Wage Act, as on 31.12.97 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).

**Table-1**  
**Average monthly income of workers at Howrah**  
**according to occupational grade**

<i>Occupational grade</i>	<i>Average monthly income (in Rs.)</i>
Headmould maker	3000
Mould maker	2000
Charger	1500
Furnace man	1800
Nail man	1250
Night lifter	1250

*Source:* Survey Results.

In most of the units periodic wage increment of the workers has been either stopped or reduced to a mere formality with insignificant increase. The trade unions could 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 average DME<sup>2</sup> 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 foundry units of Howrah, if compared to those of DME units in West Bengal as well as to those of 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 labour's share in average DME units in West Bengal as well as that in all-India (Table-2)

**Table-2**  
**Comparable factor productivity ratios in Howrah and directory manufacturing enterprises in West Bengal and India**

<i>Area</i>	<i>V/K</i>	<i>V/O</i>	<i>V/L</i>	<i>K/L</i>	<i>E/V</i>	<i>(V-E)/K</i>
Howrah	1.51	0.17	46.73	42.54	0.44	0.9
West Bengal	1.56	0.22	17.22	10.99	0.51	0.76
India	1.06	0.33	21.54	22.95	0.51	0.53

*Notes:* V/K= Capital Productivity; V/O = Value added per output; V/L = Labour productivity; K/L = Capital intensity; E/V = Share of emoluments in value added; (V- E)/K= Return to capital.

*Sources:* Ratios in rows (3) and (4) are computed from 'Unorganised Manufacturing in India: Salient features, NSS 51<sup>st</sup> Round.

Hence the labour market in Howrah can be characterised as fairly flexible with contractual labour, weak trade unions and none to execute minimum wage legislations. And, the stagnation of the cluster can be explained neither by low profitability of firms nor by low productivity of labour. This fact evokes a deeper analysis to the host of constraints in the forward and backward linkages that these small foundries presently face.

## 5. Changes in forward and backward linkages

The demand pattern of metal castings underwent a significant shift primarily due to development of alternative materials and increasing concern about quality. Use of closer

<sup>2</sup> DME, i.e., Directory Manufacturing Enterprise is an enterprise which employs six or more workers (NSSO, 1998).

substitutes like plastic pipes, fittings, sanitary items and stainless steel and aluminum pan has already reduced the demand for iron castings. Nowadays consumers seem to be least concerned about product life cycle, and have greater affinity towards sophisticated, better finished, good-looking products made up of light materials. Besides, 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, however, was due to the use of non-metallic railway sleepers resulting in a drastic decline in orders from the public sector.

Second, for the last decade, there is 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 capital goods sector 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 (Choudhury, 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 1990–91 to 1997–1998 more than half, that is 52.5 per cent of the growth accounts for consumer goods, while basic intermediate goods and capital goods accounted for only 16.3 per cent and 11.8 per cent respectively (*ibid.*). Chandrasekhar (1997) also argues that in all probability there is 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 of 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, is the unpredictable fluctuation in input prices that has a deleterious effect on the small foundries. Earlier, the government was the only supplier of pig iron, although, supply was restricted and the quality of the material was inferior. At present, several private enterprises specialise in producing high quality pig iron. However, decontrolling price and greater concern about profitability in both private and public sector plants resulted in an increase in the prices of raw materials, adversely affecting the small foundries. Following the withdrawal of the government control over prices and

distribution of raw materials, the supply depends on a few traders. They frequently restrict the supply in order to reap monopoly rents through increased price. Within a short period between November 2002 and February 2003, 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, prices of diesel oil increased by 36 per cent (Panchal, 2003). Privatising a monopoly before an effective competition or regulatory authority was in place had ultimately led to even more ruthless exploitation of the consumer. Such fluctuations in input prices inhibit planning for future production especially for the small foundries who 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. Path dependence means in this context, that the process by which we arrive at today's situations is relevant and constraints future choices. It is not to say, past neatly predicts the future but indeed in some sense the past trajectory conceptually conditions the choice set and link decisions for the future. Since 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 are de-linked from the demand of good quality castings. Because the geographical concentration of modern manufacturing industries such as automobiles, machine tools, valves and pumps, steel rolls as well as other capital goods are away from the state, it is difficult 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 the case of Howrah alone, then 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.

## **6. 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, that determine the quality of castings and those cannot be maintained through traditional

technology, and experience of workers (Murthy, 2000). The small or medium foundries in Howrah were organised neither for large volume of production nor for thin walled components with the required quality standard. This is evident from the fact that although foundries of Howrah were the pioneers in the field of castings, did ever meet demand for automobile castings, which is for both consistent quality and large volume. In a neoclassical setting, it is assumed that the technology market works efficiently and if the channels of information flow are kept open then absorbing new technologies requires no cost of search and negotiation. In this static framework, as endowments grow, firms automatically move towards right factor combinations, costlessly absorbing the right type of technology. Hence the question remains: why foundries in Howrah, with a large pool of skilled manpower are not responding adequately to changing markets through upgrading technology? To answer this we should look into the organisations and institutions upon which the market is embedded.

The organisation of production in 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 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 as *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 labour works as 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 suited well in a protected market, where orders from engineering industries, Railways or textiles and jute mills, after several layers of contracts fed these foundries with abundant demand.

With the decline of engineering industries in Eastern India and due to a qualitative shift in demand pattern, this type of production structure faced immense pressure. As the demand decreased, financing purchase of inputs and securing orders of castings gave 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 'cash and delivery' basis. This suited everybody. The risk averse owner need not have to depend on for formal credits and is satisfied with his margin. Because, most of the owners inherited their foundry, to them running the unit efficiently means that it should at least ensure an earning enough to maintain their family. Besides, the trader was happy with a role confined to financing and trading where profits can be derived without knowing the

intricacies of production. For both the owner and trader it is either a survival strategy or making money without disturbing the inertia of traditional methods.

Market-inefficiency is not a problematic as it is organisational inefficiency or X-inefficiency may be more important to be reckoned with and helps explain the low response of firms to changing markets. In the schematic view of X-efficiency theory it is 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' (Libenstein, 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 price 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 set 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.

Market was protected therefore the pressure of competition did not affect these foundries earlier. In the present situation of losing market share the foundries do not respond to innovation. Rather they try to hide from competition either by confining themselves to the lower end of the market or by way of evading taxes. Organisational efficiency persists at a low level due to the absence of impersonal management and systematic assessment of observations. And the pressure from the top also did not turn out to be effective. In the absence of a detailed input-output analysis, to the owner putting pressure on existing wages seems to be the only feasible way to reduce costs. The owner's strategy is to reduce per unit cost of effort and 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, where the pressure sent 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 best available technologies in order to take advantage of relatively cost-efficient production. Besides, investments in fixed capital for technological development involve long-term commitments to particular products and production volumes. These capital constitute the regulating capital or the key firms in the industry. In the foundries, however, through gradual transfer of ownership commercial capital gets control over the firms and the



traders with 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 undervalued labour also allows old vintages of capital stock to get replaced slowly. It impedes the Schumpeterian process of creative destruction, as flexible wages gives an additional option to non-innovative firms (Kleinknecht, 1998; Michie and Sheehan, 2003). In such situations, the regulating capital could survive by continuously shifting product market boundaries, by product and process innovations. However, so long as the numerical strength of regulating capital remains weak, introduction and diffusion of new technology happens 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).

## **7. Absence of appropriate institutions**

The foundries in Howrah, characterise a low-level equilibrium, confined in the lower end of the market, they survive with traditional technology together 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 some 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 signal radiation process. 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 cooperation 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 signal 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 pattern of demand and in a few cases, efforts to upgrade technology turned 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 their 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 to disclose. 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 doing so.

Second, manufacturing enterprises having strong intersectoral linkages cannot acquire new technologies in isolation because they cannot predict the learning curve of their suppliers and subcontractors. 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 in adapting to more demanding situations. This is evident from the fact that exports of engineering goods from India are growing at the rate of 10 to 15 per cent annually, while that of castings, those are supposed to be vertically linked as intermediate inputs, remained low at about three per cent. Thus in a 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. Leaving behind the foundries in India among the developing countries 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 by private firms. Markets usually fail in developing special skills, promoting quality awareness and setting of 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. Rest of the time spent by him is in setting his work place, looking for the materials, tools and tackling unanticipated hindrances. Energy conservation is yet another major area that deserves attention. A study of small foundry units indicates that energy conservation potential to the extent of nine per cent in coke consumption and 19 per cent in furnace oil and electricity exists on an average (Kapoor, 1998). Improved heat recovery, better furnace utilisation, recovering and reusing the bed coke, as well as, improving coke to metal ratio largely helps in reducing costs. The pattern making is still in its infancy. Foundries in South Korea take two weeks for a trial casting supply, China takes 12 days, while Japan 10 days. India takes 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 could not afford individually. Common technology support agency, a common laboratory, sand washing and grading plant, 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, resolving market failures need a coordinated effort that involves a conscious process of capability building. The endowments of traditional skills and cheap labour are not sufficient to attain dynamic comparative advantage. New skills, technological competence, proper administrative capabilities and strong support institutions to provide public goods are the essential elements toward participating in higher value chains. Developments are required at all levels, viz procurement, processes of production, managerial and organisational efforts.

The technological notions of institutions, usually ignores social institutions as reference of analysis and heavily depends on the deliberative rationalised action of the economic agent. However, 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 influence those costs. This draws our attention to broader issues behind 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, decentralised network of sanctions and coordinated public and private institutions, are the preconditions for effective functioning of 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. Illegal maneuvering of raw materials, under-invoicing of outputs, and different modes of evading taxes are the frequently chosen paths by the owners of foundries to increase profit. Moreover, in such situations horizontal cooperation among firms becomes weak and as a result, cooperative efficiency suffers in industrial clusters.

The literature on industrial district often underlines the benefits of homogeneous social and cultural identities that help form horizontal cooperation 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 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 somehow retained their units bear a defeating mind with little trust among themselves. Strong feelings of specific identity at times turned out to be efficient in Howrah when homogeneous caste identity helped forming close ties between owners and workers. However, in the present scenario linguistic and caste ties turn out to be counterproductive as it fragments the social space and prevents market from producing

its allocative effects over a wide enough domain. In the wake of liberalisation it was, however, predicted that more the economy gets released from political influence, rationalities of contract would replace custom and acquired characteristics would replace ascribed ones. However, Harris-White (2004) argued that the social institutions, which regulate the Indian economy in significant ways, are resistant or immune to changes in macroeconomic 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 market in the end drives out institutions that are ill adapted to changing circumstances (Ruttan and Hayami, 1984). However, in the context of foundries in Howrah, we see that 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 in the low end of the market, depend upon traditional technologies and inefficient organisation so that they at least ensure minimum returns to owners and traders and the existing role structure fits well to the non-market institutions that condition the functioning of the cluster. Thus, despite changes in altered incentives emergence of appropriate institutions may not be the necessary outcome. On the contrary, old institutions may persist for a long time benefiting none if it is so much taken for granted that its efficiency remains unquestioned and its sustainability is ensured till there is a favourable rate of return to all and a compatibility with the existing role structure.<sup>3</sup> Furthermore, individual initiatives to initiate joint actions as response to changes in market do not come out automatically as expected. This is precisely because individual preferences are not preformed and static but they are also embedded in the existing dynamics of institutions, that is to say, institutions not only constrain they also constitute human behaviour (Chang, 2002).

## **8. 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 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 non-competitiveness of industries. Labour productivity and profitability of capital is also high in the cluster compared to similar size category units. The stagnation of the cluster basically relates to shrinkage in demand from traditional public sector industries together with the failure to cope with

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<sup>3</sup> For a detailed analysis of the dynamics of institutions, see Sengupta, 2001; Cooter, 2002.

the changing pattern of demand. The small foundries 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 had to face similar kind of problems especially those that grew under the policy regime of import substitution. Foundries in Howrah failed to respond 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, archaic forms of production organisations persist for long amidst waves of economic reforms, market cannot drive them out on its own. Therefore, the claims of neoliberal policies pertaining to the growth and competitiveness of small firms seems incongruent with the fact that lifting up of trade barriers as also deregulation of government control in the flow of inputs could not infuse competitiveness in the cluster of small foundries, rather brought about closure and stagnation. Neoliberal claims are based on strict assumptions like endowments of two factors (labour and capital) in trading countries, perfectly competitive markets and existence of identical production functions, they miss the more dynamic elements as technological lags, capability gaps or enterprise level efforts as well as organisational rigidities. Those elements once endogenised, we find that the outcome of increased competition becomes very different from what is expected in neoliberal theories.

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

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