



Productivity Trends in Selected Indian Steel Firms: An Econometric Analysis

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ABSTRACT

The Indian steel industry is almost 100 years old now, but the real beginning was only made in the 20th century. The Indian steel sector is booming and now it occupies the fourth position globally. In the year 2011 India's crude steel output of 73.6 million metric tonnes constituted 4.85 per cent of the total global production. In this paper analysed partial (capital and Labour) factor productivity indices and their growth and consistency performance of the selected ten Indian steel firm. The results revealed that capital has been influenced in six firms out of ten during the study period. The labour productivity has been observed that the labour has greater influence on overall productivity of all the firms.

Keywords: Indian steel firms, Partial (Capital & Labour) factor Productivity indices, Growth rates of partial factor productivity indices.

1. Introduction

Steel industry is one of the basic or key industries in the national economy of any country. The iron and steel industry constitutes one of the main foundations on which the industrial structure of the country can be built. It is the core industry for the primary, secondary and tertiary sectors. The Indian steel industry is almost 100 years old now, but the real beginning was only made in the 20th century. The Indian steel sector is booming and now it occupies the fifth position globally. In the year 2011 India's crude steel output of 73.6 million metric tonnes constituted 4.85 per cent of the total global production. According to the International Iron and Steel Institution (IISI), during the year 2011 world crude steel production stood at 1518 million metric tonnes. Now Asia has become the largest producer of steel in the world.

Different researchers, namely, Goldar (1986), Ahluwalia (1991), Pradhan and Barik (1998), Mongia and Sathaye (1998), Schumacher and Sathaye (1999), Mongia et al. (2001), Kathuria (2002) and Mohanan (2009), have attempted to study the productivity and related aspects of steel industry in India. However, these studies do not throw light on the relative productivity performance of the different firms in the industry. Therefore, the present study is an attempt to bridge this gap with the objective of examining the steel firms in India using the Partial factor productivities, capital intensity, relationship of labour productivity and capital intensity and index of efficiency of labour. So, it is hoped that this study will make an important contribution to the literature of growth and productivity analysis for the steel industry in India.

2. OBJECTIVES OF THE STUDY

In view of the importance and the need of the steel, an attempt has been made to study the following objectives for the selected firms in Indian steel industry. The main objectives of the study are to examine the partial (Capital & Labour) factor productivity indices and their growth and consistency performance of selected Indian steel firms.

3. DATA BASE AND METHODOLOGY

The present study is based on secondary data and covers the period from 1989-2009. To examine the objectives of the study, the data has been drawn from PROWESS, compiled by Center for Monitoring Indian Economy (CMIE). For this study, we have taken ten Indian steel firms on the basis of their performance in terms of market share and sales during the period 1989-2009. Keeping in view of the study objec-

tives, we have collected the time series data on value of output, fixed capital, and number of employees (labour), of the following firms. 1. Steel Authority of India Ltd. (SAIL), 2. Tata Steel Ltd. (TSL), 3. Rashtriya Ispat Nigam Ltd. (RINL), 4. Maharashtra Elecktrosmelt Ltd. (MEL), 5. National Aluminium Co Ltd. (NALCO), 6. Hindustan Zinc Ltd. (HZL), 7. Hindalco Industries Ltd. (HIL), 8. Hindustan Copper Ltd. (HCL), 9. Bharat Aluminium Co Ltd. (BALCO), 10. GKW Ltd. (GKW).

Deflators

Since the data collected are at current prices, to bring the data into constant prices, we have used appropriate deflation techniques for the different variables. To bring the data into constant prices, we have taken 1993-94 as the base year for ten firms throughout the study.

The value of output is deflated by the respective wholesale price index of industrial production. For estimating the capital stock, the present study adopts standard practice of perpetual inventory method. This Capital stock is deflated by the composite price index of machinery (electrical and non-electrical). Number of employees is deflated by consumer price index of industrial workers. Energy and Material inputs are deflated by the respective wholesale price indices of power & fuel and raw material. The price indices are taken from the various issues of Reserve Bank of India (RBI) bulletins. The consumer price index (General) for industrial workers is collected from <http://labourbureau.nic.in/indtab.html>

4. RESULTS AND DISCUSSIONS

Table-1 & 2 highlights the capital and labour, productivity indices and their growth rates and consistency performance for three periods of the ten selected Indian steel firms.

The capital productivity has been observed out of ten six are registered positive and only four are significant for the overall study period. The GKW has registered negative growth rate of capital productivity accounting for -10.67 per cent per annum during the period. The remaining three companies have registered negative growth rates and are insignificant for the overall study period. From the analysis it is clear that the capital has been influenced in six companies only during the study period. From the coefficient of variations it is observed that there is high variability of capital productivity indices in RINL, GKW and HIL and there is low variability of capital productivity indices in the remaining seven companies during the study period 1989-2009.

| CAPITAL PRODUCTIVITY INDICES | | | | | | | | | | |
|-------------------------------------|------|------|-------|-----|-------|------|------|------|-------|------|
| YEAR | SAIL | TSL | RINL* | MEL | NALCO | HZL | HIL | HCL | BALCO | GKW |
| 1989 | 100 | 100 | -- | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1990 | 106 | 102 | -- | 149 | 196 | 101 | 100 | 95 | 111 | 143 |
| 1991 | 100 | 77 | 100 | 163 | 182 | 66 | 109 | 134 | 126 | 140 |
| 1992 | 108 | 67 | 285 | 245 | 186 | 83 | 151 | 154 | 160 | 169 |
| 1993 | 118 | 62 | 513 | 346 | 255 | 123 | 39 | 168 | 189 | 206 |
| 1994 | 94 | 48 | 746 | 221 | 226 | 90 | 34 | 101 | 176 | 178 |
| 1995 | 86 | 52 | 1140 | 252 | 271 | 110 | 37 | 141 | 219 | 130 |
| 1996 | 79 | 62 | 1302 | 342 | 347 | 103 | 40 | 160 | 253 | 41 |
| 1997 | 70 | 62 | 1031 | 262 | 361 | 110 | 28 | 126 | 291 | 34 |
| 1998 | 63 | 53 | 683 | 293 | 381 | 138 | 28 | 128 | 314 | 26 |
| 1999 | 56 | 46 | 1080 | 231 | 325 | 147 | 22 | 138 | 333 | 25 |
| 2000 | 64 | 45 | 1371 | 230 | 377 | 164 | 25 | 53 | 255 | 34 |
| 2001 | 79 | 51 | 1703 | 160 | 322 | 181 | 28 | 104 | 274 | 12 |
| 2002 | 82 | 52 | 2023 | 182 | 285 | 221 | 28 | 76 | 237 | 13 |
| 2003 | 102 | 62 | 2682 | 168 | 293 | 204 | 43 | 84 | 286 | 12 |
| 2004 | 128 | 68 | 4071 | 123 | 356 | 175 | 48 | 88 | 114 | 13 |
| 2005 | 177 | 76 | 7080 | 298 | 512 | 92 | 56 | 88 | 51 | 17 |
| 2006 | 167 | 68 | 7094 | 248 | 582 | 148 | 61 | 134 | 76 | 31 |
| 2007 | 179 | 61 | 7477 | 270 | 568 | 192 | 73 | 209 | 163 | 24 |
| 2008 | 193 | 60 | 5326 | 327 | 384 | 128 | 70 | 204 | 169 | 31 |
| 2009 | 156 | 63 | 2946 | 299 | 334 | 74 | 65 | 120 | 175 | 105 |
| LABOUR PRODUCTIVITY INDICES | | | | | | | | | | |
| | SAIL | TSL | RINL* | MEL | NALCO | HZL | HIL | HCL | BALCO | GKW |
| 1989 | 100 | 100 | -- | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1990 | 115 | 120 | -- | 138 | 178 | 143 | 109 | 106 | 104 | 108 |
| 1991 | 131 | 136 | 100 | 142 | 173 | 180 | 127 | 164 | 122 | 110 |
| 1992 | 174 | 194 | 233 | 190 | 219 | 242 | 174 | 196 | 150 | 130 |
| 1993 | 218 | 251 | 405 | 242 | 275 | 331 | 211 | 225 | 198 | 162 |
| 1994 | 208 | 240 | 563 | 153 | 241 | 263 | 183 | 167 | 194 | 162 |
| 1995 | 232 | 290 | 817 | 175 | 281 | 322 | 222 | 270 | 241 | 171 |
| 1996 | 256 | 392 | 911 | 262 | 353 | 309 | 276 | 357 | 272 | 235 |
| 1997 | 273 | 456 | 688 | 292 | 357 | 350 | 250 | 310 | 304 | 264 |
| 1998 | 292 | 497 | 464 | 343 | 386 | 467 | 312 | 376 | 331 | 238 |
| 1999 | 301 | 595 | 752 | 328 | 365 | 531 | 401 | 534 | 385 | 187 |
| 2000 | 326 | 726 | 951 | 345 | 504 | 627 | 453 | 246 | 424 | 250 |
| 2001 | 375 | 861 | 1225 | 332 | 544 | 769 | 500 | 563 | 428 | 109 |
| 2002 | 385 | 928 | 1382 | 310 | 547 | 1206 | 537 | 429 | 375 | 102 |
| 2003 | 499 | 1222 | 1637 | 345 | 602 | 1508 | 1033 | 566 | 600 | 114 |
| 2004 | 624 | 1457 | 2202 | 288 | 693 | 1785 | 1261 | 753 | 566 | 132 |
| 2005 | 840 | 1973 | 2932 | 579 | 862 | 1914 | 1336 | 750 | 693 | 166 |
| 2006 | 725 | 1976 | 2710 | 471 | 890 | 3176 | 1607 | 1167 | 1283 | 359 |
| 2007 | 811 | 2068 | 3003 | 541 | 956 | 5904 | 2077 | 1890 | 2457 | 286 |
| 2008 | 978 | 2370 | 3080 | 706 | 829 | 5696 | 2171 | 1972 | 2503 | 990 |
| 2009 | 1176 | 3095 | 2779 | 899 | 924 | 4108 | 2133 | 1318 | 2746 | 2949 |

Source: Author calculation, * indicates Rashtriya Ispat Nigam Ltd., period-I (1991-98),

Period-II (1999-09) and overall (1991-09) Labour productivity growths have been registered positive and are significant at 1 per cent level of significant. It is observed that labour productivity has greater influence on overall production of the studied firms during the period. The Coefficient of Variation, it is observed that there is a greater variability in the labour productivity indices of eight firms and the remaining two MEL and NALCO companies less variability was seen during the

period 1989-2009.

Conclusion

Capital productivity has been observed that the capital has been influenced in six firms out of ten during the study period. The labour productivity has been observed that the labour has greater influence on overall productivity of all the firms. The Coefficient of Variation, it is observed that there is a greater variability in the labour productivity indices of HZL, BALCO, GKW, TSL, HIL, HCL, RINL and SAIL during the period 1989-2009.

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