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Selling steel in the 1920s: TISCO in a period of transition

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Through a case study on the Tata Iron and Steel Company, this article aims to clarify how a large-scale Indian industrial enterprise developed its business strategy in order to expand suitable sales networks in the 1920s, when the consumption pattern of steel changed drastically. In correspondence with the change, the company devised a business strategy to develop its sales network to minimise information asymmetries between the company, the end user and the intermediary merchant. The development of the sales network enabled the company to cultivate an emerging demand in domestic outlets, thereby helping the company survive after the 1920s. Besides, these successes could have prompted the House of Tata, the family owning the steel company, to initiate development in the domestic market to further its interest after the 1920s. Presumably, this resulted in the sharing of its views with some of the local merchants and entrepreneurs who had opposed the laissez-faire policy of the colonial government to preserve domestic outlets in their hands.

Keywords: TISCO, Tata, steel, sales network, business strategy

Introduction

An important issue with regard to the steady and stable progress of a large-scale industrial enterprise pertains to whether the enterprise can adopt an appropriate business strategy to develop a suitable production facility and sales network in correspondence with the changes in the macro-economic environment of the business enterprise. Without the employment of such a business strategy, the industrial enterprise could fail to cultivate an emerging demand. A number of business historians of leading industrial nations have demonstrated the manner in which...
successful large-scale industrial enterprises developed business strategies in order to adjust to a macro-economic transition of this kind.¹

Such business strategy development presumably supported the expansion of the large-scale industrial enterprise of colonial India. After the introduction of direct rule by the British Crown in the mid-nineteenth century, colonial India developed various large-scale industries such as cotton, jute, and iron and steel industries with the support of British technology and capital. This resulted in the transformation of colonial India into one of the leading industrialised countries in Asia at the time of its independence. Despite the wide-ranging industrial growth, there are a limited number of studies on Indian economic history investigating the manner in which industrial enterprises developed business strategies such as the strategy to change production lines or reorganise sales networks, in order to adapt to a macro-economic transition like a shift in the domestic consumption pattern of their products.²

Based on a detailed study of the Tata Iron and Steel Company (TISCO) in the 1920s, the only modern technology-based steel-producing company in India until the mid-1930s, this article aims to clarify the manner in which a large-scale Indian industrial enterprise developed a business strategy in order to adjust to the shift in the consumption pattern of steel in the domestic market during the decade. In the 1920s, the Indian steel market underwent a drastic change in its consumption pattern mainly owing to two causes: the decrease in the expenditure on the railway industry owing to the employment of the government’s retrenchment policy and the gradual increase in the demand for the mass consumer’s steel demand. The main focus of this article is centred on clarifying the manner in which TISCO developed a business strategy in order to adjust to such the shift in the consumption

¹ As regards the business strategy adopted to expand the sales network, which is the major focus of this article, a number of studies have been carried out so far. For instance, Business History, an eminent journal in the field of international business history, studies the topic in its special issue edited by Church and Godley, ‘The Emergence of Modern Marketing’, pp. 1–2. The scholarly attention to the business strategy adopted to develop a sales network, such as strategies to construct a marketing and distribution system, probably dates back to Chandler, The Visible Hand, Chapter 7. Brief surveys of the studies on the development of sales networks have been referred to, for instance, in Fitzgerald, ‘Marketing and Distribution’, Chapter 17; Fullerton, ‘How Modern is Modern Marketing?’; Tedlow, ‘The Fourth Phase of Marketing’.

² Contrary to the case of industrial products for the domestic market, scholars have paid greater attention to the manner in which business enterprises or merchants developed a marketing network of agricultural products and export products in order to adjust to macroeconomic transitions such as the shift in consumption pattern. See for instance, Ray, ‘The Bazaar’; Datta, ‘Merchants and Peasants’; Banerjee, ‘Grain Traders and the East India Company’; Sudhir and Swarnalatha, ‘Textile Traders and Territorial Imperatives’; and Haynes, McGowan, Roy, and Yanagisawa, Towards a History of Consumption. The formation of a market for agricultural products and export products was brought up in a special issue of the Indian Economic and Social History Review in 1999 as well. As regards the development of researches on such market formation, see the ‘Editors’ Note’ of the special issue by Banaji and Roy.

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pattern. This study attempts to show that one of the most important business strategies of TISCO, whose steel did not have sufficient international competitiveness in the 1920s, was the reorganisation of the domestic sales department in order to expand the company’s domestic sales network.

The analysis of the development of TISCO’s domestic sales department has at least two implications for the modern political economic history of India. First, the analysis is expected to narrow the aforementioned gap in the understanding of how a large-scale Indian industrial undertaking developed a business strategy to adapt to a macro-economic transition. Second, the study describes how TISCO, the largest business enterprise of the House of Tata, the most powerful indigenous business group, in the course of developing its sales market network, established wide-ranging controlling power over indigenous local merchants who were in the business of purchasing and selling imported steel even before the foundation of TISCO in 1907. This establishment of controlling power over domestic market means, first, the domestic market became an important source of interest of the House of Tata and, second, the House of Tata, in addition to some indigenous local merchants and entrepreneurs of local origin whose business were restricted to domestic market mainly due to lack of international competitiveness, began to understand that the domestic market had a vital significance for development. The shared understanding about the significance of the domestic market could be considered as one of the important factors that promoted the establishment of collective support of the business magnates such as Tatas and some indigenous merchants and entrepreneurs as Indian business classes for anti government-led laissez faire policy in the 1930s. Thus, this analysis is expected to provide readers a possible clue to understanding some features of the collective political actions of the Indian business community in the last phase of the colonial period.3

This article consists of nine sections. The first section reviews the history of TISCO in colonial India, especially after the sanction of the Great Extension Scheme (GES) in the 1910s. This post-GES history is important for this study because the production capacity expansion resulting from GES was one of the significant factors that forced the company to explore additional markets within the subcontinent. The next section statistically illustrates that the importance of the steel demanded by mass consumers increased after World War I (WWI), while the steel consumed by the railway industry, a dominant consumer of steel before the war, decreased its share, indicating that a shift in the consumption pattern of steels had occurred in the Indian steel market in the 1920s. The third

3 Regarding the failure and success of collective action, see, for instance, Chandra, Rise and Growth of Economic Nationalism, Markovits, Indian Business and Nationalist Politics, Markovits, Merchants, Traders, Entrepreneurs, Chakrabarti, ‘Why Did Indian Big Business’ provides a useful summary of the development of collective action of Indian business classes and its influence on the Indian National Congress in the colonial.

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section shows how TISCO responded to the changing market conditions, where mass consumers increased their share. For the purpose, TISCO varied the types of steel products, which was to be distributed domestically through its sales department. The fourth section briefly surveys the history of the sales department before its full-fledged development in the 1920s. The fifth section studies the problems that emerged from exploring the market for mass-consumer outlets after GES in the 1920s. These problems originated essentially from informational asymmetries between TISCO and end users scattered all over the subcontinent. It is shown that TISCO initially attempted to solve the problems by utilising existing sales networks knitted by indigenous local merchants. The sixth section describes some sort of informational problems that remained even after the utilisation of a sales network of indigenous local merchants, while the seventh section shows that TISCO sought to solve the informational problems by drastically transforming its own sales department after the mid-1920s. The eighth section shows that, in course of development of sales department, TISCO resolved its informational problems and thus enhanced its bargaining power over indigenous local merchants. The last section concludes the study.

**Brief History of TISCO**

TISCO was undoubtedly one of the exceptionally successful industrial enterprises of colonial India. The indigenous firm, which was incorporated in 1907 by Tata Sons and Co., a managing agency of the House of Tata, grew to become one of the biggest industrial enterprises in terms of paid-up capital (₹ 103.2 million in 1922–1923) and manpower (25,923 in 1922–1923).\(^4\) In the course of its development, TISCO, the only steel-producing company until the mid-1930s, raised annual production of steel from 55,000 tons in 1910–1911 to 443,000 tons in 1930–1931, having achieved an increasing self-sufficiency rate (rate of domestic production to net domestic demand) for steel in colonial India from almost zero in 1910–1911 to 45 per cent in 1930–1931 (Table 1).

The exceptionally successful growth of TISCO has been attributed to several factors: favourable resource endowment, government supports such as purchasing contract and tariff protection, proper technological transfers from the US and Germany, flexible and appropriate transformation of corporate organisation, and the entrepreneurship of the chairmen of the company.\(^5\) Among such factors, GES in the beginning of the 1920s must have been one of the most important in

\(^4\) TISCO Archives (hereafter TA), Jamshedpur, India, *Annual Report of TISCO*.


Table 1
Steel Market in India in 1910–1911 to 1930–1931

<table>
<thead>
<tr>
<th></th>
<th>Domestic Production (1,000 tons)</th>
<th>Net Demand (1,000 tons)</th>
<th>Rate of Domestic Production to Net Demand (per cent)</th>
<th>Domestic Production (1,000 tons)</th>
<th>Net Demand (1,000 tons)</th>
<th>Rate of Domestic Production to Net Demand (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pig Iron</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Steel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Domestic</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Net Steel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Steel Prices</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Steel Prices</strong></td>
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<tr>
<td><strong>Indices based</strong></td>
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<td><strong>as 1913–1914</strong></td>
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<td></td>
<td></td>
<td><strong>as 1913–1914</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1910–1911</td>
<td>55</td>
<td>296</td>
<td>18</td>
<td>n.a.</td>
<td>645</td>
<td>n.a.</td>
</tr>
<tr>
<td>1915–1916</td>
<td>226</td>
<td>275</td>
<td>82</td>
<td>91</td>
<td>472</td>
<td>19</td>
</tr>
<tr>
<td>1920–1921</td>
<td>431</td>
<td>534</td>
<td>81</td>
<td>122</td>
<td>810</td>
<td>15</td>
</tr>
<tr>
<td>1925–1926</td>
<td>890</td>
<td>615</td>
<td>145</td>
<td>320</td>
<td>1,200</td>
<td>27</td>
</tr>
<tr>
<td>1930–1931</td>
<td>818</td>
<td>365</td>
<td>224</td>
<td>443</td>
<td>990</td>
<td>45</td>
</tr>
</tbody>
</table>

Sources: 1. Domestic production of pig iron and steel of TISCO: Annual Reports; pig iron of the Bengal Iron and Steel Company and India Iron and Steel Company: The Investor’s India Yearbook and Government of India: Department of Commercial Intelligence and Statistics, Statistical Abstract for British India. Data of pig iron of BISCO before 1914 was interpolated from the data of 1901 in Chaudhuri, M., The Iron and Steel Industry of India.

Notes: Domestic production: India had four pig iron producing concerns in colonial period: TISCO, the Bengal Iron and Steel Company, the Indian Iron and Steel Company, and the Mysore Iron Works. Data of pig iron includes those of TISCO, the Bengal Iron and Steel Company, and the Indian Iron and Steel Company only, leaving data of the Mysore Iron Works, due to unavailability of the data, not inclusive. The exclusion of data of Mysore Iron Works does not affect findings of the figure due to relatively small amount of the output.

Net demand: (1) Net demand = total domestic production + imports − exports, (2) The Annual Statement of Sea-Borne Trade contains data (quantity and value) of imported and exported iron (I), imported and exported steel (S) and a combination of both iron and steel (IS). Unfortunately, more than half of the data is in the third. Individual figures for iron and steel were, thus, estimated from the third category by assuming that the data in the third category can be divided into iron and steel data in the same proportion between the first two. That is to say, estimated iron imports = I + (IS) * (I/(I + S)) and estimated steel imports = S + (IS) * (S/(I + S)). Exports were calculated in the same manner.
increasing productivity significantly in the 1920s, a decade in which the company faced continuing reduction of steel prices due to resumption of international competition among steel producers after the end of WW I as well as shifting consumption pattern of steel in domestic market. In the following paragraphs, we will review in detail why and how TISCO raised production capacities through GES, since GES formed the foundation for developing business strategy to introduce several innovative corporate organisations, including, undoubtedly, the sales department to market its products whose volume was drastically increased after completion of GES.

Before GES, TISCO’s steel had serious difficulty in finding outlets not only abroad but also in domestic markets because of its low productivity and therefore high price, while TISCO’s pig iron, the primary input for steel, achieved high international competitiveness in prices as well as quality from the beginning of production in the early 1910s. According to archival evidences, TISCO’s production cost of pig iron (variable costs only) were ₹ 18.92 in 1916–17 and ₹ 36.70 in 1921–1922 respectively, while production costs of other leading iron producing countries were ₹ 31.98 and ₹ 60.80 in Japan, ₹ 48.65 and ₹ 68.86 in the UK and ₹ 42.89 and ₹ 86.59 in the US in pre-war period and in 1922–23 respectively. The main causes of the cheap production of pig iron of TISCO were the cheap prices of the inputs even during the initial phase of production (prices of a ton of coke and iron ore were ₹ 6.19 and ₹ 1.88 in 1916–1917 and ₹ 16.06 and 3.54 in 1921–22 in case of TISCO, while in Japan they were ₹ 10.31 and ₹ 8.34 in 1914 and ₹ 29.60 and ₹ 14.0 in 1922 respectively. In the UK, the price of a ton of coke and iron ore was ₹ 14.40 and ₹ 3.94 in pre-war period and ₹ 24.60 and ₹ 11.98 in 1923). These cheap prices of Indian coke and iron ore resulted in India realising self-sufficiency in pig iron production in the first half of the 1920s (Table 1).

In contrast to its successful pig iron production, TISCO failed to achieve high international competitiveness in steel production, largely due to the high cost of conversion from pig iron to steel ingots. According to an archival evidence of TISCO, variable cost of a ton of pig iron, steel ingot, bloom and rail were ₹ 18.96, ₹ 41.25, ₹ 50.98 and ₹ 68.98 respectively in 1922, while they were ₹ 31.20, ₹ 42.58, ₹ 48.04 and ₹ 65.05 in a company in the US in the same year.


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Attention should be paid to the fact that we compare variable costs only, excluding capital costs because of its arbitrariness in fixing depreciation rates.


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The cause of the high cost of conversion from pig iron to steel ingots can be identified through a comparative cost sheet analysis of TISCO and a leading steel-producing company in the US. As indicated in Table 2, it was ‘furnace & mixer repair’ and ‘labour’ costs that accounted for the large difference in cost of conversion from pig iron to steel ingots between TISCO and its US counterpart.

Table 2
Variable Costs to Produce a Ton of Steel Ingots in 1922 (₹)

<table>
<thead>
<tr>
<th>Input</th>
<th>TISCO</th>
<th>Company in the U.S.</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel</td>
<td>2.56</td>
<td>2.25</td>
<td>0.31</td>
</tr>
<tr>
<td>Limestone</td>
<td>0.81</td>
<td>0.31</td>
<td>0.50</td>
</tr>
<tr>
<td>Labour Contingent fund</td>
<td>0.50</td>
<td>0.12</td>
<td>0.38</td>
</tr>
<tr>
<td>Labour</td>
<td>4.12</td>
<td>2.00</td>
<td>2.12</td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furnace &amp; Mixer Repair</td>
<td>4.75</td>
<td>1.50</td>
<td>3.25</td>
</tr>
<tr>
<td>Others</td>
<td>2.80</td>
<td>1.36</td>
<td>1.44</td>
</tr>
<tr>
<td>Others</td>
<td>1.46</td>
<td>0.96</td>
<td>0.50</td>
</tr>
<tr>
<td>Total Cost Above Metal</td>
<td>17.00</td>
<td>8.50</td>
<td>8.50</td>
</tr>
</tbody>
</table>

Source: TISCO Archives, Jamshedpur, India, General Manager’s Correspondence file 119.

Here, a major share of the furnace & mixer repair cost was incurred on bricks to line the insides of furnaces in order to protect their shells. In the 1910s, India did not have sufficient equipment to produce some types of bricks, such as the silica brick that was essential to steel production, and had to import most of this very fragile item by ship; the bricks suffered much breakage before reaching the TISCO furnaces. This was the major cause of TISCO’s high brick costs. Of course, TISCO tried to produce the brick itself, with favourable results, as early as the mid-1920s.

Another serious hindrance to producing competitive steel was labour cost. The cost of labour continued to be a particularly vexing problem for TISCO’s management, especially since the 1920s, when the furnace & mixer repair cost problem was just about solved, with the prospects of achieving a full domestic supply of bricks. Labour costs per ton of steel ingot consist of two factors, wages and productivity. In colonial India, the high cost was caused by productivity, rather than wages. Regarding wage, the wages of TISCO in colonial India were much lower than that in the US counterparts at that time. According to Table 3, the weekly average wage at TISCO was ₹ 11.35 in 1915–1917, including the wage for

9 Since the major part of imported steel of India came from the UK or the European Continent and not from the US, the reliability of implications derived from a comparison of costs between the US and TISCO may come into question. However, an enquiry was made by TISCO managers to find out the causes of TISCO’s high conversion cost. TA, GMC file 119, p. 151, ‘Letter of Alexander to B.J. Padshah on 14 July 1922’. Thus, in this sense, a comparison of TISCO and the US data can be meaningful.

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covenanted (foreign) labour, while in the US it was equivalent to $36.50 in 1910.

Thus, lower wages coupled with higher unit cost of labour in India in comparison with the US suggests that labour productivity (amount of steel ingot produced by one person of labour) in India was much lower, just 15 per cent of the US figure, as shown in Table 3.

<table>
<thead>
<tr>
<th>(Figures in the Open Hearth Department)</th>
<th>TISCO (Including Covenanted Labour)</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Cost of Labour per Ton of Steel Ingot Production (₹)</td>
<td>4.62 (1922)</td>
<td>2.12 (1922)</td>
</tr>
<tr>
<td>Weekly Averaged Wage (₹)</td>
<td>11.35 (1915–1917)</td>
<td>36.50 (1910)</td>
</tr>
<tr>
<td>Amount of Steel Produced by One Person of Labour (Labour Productivity, Weekly Averaged Wage/Unit Cost)</td>
<td>2.75</td>
<td>18.25</td>
</tr>
</tbody>
</table>


Note:
(1) The weekly TISCO wage was calculated by dividing the recorded annual wage by 48.
(2) The U.S. data amounts to the ratio of average wages for open hearth department workers to the lowest wage paid and the amount of the minimum wage per hour. Elbaum adds that open hearth employees worked between 52–58 hours per week. Therefore, an estimation of the U.S. ‘averaged weekly wage’ was calculated multiplying the above ratio by the lowest wage by the average work week of 55. Elbaum’s data is based on a U.S. Bureau of Labor report on the conditions of employment in the U.S. iron and steel industry.

It has been sometimes argued that TISCO expenditures for labour were high due to the wage paid to covenanted employees. TA, GMC file 119, ‘Letter of B.J. Padshah to TISCO General Manager on 19 July 1922’, p. 145. It is true that the company did pay an astounding ₹ 637,784,784 to seventy five covenanted employees working in production departments in 1915–1916, an average of ₹ 8,503 per employee annually, while the company’s total outlay for 4,243 non-covenanted workers in the same departments was only ₹ 1,120,284, or ₹ 264 per employee! (Government of India: Indian Tariff Board, Evidence Recorded During Enquiry into the Steel Industry, Vol. 1, pp. 109–11). Despite the incredible discrepancy, the average annual wage paid by TISCO came to only ₹ 407 per employee then and the average wage came to be much below that paid in foreign steel producing companies in the US, which was, according to Table 3, almost three times the average wage of TISCO.

Besides, due to a shortage of opportunity for higher promotion within the company, the turnover ratio of skilled labour was high in India. Because of this high mobility, a manager of the company hesitated to invest in technological education to provide necessary skill for labour. On the basis

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low labour skill on productivity seems to be apparent because large differences in labour productivity continued even after TISCO introduced a world-class open hearth furnace and state-of-the-art technology after the completion of GES in the mid-1920s. In other words, output per worker was much lower than the US standard, even after TISCO equipped itself with the latest technology, which raised the capital/labour ratio to the world standard.

However, it seems to have been the low capital/labour ratio—that is, the smallness of its steel production furnaces—that was the leading cause of low productivity in the initial period of operation of the company in the 1910s. Major R.H. Mohan, the Deputy Director-General of Ordnance, who was well known for the first full-scale investigation of the possibilities of iron and steel production in India during the 1890s, stressed the importance of large-scale operations for successful steel production, stating, ‘to be successful, the works would have to be planned on a scale equal to an output of between 300,000 and 400,000 tons annually’. Nevertheless, up to the middle of the 1920s, the production capacity of TISCO for steel ingots was below 200,000 tons, apparently implying that the small production capacity affected the productivity of the company seriously.

The small production capacity of steel can be attributed to two causes: the installation of small-capacity furnaces and a less-than-optimum number of them. When TISCO started steel production in 1911, it had installed four open hearth furnaces for steel production for that purpose, each with a capacity of 40 tons per heat. In contrast, it is reported that steel companies in the US used furnaces with an average capacity of 100 tons per heat as early as 1920, meaning the size of TISCO’s furnaces were just 40 per cent of the US average. In addition, the number of furnaces TISCO installed was far from optimum. The original company plan, the Perin-Weld Report of 1905, mentioned that ‘in the United States, six such furnaces are found to form the most economical unit to operate from the point of view of superintendence and skilled labour’, and recommended installing six 40-ton basic open hearth furnaces to obtain economies of scale. However, TISCO’s management decided to install only four furnaces, possibly due to financial stringency, a move that we consider to have been the most decisive for the initial low productivity of steel making there.


12 Mahon, Manufacture of Iron and Steel in India and on the Coking Qualities of Indian Coal, quoted in Sen, Studies in Industrial Policy, p. 55.
16 Oba pointed out that technology of the furnace of TISCO at that time was old-fashioned. Some of the U.S. steel makers had already started to use the newly innovated duplex furnaces in place of...
The primary aim of GES was to raise the low labour productivity by a drastic expansion of production capacity. The original idea behind this plan seemed to have occurred to C.P. Perin, a consultant engineer of TISCO, as early as 1913, the year before the outbreak of WWI; however, he needed three more years to give shape to the plan in his mind. It was in May 1916 that Perin submitted his ‘Report of Plant Extension’, composed of 33 pages of main text and 17 pages of drawings and tables. The report proposed not only a physical enlargement of the size of steel furnaces, but also the employment of newly innovated steel production technology, the installation of new types of plate and tube mill, wagon, etc., which had not been produced in India before WWI, the establishment of a modernised medical facility for both workers and their families, and the enlargement of the workforce to man the expanded production operations.

The plan was plagued by serious difficulties, even after it was approved by the shareholders on 12 December 1916, due to special regulations on the export of the necessary production equipment by the governments of its suppliers in the UK and the US out of the desire to give priority to producers in their respective countries. Both the Government of India in Delhi and the Secretary of State in London jointly supported GES because of the severe need of steel for military use and asked the British and US governments to ease their export regulations in the case of TISCO. Owing to such government intervention in exchange for priority supply of the products to fulfil needs of the government with discounted prices, TISCO succeeded in concluding purchasing and shipping contracts with several UK and US steel production equipment makers, enabling it to start plant construction as early as 1917. However, the work progressed very slowly due to such problems as government red tape and delays in the delivery of the equipment owing to a shortage of transportation. GES was finally realised in 1924, eight years after the go-ahead had been given.

Under the GES, TISCO installed world-class production equipment. As to the blast furnace department, the key section for pig iron production, first, TISCO originally had two furnaces, each 77 by 19 feet with a 12-foot diameter hearth and a production capacity of 200 tons per day. It is reported that the average height of blast furnaces in the US in 1900 was about 100 feet with an average daily output of 600 tons per furnace. This newer technology was introduced at TISCO later, in the middle of the 1920s. Oba, ‘Industrial Development’, p. 52.

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less than the US average, although the unit production cost of its pig iron was cheaper, even before GES, due to cheaper availability of inputs. GES called for the installation of three more furnaces with production capacities of 300, 500 and 850 tons per day. Compared to one of the largest furnaces in the US, 672 tons in 1919 and 1,092 tons in 1929, the capacity of TISCO’s largest furnace, which went into operation on 15 January 1924, was indeed world-class at that time.²⁰

The enlargement of steel furnace production capacity, which prior to WWI was 40 tons per heat for each of the four open hearth furnaces in operation, involved the installation in 1917 of two open furnaces with production capacities of 111 and 60 tons per heat each, just before GES was approved. One more open hearth furnace with almost the same capacity was added three years later. However, it was the installation in 1923–1924 of two tilting open hearth furnaces called for by GES that changed TISCO’s production capacity drastically to 200 tons per heat.²¹ Given the fact that only large steel plants had 200-ton open hearth furnace even in the US in 1930,²² TISCO certainly had one of the largest steel furnaces in the world, capacity-wise.²³ Due to such enlargement in size and number of furnaces, TISCO’s production capacity increased remarkably from 132,000 tons of steel ingots in 1914 to 523,320 tons in 1925.

However, the fruits of economies of scale achieved by GES could be realised only if the company succeeded in cultivating additional consumers for steel produced by the expanded production capacity to avoid a serious accumulation of dead stock.²⁴

Given the fact that, as shown in Table 1, India was blessed with sufficient steel demand to warrant an enterprise the size of TISCO, let us first examine the domestic consumers who generated demand at that time. Here, the examination focuses particularly on a shift in the pattern of the steel consumption in India in the 1920s, that is, a shift from a consumption pattern wherein the demand of the railway industry dominated to another pattern wherein the demand of the mass consumer

²¹ These large capacity furnaces were contained within two 25 ton Bessemer converters, usually called ‘duplex furnaces’.
²³ I stress on a change in production capacity by the GES here, while other scholars sometimes focus on technological transformation by the GES, such as the introduction of duplex furnace or the product coke oven. Datta, Capital Accumulation, p. 77, Oba, ‘Industrial Development’. Regarding the progress of technological changes, Victor S. Clark, an eminent historian of steel industry in the U.S., states that no revolutionary change was made in furnace construction during the early twentieth century. According to him, duplex furnace was just a minor innovation. Clark, History of Manufactures, p. 71.
²⁴ In addition to an organisational reform for finding new outlets for expanded production capacity, a wide range of other organisational reforms were necessary for realising merit of GES, in such areas as input purchasing, labour management, training, welfare and accounting. Detail of such other reforms is studied in my Ph.D. dissertation, Nomura, ‘Corporate Organization Matters’.

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increased drastically. The shift in the consumption pattern caused TISCO to undertake a business strategy to cultivate the emerging demand led by mass consumers, and this resulted in the company developing a sales department to expand a domestic sales network during the decade. The reader should be reminded here that in the mid-1920s, TISCO still did not possess sufficient competitiveness to explore outlets abroad, forcing the company to turn all of its sales efforts to the domestic market.

Steel Demand in the Indian Market in the 1910s and 1920s

First, we will review the trend of steel demand in the Indian market in the 1910s and 1920s. Then, we will examine how TISCO found outlets for its expanded production in the domestic market in the 1920s.

The demand for steel in the Indian market in the 1910s and 1920s had two distinct features: a steady increase in the total demand and a shift in consumption pattern.

First, absolute demand for steel in India expanded steadily throughout the two decades. Total net demand (domestic production plus net imports) for steel amounted to 472,000 tons in 1915–1916 and grew by more than 110 per cent, reaching 990,000 tons in 1930–1931 (Table 1). Since population growth during the same period was merely 9 per cent, from 252 million in 1914–1915 to 275 million in 1929–1930, annual per capita consumption of steel in India expanded 50 per cent from 1.87 kg in 1915 to 3.6 kg in 1930. Steel consumption in the UK was 130.8 kg per capita in 1913 and 180.7 kg in 1929, while in Japan the figures were 12.7 kg in 1914 and 44.1 kg in 1929–1930, indicating that per capita steel consumption of colonial India was much less than not only that of leading industrialised nations such as the UK but also that of Japan, another industrialising nation in Asia. Although the absolute amount was far lower in India, the consumption of steel there still grew steadily throughout the decade,

25 On the basis of Johnson’s estimation, Morris states that demand for steel remained stagnant during the inter-war period. He wrote, ‘During the eighteen years between 1920–1921 and 1938–1939 annual consumption averaged only 1.1 million tons, less than 85 per cent of the 1913–1914 figure of 1.3 million long tons’. Then, he explained the cause of the stagnation as follows. ‘Why was demand so slack? Unlike other countries, where private demand for steel for machinery, truck, automobiles, ship food containers, private construction, etc., contributed a great deal to total requirements, the major consumer of steel in India was government or government-related activities like railways, military and public works projects. In the absence of a rapid expansion of private demand, limited government expenditure was decisive.’ Morris, ‘The Growth of Large-Scale Industry’, p. 627. It is true that there was only a slight increase in net demand for steel between 1920–1921 and 1938–1939; however, this does not mean that there was no meaningful increase in demand in the 1920s. As is shown in Table 1, net demand for steel in the 1920s grew steadily by almost 50 per cent from 810,000 tons to 1,321,000 tons.
suggesting that the Indian steel market had been a favourable prospect for TISCO in the period.\textsuperscript{26}

The leading cause of the steady expansion of steel demand was, presumably, a decrease in steel prices in nominal terms (Steel price indexes decreased from 178 in 1922–1923 to 124 in 1925–1926 and 69 in 1929–1930 in nominal terms). The demand for steel and the nominal price indexes of steel were well correlated in 1920/1921–1929/1930 (except in 1924–1925, 1927–1928 and 1928–1929 for lack of data) (84.87 per cent) (Table 1), clearly indicating that declining steel prices formed the major cause of the increase in demand.

Second, the consumption pattern of steel in Indian market changed drastically in the 1920s. Until the beginning of the 1910s, the demand for steel in India was mainly driven by India’s railway companies. According to Table 4, which shows the amount of specific types of steel demanded in India, the shares of each item’s demand in total demand, and the rates of domestic production to net domestic demand during the period 1909–1910 to 1936–1937, the share of railway-related materials—rail, fishplates, and sleepers—accounted for almost 50 per cent of total demand at the beginning of the 1910s. In addition to rail and fishplates, various other steel items must have also been consumed by the railway companies for the construction of bridges and railway stations. This dominant position occupied by the railway companies at the beginning of the 1910s is partly proven by the fact that the Indian railway mileage grew by about 2.5 per cent annually then; such a steady growth must have been encouraged by a change in government policy to allow the entry of princely state-owned or private lines into the industry at the end of the nineteenth century.\textsuperscript{27}

However, columns 1 and 2 in Table 4 also indicate that this dominance of railway-related steel demand was starting to erode by the outbreak of WWI, leading to the demand for railway-related materials sharply decreasing from 310,000 tons to just 165,000 tons by the mid-1920s. One of the possible causes of this decline was that government expenditure moved away from railways in favour of military spending to support the British Government during WWI (£100 million for transporting troops with a grant of an additional £100 million) and tight restraints on expenditure for the railway companies after WWI. For example, newly opened railway mileage declined by more than 50 per cent from 726 miles (1898–1916) to 300 miles (1916–1928) per annum.

What is interesting for the present study is that the sharp decline in demand by the railway companies did not lead to a reduction in India’s total demand for

\textsuperscript{26} Net demand for steel in each countries: India, see source and note of Table 1, Japan, Okazaki, Nihon no Kogyoka to Tekkousannzyo, p. 42, U.K.: National Federation of Iron and Steel Manufacturers, Statistics of the Iron and the Steel Industries. Population: Maddison, Monitoring the World Economy, Appendix A.

\textsuperscript{27} Rao, Indian Railways, p. 25.
Table 4
Demand and Supply of Specific Steel Items in India

(1) Demand in 1,000 tons, (2) Share of Each Item’s Demand to Total Demand in per cent, (3) Rate of Domestic Production to Demand in per cent

<table>
<thead>
<tr>
<th></th>
<th>Rail, Fishplates and Sleepers</th>
<th>Bars (Including Tin Bar)</th>
<th>Heavy Structurals (Mainly Angles)</th>
<th>Sheets and Plates, not Galvanized</th>
<th>Sheets and Plates, Galvanized</th>
<th>Tubes, Pipes and Fittings, Wrought</th>
<th>Hoops and Strips</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Demand)</td>
<td>(Share)</td>
<td>(Rate)</td>
<td>(Demand)</td>
<td>(Share)</td>
<td>(Rate)</td>
<td>(Demand)</td>
<td>(Rate)</td>
</tr>
<tr>
<td>1910–1911</td>
<td>310</td>
<td>148</td>
<td>52</td>
<td>8</td>
<td>80</td>
<td>15</td>
<td>96</td>
</tr>
<tr>
<td>1915–1916</td>
<td>114</td>
<td>109</td>
<td>53</td>
<td>11</td>
<td>62</td>
<td>69</td>
<td>42</td>
</tr>
<tr>
<td>1920–1921</td>
<td>87</td>
<td>196</td>
<td>87</td>
<td>23</td>
<td>127</td>
<td>16</td>
<td>96</td>
</tr>
<tr>
<td>1925–1926</td>
<td>165</td>
<td>288</td>
<td>120</td>
<td>10</td>
<td>150</td>
<td>12</td>
<td>96</td>
</tr>
<tr>
<td>1930–1931</td>
<td>162</td>
<td>273</td>
<td>127</td>
<td>13</td>
<td>106</td>
<td>11</td>
<td>96</td>
</tr>
<tr>
<td>1935–1936</td>
<td>109</td>
<td>333</td>
<td>125</td>
<td>11</td>
<td>148</td>
<td>13</td>
<td>96</td>
</tr>
</tbody>
</table>

Source: Import/export: Government of India: Department of Commercial Intelligence and Statistic, Annual Statement of the Sea-Borne Trade of British India; Domestic Production, TISCO Archives, Jamshedpur, India, Annual Report of TISCO.

Note: (1) Demand (net) = import + domestic production – export, (2) The Annual Statement of Sea-Borne Trade contains data of imported and exported iron (I), imported and exported steel (S) and a combination of both iron and steel (IS). Unfortunately, some steel articles are included only in the third. Individual figures for such article were, thus, estimated from the third category by assuming that the data in the third category can be divided into specific steel article’s data in the same proportion between total imported/exported irons and total imported/exported steels. That is to say, estimated import of specific steel article = (imported IS of combination of both iron and steel articles such as galvanized sheets and plates) * (total imported S)/(total imported I and total imported S). Exports were calculated in the same manner, (3) Categories of steels in Annual Report of TISCO and those of Annual Statement of the Sea-Borne Trade of British India are sometimes inconsistent each other; thus, we reorganized the categories in the following ways: 1. rail, fishplates and sleepers = ‘rail and fishplate’ + ‘sleepers and sleeper bars’ of Annual Report of TISCO plus ‘rails and other sort of railways for private as well as government uses’ + ‘rails and fishplates’ of Annual Statement; 2. bars and light structurals = ‘bar and light structural’ + ‘tin bar’ of Annual Report of TISCO plus ‘angle and tee’ + ‘bar other than cast steel’ of Annual Statement; 3. heavy structurals = ‘heavy structural’ of Annual Report of TISCO plus ‘beams, channels, pillars, gilders and bridge work’ of Annual Statement; 4. sheets and plates, not galvanized = ‘plates’ + ‘black sheets’ of Annual Report of TISCO plus ‘sheets and plates, tinned as well as not galvanized’ of Annual Statement; 5. sheets and plates, galvanized = ‘galvanized sheets’ of Annual Report of TISCO plus ‘sheets and plates, galvanized’ of Annual Statement; 6. tubes, pipes and fittings, wrought = only ‘tubes, pipes and fittings, wrought’ of Annual Statement; 7. hoops and strips = only ‘hoops and strips’ of Annual Statement.
steel, meaning that a group of new consumers for steel appeared during the 1920s to more than compensate for the reduction in demand by railway companies. The group of consumer was a target of business strategy of TISCO in the 1920s.

The group which led the expansion of steel demand in the 1920s can be described as mass consumers, who used steel for the purpose of constructing zamindar palaces, raiyat huts, agricultural implements, and so on. The evidences for this mass consumption are as follows.

Column 2 in Table 4 shows that the share of steels such as bars, light and heavy structural steels, or sheets and plates increased during the 1920s and 1930s in relation to that of railway-related materials. Table 5 provides a classification of the chief lines of consumption of specific types of steel in the US in the 1930s: the major users of structural steel were the construction industry, whereas plate and sheet metal were used mainly for containers, machinery and distribution. It can be assumed that similar entities in India were increasing their consumption of steel in the construction, container, distribution and machinery industries at that time, although there must have surely been differences in the exact use between the two countries. As spending on public works did not grow in the midst of budgetary retrenchment during the 1920s, the consumption of steel materials for private use by mass consumers, especially steel materials for the construction, container and distribution industries, must have increased appreciably, probably explaining part of the rise in consumption of steels such as bar, light and heavy structural steels during the 1920s and 1930s.

Table 5

<table>
<thead>
<tr>
<th>Industry</th>
<th>Proportion (Per cent)</th>
<th>Chief Purchases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive</td>
<td>21</td>
<td>Sheets, Strip and Bars</td>
</tr>
<tr>
<td>Building and Construction</td>
<td>12</td>
<td>Plates, Structural Shapes and Reinforcing</td>
</tr>
<tr>
<td>Containers</td>
<td>10</td>
<td>Sheet</td>
</tr>
<tr>
<td>Railroad</td>
<td>9</td>
<td>Track Material and Plates</td>
</tr>
<tr>
<td>Oil, Gas, Water</td>
<td>5</td>
<td>Pipe</td>
</tr>
<tr>
<td>Machinery</td>
<td>4</td>
<td>Bars and Sheets</td>
</tr>
<tr>
<td>Furnishing for Buildings</td>
<td>4</td>
<td>Black Plate and Sheets</td>
</tr>
<tr>
<td>Agriculture</td>
<td>3</td>
<td>Wire and Galvanized Sheets</td>
</tr>
<tr>
<td>Jobbers and Distributors</td>
<td>15</td>
<td>Wire, Pipe, Sheets and Bars</td>
</tr>
<tr>
<td>Unclassified</td>
<td>12</td>
<td>...</td>
</tr>
</tbody>
</table>

Note: Figures are average for 1933–1938 inclusive.

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28 We consider the term ‘mass consumers’ to include not only farmers or raiyat but also those who resided, for instance, at the residence of the zamindar.

29 Public expenditure of British India (Central and Provincial) on capital account charged to revenue, for instance, decreased from ₹ 3,362,732, ₹ 11,228,044, and ₹ 10,919,482 in 1921–1922 to...
This assumption on shift in pattern of consumption of steels led by mass consumption is also supported by some descriptive evidences. For example, on 20 December 1933, Maresh Nath Mookerjee, a representative of various Indian importers of iron and steel, explained before the Indian Tariff Board at Calcutta how galvanised sheet metal, whose share of total steel demand drastically rose during the 1920s from almost zero to more than 10 per cent at the end of the decade, was consumed in India at that time. He stated that sheet metal consumers were concentrated in Bengal and used 156,665 tons of the approximately 331,000 tons imported into India in 1928–1929. He added that the demand was seasonal and depended upon the prices of jute and rice. From September onwards, the demand entirely depended on the jute district, principally East Bengal. From January to April, the demand shifted to the centres of rice cultivation, located principally in East Bengal, North Bengal, Midnapore, etc.

Mookerjee’s statements clearly suggest that the demand for galvanised sheet metal heavily depended on the annual or seasonal fluctuations in income or production of the private agrarian sector of Bengal, like jute cultivating raiyats or farmers. Concentrated consumption of galvanised sheet in the jute-cultivating region is also clearly indicated by the following statement of Mookerjee:

In East Bengal galvanised sheets are the only medium of making houses. The weather is damp. People don’t suffer from damp by living in tinned houses. Rivers are constantly changing their course and there are floods and houses have to be dismantled and carried to distant places. Naturally they have to be portable. Even some of the largest houses of the very well to do are made of galvanized sheets. No other form of houses is safe or suitable ... We have known during floods the raiyats and farmers and other inhabitants of the place taking the whole house after dismantling in a boat without almost losing anything.

He adds that consumers did not include agricultural wage labourers, who could not afford sheet metal and used materials such as grass thatch to build their

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32 Ibid., p. 510.

33 Ibid.
dwellings. Such evidences seem to support the assertion that mass consumers such as raiyats and farmers led the increase in demand for steel during the 1920s, meaning that TISCO would have to delve deep into rural areas scattered all over South Asia to find domestic outlets for its enlarged output of commodities.

**TISCO’s Response to Changing Market Conditions**

The changing pattern of steel consumption led by mass consumers in the 1920s forced TISCO to develop a business strategy to diversify its own product lines and customer base. How TISCO adjusted its product lines to the changing pattern of steel consumption is clearly shown by the growth of India’s self-sufficiency in several types of steel, whose domestic supply was afforded almost exclusively by TISCO in the 1920s. As shown in column 3 in Table 4, India’s rate of domestic production to net domestic demand (self-sufficiency rates) in main steel products, such as bars, light and heavy structural steel, galvanized and non galvanized sheets and plates, improved significantly during the 1920s and 1930s although the self sufficiency rate of products such as tubes, pipes and fittings was zero during the period. The improvement of self sufficiency rates indicates that TISCO efficiently adjusted its production lines to the changing pattern of steel consumption in India during the decade.

However, merely adjusting its production lines was not an adequate measure to respond to the shift in the consumption pattern effectively. Besides, the company had to find outlets for the diversified products. There are several other evidences to show that sales to mass consumers had an increasing importance for TISCO during the 1920s, suggesting that the company had also successfully adjusted its customer base to the shift in the consumption pattern of steel. First, as is shown in Table 6, which show the share of TISCO steel sold to the leading categories of consumers during the period 1924–1925 to 1929–1930, the share of sales to dealers increased to make up for the declining importance of the railways and government purchases, although railways were still the company’s largest customers, purchasing more than 50 per cent of the company’s annual production in 1929–1930, collectively. By dealers, we mean mostly large-scale merchants living in large cities like Calcutta, Bombay and Madras, who were not the end users of the steel products they purchased. Most of the products were redistributed to end users through smaller merchants travelling between the big cities and mandis, mandis and hats, and villages. Thus, Table 6 indicates that TISCO’s steel began to find outlets among mass consumers scattered over the Indian subcontinent.

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34 Ibid.
35 Such a hierarchical structuring of the Indian market is well illustrated in R.K. Ray’s article, although it focuses largely on the market for agricultural, not industrial products such as steel. Ray, ‘The Bazaar’.

*The Indian Economic and Social History Review, 48, 1 (2011): 83–116*
Second, in addition to sales to dealers, some of the steel products of TISCO also reached mass consumers through engineering firms producing, for example, agricultural implements. As shown in Table 6, engineering firms purchased about 20 per cent of the total sales of TISCO, indicating the significance of sales to such firms.

Sales to engineering firms increased sharply during the early 1920s, just before the period covered in Table 6. For example, in 1922, two engineering firms, the Tinplate of India Co. Ltd. and the Agricultural Implements Co. Ltd., exchanged purchasing contracts with TISCO for 16,000–35,000 and 1,500–3,000 tons of steel, respectively, annually. According to Table 6, these two companies accounted for roughly between 20 and 60 per cent of TISCO’s total sales to engineering firms from the mid-1920s onwards (almost 60,000 tons on average), contributing much to the expansion of outlets for TISCO products during the 1920s. Both the companies were interestingly set up at the beginning of the 1920s with the financial support of TISCO, apparently indicating that TISCO supported the establishments to expand the outlets for its products.

Table 6
Share of TISCO’s Sales to Leading Customers (per cent)

<table>
<thead>
<tr>
<th>Year</th>
<th>Government</th>
<th>Railways</th>
<th>Engineering Firms</th>
<th>Dealers</th>
<th>Miscellaneous</th>
<th>Total Sales (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1924–1925</td>
<td>2.8</td>
<td>57.2</td>
<td>19.4</td>
<td>18.2</td>
<td>2.4</td>
<td>281,858</td>
</tr>
<tr>
<td>1925–1926</td>
<td>0.4</td>
<td>32.3</td>
<td>25.7</td>
<td>34.0</td>
<td>7.6</td>
<td>258,468</td>
</tr>
<tr>
<td>1927–1928</td>
<td>2.3</td>
<td>48.4</td>
<td>19.4</td>
<td>29.5</td>
<td>0.4</td>
<td>384,264</td>
</tr>
<tr>
<td>1928–1929</td>
<td>1.5</td>
<td>47.0</td>
<td>13.7</td>
<td>34.2</td>
<td>0.4</td>
<td>370,192</td>
</tr>
<tr>
<td>1929–1930</td>
<td>1.8</td>
<td>42.2</td>
<td>18.9</td>
<td>37.1</td>
<td>0.1</td>
<td>357,168</td>
</tr>
</tbody>
</table>


Note: Data of 1926–27 is missing due to a lack of data. Original data on 1924–1925 and 1925–1926 are for 8 months and 10 months respectively; thus, data for one year are 1.5 times the original data of 1924–1925 and 1.2 times that of 1925–1926.

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products clearly show how serious it was in securing domestic outlets for its huge production capacity, considerably enlarged by GES.

Even when TISCO succeeded in diversifying its production lines to adjust to the shift in the consumption pattern, in reality the company experienced serious difficulties in selling such steel to mass consumers, because these consumers did not place as large orders as the railway industry or the Government Store. This meant that, in order to explore the domestic demand led by mass consumers, TISCO had to conduct separate transactions with each customer or outlet, which resulted in a serious informational asymmetric problem between the two parties in terms of price, quality, contract observance, etc. Subsequent efforts to solve such problems of informational asymmetry to establish sustainable transactions formed the history of the development of TISCO’s sales department during the 1920s. This was one of the essential strategies of the company to achieve sound and stable progress in the 1920s. In the following section, we will clarify what kind of informational problems TISCO faced and how TISCO developed its sales department to solve the problem of securing outlets for its enlarged production capacity.

Sales Department during the 1910s

Before describing the development of the sales department in the 1920s in detail, we will start with the initial stages of the establishment of TISCO’s sales department during the 1910s, when the company had just begun production operations.

Sales activities of TISCO, which involved the business of searching for new customers, receiving orders, accurately informing the production section of those orders, and delivering the finished products to customers within the allotted time, began in 1911. At the initial stage, sales were conducted by a small cell of only about half-a-dozen clerks and typists under the supervision of an inexperienced D.C. Driver, and were restricted to delivering orders to customers. No efforts were made to find new customers because most of the company’s products were sold to two big purchasers, the railway companies and the Government of India, through negotiations conducted by TISCO’s managing agency. Therefore, the efforts of the sales staff for the most part had to do with how to raise efficiency and accuracy in handling goods in stock and delivery to customers.

Limiting the sales department strictly to delivery work does not mean, however, that there was no meaningful development or improvement in its functioning during that period. The initial proposal for improvement was put forward by B.J. Padshah, one of the leading directors of Tata Sons, a managing agency of

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38 TA, GMC file 61, part 1, ‘Letter of B.J. Padshah to R.B. Shover, the General Manager of TISCO on 13 April 1915’, p. 239.
39 TISCO, Tata Steel Diamond Jubilee, p. 160.
TISCO, just after the outbreak of WWI in 1914 in an attempt to raise the department’s communication skills. Padshah relates, ‘I observed that customers continue to make complaints about our deliveries’.\textsuperscript{40} C.P. Perin, consulting engineer of TISCO, supported the proposal, stating, ‘I note what you say in regard to lack of co-ordination between the present sales office and the shipping department’.\textsuperscript{41} The department was then reorganised on the basis of a rolling schedule to standardise production and delivery times.\textsuperscript{42} Indeed, ‘standardisation’ would be a key word in reforming not only the sales department but also some of TISCO’s corporate organisations as exemplified best in its efforts at forming a scientific labour management system in the mid-1920s based on wage standardisation.\textsuperscript{43}

The 1920s: Risk of Customer’s Breach of Contract and an Indirect Sales Strategy

The expected role of the sales department was significantly changed in the 1920s when GES was completed and the consumption pattern of steel market changed. Efforts were now required to find new outlets for domestic mass consumers and collect and deliver necessary information about them for the purposes of stabilising sales transactions. A letter written by General Manager T.W. Tutwiler to J. Peterson, a leading director of Tata Sons, on 13 February 1921, indicates just how seriously top management felt about the necessity to reorganise the sales department to meet the new requirements. ‘I quite realize that it is necessary, in view of the diversified articles which we will manufacture when the Great Extensions are completed, to have a pucca (pukka) selling organization’.\textsuperscript{44} Peterson also implies the necessity to attach a new role to the sales department. He wrote,

The functions of a Sales Department are to sell the whole product of the works at as high a price as can be obtained...This was in my opinion the chief danger of the whole scheme of the Great Extensions...Up to the present we have never been faced with a difficulty of that kind.\textsuperscript{45}

\textsuperscript{40} TA, GMC file 60, ‘Letter from B.J. Padshah to C.P. Perin on 11 December 1914’, p. 217.
\textsuperscript{41} Ibid., p. 213; ‘Letter from C.P. Perin to B.V. Padshah on 14 December 1914’.
\textsuperscript{42} Ibid.
\textsuperscript{43} Such attempts to standardise wage level can be seen also in cotton mills in the 1920s and 1930s. And the attempt to standardise wage level at cotton mills in these two decades became one of the significant causes of continuous labour unrest. For instance, see, Morris, The Emergence of an Industrial Labor Force, pp. 137–41, Chandavarkar, The Origins of Industrial Capitalism, Chap. 8.
\textsuperscript{44} TA, Tutwiler Paper Box 12 file 2, ‘Letter of T.W. Tutwiler to J. Peterson on 13 February 1921’.

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The statement of Peterson implies what was to become the most important task for the sales department under the new situation: in sum, gathering necessary information on maximum local prices. In addition, the sales department also had to collect information on customer location and whether or not they could be trusted to observe their contracts with TISCO, while at the same time delivering accurate information about the quality of TISCO products to those same mass consumers, who had no other means of knowing.

Of course, the task of collecting and delivering information to expand and stabilise transactions was necessary even when TISCO was selling most of its products to the railway companies and the Government Store during the 1910s. Sales to such bodies, however, did not trouble TISCO seriously, as the contracts were not too many and the amount of steel delivered per contract was very large, so that much less information was required to sell its products. In addition, there were reliable guarantees that such contracts would be repeated and honoured between TISCO and the railway companies or the Government Store over the long term, factors that also reduced the necessity on the part of TISCO to collect information regarding customer reliability.

Drastic expansion of production after GES as well as change of leading customers from official or semi-official bodies to private mass consumers scattered all over India resulted in an informational problem, which was quite serious after the mid-1920s. According to statements from a number of merchants with extensive experience in the iron and steel trade in India and the US as well as Europe, it was very difficult for any Indian concern to collect the necessary information to stabilise its transactions. For example, Mott, a merchant versed in both British and Indian steel trade, reported to TISCO in 1930 how sales to mass consumers ('sales to bazaar', in his words) were far more difficult in India than anywhere else in the world. To begin with, he prefaced his statements with the remark, ‘It is unsafe to compare European and American organization with that [in India], which is necessarily quite different’, then explaining as follows why sales in India were difficult:

The obstacles in the way of your selling department are, in my opinion, almost endless. For instance, it is quite a simple matter for a buyer in India to arrange for a friend in Europe to write or cable a ‘bogus’ quotation. I have known of cases where a dummy offer has been given in exchange for a letter declining the quotation, before the latter was written—and this sort of thing could frequently be done and no outsider would be any the wiser ... Various persons reported how difficult it was to grasp reliable market information.

Ibid.

Ibid.

Ibid.
General Manager Tutwiler, an American expert in the iron and steel business, agreed with Mott, saying,

I do not think a selling organization organized on the lines that are following in western countries will be the most efficient for India, as the Indian market and method of selling material are so entirely different from western countries.49

Such were the difficulties TISCO faced in collecting and delivering information to expand domestic sales outlets after GES. How to reduce such difficulties became the major target of its sales strategy during the 1920s.

Although realising steady and stable exchange of information between mass purchaser and seller is not an easy task for any transaction, it became quite a serious challenge for business undertakings after the mid-nineteenth century all over the world due to drastic expansion of production capacity triggered by the industrial revolution. Such challenges were handled, for instance, as in the case study of leading steel companies in the US, by establishing internal company-owned sales departments at the beginning of the twentieth century to directly collect and deliver necessary sales information, which during the nineteenth century had been exchanged through outside merchants.50

Instead of establishing internal sales departments as was done in the US steel companies, TISCO decided, in the beginning of the 1920s, to use the helping hand of local merchants to collect necessary customer information. In a letter to Tutwiler, John Peterson clearly indicated an intention of using such an ‘indirect sales system’:

You will remember our discussion regarding the Sales Department when I was at Jamshedpur. I may recapitulate briefly the conclusion we arrived at. We thought that Padshah’s scheme for a subordinate company which would consist of the principal Indian dealers was a very good one ... Personally I would prefer that we should sell ourselves. It is obvious that we cannot do that without some sort of organization and it is obvious that we cannot pick up an organization in a few months.51

Time was indeed of the essence for TISCO, so it decided to turn to the local merchants experienced in import steel retail activities to accumulate information instead of directly taking on the task itself.

TISCO’s positive utilisation of the existing market network after GES, on the one hand, means that a sufficient sales network for steel transactions had been established already by indigenous local merchants and, on the other hand, suggests


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that after GES the interests of TISCO and such indigenous local merchants clashed over the price and quality of steel.

Problems Relating to the Employment of Local Merchants

The conflict of interests between TISCO and the indigenous local merchants resulted in several other informational problems. To begin with, using merchants to collect customer information increased the probability that TISCO could have lost possible profit, due to the superior information such merchants possessed on the maximum prices payable by its customers and the ability to bargain at prices below the maximum. Such information asymmetry was an important source of profit for middleman merchants, and TISCO had to accept it to some extent, although the company could have lost most of its profit if the asymmetry between the end-user price and merchant’s price got too far out of hand.

Second, the informational superiority exercised by indigenous local merchants was not limited merely to customer price information, for they also had advantages over end users regarding the quality of products, which also threatened TISCO’s interests. This problem originated from the fact that end users did not have the same ability as merchants to judge differences in quality of steel. There were two types of steel available for mass consumption in India at that time: a higher-quality steel produced by British steel companies and TISCO (British standard specification steel), and a lower quality supplied by European continental makers (non-British standard specification steel). This state of affairs allowed plenty of leeway for merchants to deliver lower-quality steel products from the Continent to customers who had paid for TISCO steel and keep the higher-quality TISCO steel for themselves. Such a problem not only hurt end users, but also damaged TISCO, because the delivery of lower-quality steel would result in a situation similar to ‘bad money driving out good’, as in the textbook case of the ‘lemon market’ for used cars. That is to say, no end user would pay the price for higher-quality steel if he anticipated in advance that a lower-quality product might be delivered. The result would therefore be that TISCO steel did not receive a price corresponding to its quality.

Besides, TISCO faced another informational problem. If local steel merchants took advantage of better familiarity and experience than TISCO with not only present but also future estimated prices, and succeeded in offering considerably lower prices to TISCO than end users could pay, TISCO would of course lose

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52 Such circulation of two different qualities of steel in Indian market in the colonial period is pointed out, for instance, by Wagle, ‘Imperial Preference and the Indian Steel Industry’, p. 124.

53 Oxford Dictionary of Economics, for instance, defines ‘lemon’ as follows. ‘An unsatisfactory product, where quality cannot reliably be checked before purchase. Even if some goods of the same types are, in fact, perfectly satisfactory, their price is lowered by the risk that the purchaser may get a dud’. Black, Oxford Dictionary of Economics.
profits. This happened, apparently, according to a letter from Peterson to Tutwiler, who had insisted on putting sales completely into the hands of indigenous local merchants.\(^{54}\)

If they [local merchants] hold stocks for us and we give them prices from time to time, they will naturally buy our stocks when the market suits them and then when prices go up will compete with us in our own material. That may sound far-fetched, but I think it is quite likely to happen, as they will have far better information as to the trend of the market than we will and, in addition, will know all about our stock in any given place, whereas we shall know nothing about theirs. R.D. [Tata] points this out.\(^{55}\)

Since these informational matters posed a serious risk to TISCO’s profit earnings, the company tried to address these problems by establishing depots or stockyards in major regions to accumulate market information on its own. On such establishment of depots or stockyards, Peterson first wrote,

Both R.D. [Tata] and I think it would be sound to open a stockyard in some one place in order to give experience and to train staff, if nothing else; and, if you agree and think it is possible to supply any material for sales, we are inclined to try the experiment at once.\(^{56}\)

Peterson wrote also,

I do not think we come to any definite conclusion as to the places at which these stocks should be kept. So far as my recollection goes we thought of Cawnpore, Delhi, Madras and possibly Bombay, Nagpur and Patna.\(^{57}\)

\(^{54}\) T.W. Tutwiler responded to the letter of John Peterson, expressing fear of unnecessary costs owing to an establishment of depots as follows: ‘Since talking to you over here, I have been reconsidering, and I am not so sure but what would be better, instead of opening up depots ourselves in different centres, to make arrangements with such people like Burn, Jessop, Martin, (or other people who have a long standing in the different centres), who have branches in these different centres, to carry stocks on our account and sell on a commission, or come to an arrangement with them similar to the existing arrangement for material supplied to the Engineering trade. If we picked out centres such as Cawnpore, Delhi, Bombay, Nagpur, Lucknow, the firms which have the best standing, then they could carry stocks for us and sell to people like Madhoram, Bhanamal, Nunaimal Jenkidas, on terms which would be given them by the Head Office and on which they would draw a commission. Some such scheme as this, I believe, would be much better than trying it on our own, for we are bound to have a very heavy overhead, whereas these people have existing organizations and knowledge of the trade which would take us years to get and which we will pay through the nose before we establish ourselves.’ TA, Tutwiler Paper Box 12, file 2, ‘Letter of T.W. Tutwiler to J. Peterson on 14 May 1923’.

\(^{55}\) Ibid., ‘Letter of J. Peterson to T.W. Tutwiler on 21 May 1923’.

\(^{56}\) Ibid.

\(^{57}\) Ibid., ‘Letter of J. Peterson to T.W. Tutwiler on 8 May 1923’.
Since it had been this difficulty in collecting information about end users that had motivated the company to set up an ‘indirect sales system’, in which TISCO subcontracted selling business to indigenous local merchants, it could not have expected that depots or stockyards would succeed in accumulating necessary information in a short time. Thus, TISCO’s depots and stockyards needed time to replace the indirect sales system under which indigenous local merchants enjoyed considerable profit, indicating that TISCO’s indirect selling strategy during the 1920s should be considered as a stop-gap measure to expand sales to mass consumers as smoothly as possible.

The Sales Department at the Beginning of the 1930s

These informational problems in the dealings between TISCO, end users and merchants were gradually solved through continuous efforts by the company after the mid-1920s to collect and accumulate reliable information on price, quality and contract observance on its own. Such efforts reduced the profit margins of indigenous local merchants, strengthened TISCO’s control over local markets and provided a basis for gains by the company in not only economic but also, presumably, political prestige throughout India. The key factor in solving the company’s informational problems was the setting up of the above-mentioned depots and stockyards.

Figure 1 provides a sketch of the sales department’s organisational set-up around the beginning of the 1930s, apparently showing how the sales department with half-a-dozen staff members in the 1910s developed into a complicated organisation with a head office in Calcutta, branch offices and depots and stockyards. The manager of the head office in Calcutta, which was under the direct control of Tata Sons in Bombay, supervised the policy and administration of the whole operation, which can be divided into sales to (1) foreign markets (mainly exports of pig iron), (2) the government, railways, and engineering firms, and (3) local merchants in mass consumption. While categories (1) and (2) were handled mainly by the head office, category (3) was the responsibility of branch offices which were located in leading trading centres outside of Calcutta around the beginning of the 1930s—Bombay, Nagpur, Lahore, Cawnpore, Jullundur, Madras, Meerut, Secunderabad, Vizianagram, Bangalore, Hathras, Ranchi and Sabarmati.\(^58\)

The development of its corporate sales organisation shows how TISCO actually went about setting up institutions to collect the information it needed to expand and stabilise its steel transactions in the Indian market.


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How Did the Development of Sales Department Change TISCO’s Relations with Local Dealers?

Through the development of its depots and stockyards, TISCO succeeded in collecting the market information on its own, gradually resolving its informational problems. The fact that TISCO did successfully acquire such information is clearly seen, for example, in the changes that occurred in its bargaining power over pricing vis-a-vis large local merchants at the beginning of the 1930s, a power that, on the one hand, reduced the local merchant’s margin of profit, and, on the other hand, expand the source of profit of TISCO. The following paragraphs explain how TISCO enhanced its bargaining power over pricing.

One interesting episode shows that TISCO succeeded in raising its bargaining power by tightening the terms of forward contracts or resale, thus reducing the chance for dealers to profit from portfolio operations through forward or resale contracts. B. Banerjea, representative of the Calcutta Iron Merchants’ Association, reported to the Indian Tariff Board on 19 December 1933 that TISCO would not grant any forward contracts to indigenous steel merchants, while such merchants...
themselves had previously enjoyed at least six-month forward contracts when they were importing materials from abroad.\(^5^9\) This prohibition of forward contract indicates that TISCO attempted to profit from seasonal fluctuations of steel prices on a basis of long term steel price information which TISCO collected at depots and stockyards, while reducing the margin of profit of local merchants from such seasonal fluctuations. In addition, Banerjea reported that TISCO had taken several other measures to hinder the business of existing local dealers and increase its control over regional market prices. One of them was to prohibit resale of its products, even when there were regional differences in steel prices. If local dealers took the advantage of resale, it would become difficult for TISCO to profit from region-by-region pricing. On the basis of price information of a wide range of regions of the subcontinent that TISCO succeeded in collecting, the company now attempted to profit from the region-by-region pricing while prohibiting local dealers to resell. Banerjea explained the prohibition as follows:

Formerly Calcutta was the principal centre of the whole of Northern India. Now our market has been circumscribed to Calcutta and its neighbourhood—I mean its suburbs only. What Tata’s do is this: if you study their price list, you will see that they give their least price for the up-country one rupee less than the Calcutta price... If we want to sell goods to our up-country customers, we are at a disadvantage of one rupee. Another point is this that Tata’s do not permit us to deliver goods directly from the station at which we receive the goods. We are compelled to take the goods direct from the station to our yard and then take it back to the station and book the same to our customers... For example...[i]f I am to send my goods to Banaras, Tata’s will require me to prove that I have got a warehouses or establishment there.... Suppose the English Company is sending their goods to India, if they were said that unless they have warehouses in Calcutta, Bombay, Madras and Karachi, they would not be permitted to export their goods to those places, what became of their position?\(^6^0\)

He concludes by saying that Tata was his toughest competitor in certain markets. TISCO’s growing control over pricing vis-a-vis indigenous local dealers had already started at the beginning of the 1930s and the profit margins of those dealers decreased drastically. This can also be seen in the oral evidence given by other dealers. For example, Maresh Nath Mookerjee, a representative of various Indian importers of iron and steel, expressed his grievance to the Indian Tariff...
Board, saying, ‘We feel that the entire advantage went to Tata in the way of a monopoly to the extent of their entire output’.61

The strong bargaining power gained by TISCO over indigenous local merchants was not limited to the area of pricing but extended to quality control, as symbolised by the ‘TISCO dealer system’. Under this system, which was established before 1932–1933, TISCO would first select, on a basis of the information the company collected at its own depots and stockyards, whom it considered to be ‘reliable local merchants’ and propose them to contract to sell only TISCO steel in exchange for a commission of ₹ 2 per ton of steel sold, which presumably made up for the lost opportunity to profit from deceiving customers over the quality of the steel delivered.62 How effective the dealership system was in solving the quality problem cannot be shown empirically, due to a lack of conclusive evidence. However, the Indian Tariff Board reported that ‘as the result of this scheme [the TISCO dealer system] the Steel Company has been enabled to increase the manufacture and sale’, suggesting that the system was at least effective in expanding sales with fair prices and contributed to the company’s development.63 The effectively functioning TISCO dealer system must have been made possible largely owing to the information on ‘reliability on local merchants’ which TISCO succeeded in gathering at its own depots and stockyards.

The strengthening of TISCO’s bargaining power over indigenous local merchants in pricing as well as terms of contracts in the 1930s has sometimes been considered to have occurred largely from tariff protection, rather than the company’s efforts to resolve its informational problems. For example, the president of the Indian Tariff Board stated in 1933:

As a matter of fact the complaint that Tatas have reached the position of a relative monopoly is made not merely in regard to sheets but also with regard to other steel products... and the real reason why that complaint is made is... that ... the prices that have got to prevail in this country under the tariffs, are such that the imports are being gradually shut out and Tatas are necessarily expanding.64

Maresh Nath Mookerjee, an Indian steel importer, agreed. He stated, ‘We quite agree there. What we wanted to point out was that the existing high duties ... gave them [Tatas] another big profit and that affected the consumer.’65

61 Ibid., ‘Evidence of Mr. Maresh Nath Mookerjee, recorded at Calcutta on 20 December, 1933’, p. 506.
62 Ibid., Vol. 1, p. 189. Form of Application for Enlistment as a Tata Dealer is in TA, Tariff Board file 28, ‘Notice to Tata Dealers’, on 21 April 1933.
64 Ibid., Vol. 4, ‘Evidence of Mr. Maresh Nath Mookerjee, recorded at Calcutta on 20 December’, p. 525.
65 Ibid.

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However, we do not agree with the argument that tariff protection was the leading cause of TISCO’s increased bargaining power on a basis of studies of price data of steel circulated in India. According to the same Indian Tariff Board Report in 1933, on the one hand, TISCO realised price of structural section steel per ton in 1927–1928, 1928–1929, 1929–1930, 1930–1931, 1931–1932 and 1932–1933 were ₹128, ₹125, ₹125, ₹130, ₹123 and ₹120 respectively, while TISCO-realised prices of bar steel per ton for the same six year were ₹138, ₹131, ₹134, ₹127, ₹111 and ₹118. On the other hand, average after-tariff-levied prices of British steel that landed at Indian ports (tariff rates) for the same six years were ₹138 (₹19), ₹132 (₹19), ₹132 (₹19), ₹134 (₹19), ₹135 (₹19), and ₹136 (₹24) per ton in cases of structural section, while they were ₹148 (₹26), ₹141 (₹26), ₹144 (₹28), ₹133 (₹28), ₹131 (₹30), and ₹129 (₹33) per ton respectively in cases of bar steel. The evidence of the Indian Tariff Board Report indicates several interesting features of the price competitiveness of TISCO steel over the British steel. On the one hand, the evidence suggests, as was pointed out by the statement of the Indian Tariff Report, that the after-tariff-levied prices of British steel continued to be higher than the TISCO realised price in the mid-1920s owing to tariff protections, implying that TISCO steel gained a competitive edge over British steel owing to the prevailing tariff in the period. On the other hand, the evidence also indicates that such price competitiveness of TISCO steel shown by price differences between after-tariff-levied prices of British steel and TISCO realised price did not reveal any apparent ‘improving’ trend until 1930–1931 (the differences remained almost ₹8 in case of structural section steel, and ₹9 in case of bar steel), while the competitiveness described by the price differences drastically increased after around 1931–1932, probably owing to factors other than tariff protection, suggesting that TISCO steel did not enhance its competitiveness over British steel owing to the tariff protection in the mid-1920s. These facts mean that TISCO’s achievement in the mid-1920s in ‘improving’ its bargaining power over local merchants could have resulted from factors other than enhancing price competi-iveness of TISCO steel due to introduction/increase of tariff protection.

What was more effective, in our opinion, in strengthening TISCO’s bargaining power over indigenous local merchants were the constant efforts by the company’s sales department to accumulate market information at depots and stockyards, as has been studied in the foregoing sections. In order to cultivate an emerging demand led by mass consumers, TISCO invested a huge amount of money in the task of collecting market information during the 1920s. The following statement, for instance, indicates how much TISCO spent to sell a ton of steel on a basis of case study of selling cost of galvanised sheet metal.

66 Calculated from data in Ibid., Vol. 1, p. 63. Price of structural section steel is that of heavy structural section steel.
67 Ibid., p. 252. Landing charge is Rs. 2.75. Ibid., p. 61.
There is the cash discount of one per cent, merchants’ commission one per cent, then the rebate of ₹ 1–8, miscellaneous claims 0.25 per cent, defective 0.25 per cent and bad debts 0.25 per cent. It gives you on galvanized sheets 2.75 per cent of their fair selling price plus ₹ 1–8 per ton. I have worked out on their fair selling price as they have given and it [total cost to sell product] is about ₹ 6.68

The evidence suggests TISCO spent roughly ₹ 6 to find an outlet for a ton of its own steel, a cost spent to collect market information to sell the steel. Since TISCO sold a total of roughly 2,610,000 tons of steel during the 1920s, it spent presumably as much as ₹ 15.66 million, or 2.9 per cent of the total cost of production (₹ 534.7 million), to collect market information to find an outlet for it for that decade. This amount comes to 10.6 per cent of the total wages paid (₹ 146.7 million), 20.8 per cent of total gross profits earned (₹ 75.2 million), and 59.5 per cent of total dividends paid out (₹ 26.3 million) during the decade.69 This is just a rough estimation, but it indicates the considerable expenditure which TISCO undertook to collect market information and find additional domestic outlets for its products during the 1920s. This expenditure presumably enabled TISCO to adjust its consumer base to the shifting consumption pattern of steel market of India in the 1920s.

The increase in TISCO’s bargaining power over indigenous local merchants during the 1920s had an interesting implication for Indian economic as well as political history, for it clearly shows how influential such industrial entities as the House of Tata had become by the 1930s. In other words, the study of the changing power balance between TISCO and indigenous local merchants is an excellent example of how business leaders of independent India, such as the Tatas, strengthened their control over other smaller domestic economic actors and built the economic and, possibly, political bases that would enable them to fill the vacuum created by the retreat of British expatriate businesses after independence. C. Baker has pointed out that after the outbreak of the great depression of the 1930s, ‘in much of the region [of Tamilnadu], rural marketing came more under the ultimate control of urban financial institutions which channelled much of the returns into the urban sector’.70 This image of the relationship between powerful urban financial institutions and rural marketing coincides well with the case of TISCO; that is, the strengthening of the bargaining power of urban-based merchant-capitalist financiers over smaller traders probably being a common feature in India around the 1930s. This could, first, lead to an attractive assumption that the commanding

70 Baker, An Indian Rural Economy, p. 333.

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power exercised by large indigenous capitalists over smaller traders in and after the 1930s offered an excellent opportunity to realise India’s planned economic development, which required the wide-ranging influence of leading industrialists like the Tatas at the apex.

Second, such a tight connection established between urban-based merchant-capitalist financers and inland markets resulted in these urban magnates’ deep involvement in the domestic economy of South Asia. This led Indian indigenous business giants also to believe that preserving domestic markets was in their interest, a view shared by some indigenous local merchants and entrepreneurs who had less international competitiveness, even before the 1920s, when such indigenous local merchants fiercely opposed the government-led laissez-faire economic policy. Thus, both Indian indigenous business giants such as the Tatas and indigenous local merchants and entrepreneurs shared a similar view on the anti-government-led laissez-faire policy after the 1920s. Therefore, we might further assume that such a shared view could have formed the foundations for the collective action of the Indian business classes, which probably helped develop a united front of the business classes of colonial India at the last phase of the colonial period. Of course, further study would be necessary to strengthen these assumptions.

Conclusion

This article has first attempted to show that, in addition to the production expansion by GES, the changing pattern of steel consumption largely led by an increase in the demand of mass consumers was one of the keys to TISCO’s business strategies during the 1920s. We have further described the manner in which TISCO developed a business strategy to take advantage of the helping hand of existing indigenous local merchants to expand its outlets within the domestic market network that such local merchants had built. Of course, the use of such a helping hand was not risk-free; for indigenous local merchants took advantage of the market information they possessed on maximum prices acceptable to end users and differences in steel quality in order to manipulate prices and reduce TISCO’s margin of profit in their favour. We thus showed how TISCO tackled these problems by constructing its own depots and stockyards in important trading centres in order to reduce its initial losses in bargaining power by increasing its own direct channels to end users.

Finally, we have suggested, first, that TISCO’s bargaining power over pricing vis-a-vis indigenous local merchants changed in the course of time and that the tide started to turn in TISCO’s favour as early as the 1930s. And it may well have

71 On such collective action of Indian business classes, see, for instance, Markovits, Indian Business and Nationalist Politics, or Chakrabarti, ‘Why Did Indian Big Business’

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been this strengthening of control over the domestic steel market that provided a foundation for both the economic and political power and prestige that the House of Tata would enjoy after the 1930s. In addition, this study suggests that with the establishment of its wide-ranging domestic market network the House of Tata might have perceived the domestic market as its own interest, resulting in the House considering protection from foreign competition as an important strategy in colonial India. This perception might have established, we believe, a foundation of a common stand with some local merchants and entrepreneurs who had opposed the laissez-faire policy of the colonial government for long, although further study is undoubtedly necessary to strengthen these assumptions.

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