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MNE Responses to Economic Liberalization in a Developing Country: Evidence from India

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This paper identifies and evaluates the impact of structural and economic reforms in India on the behavior and performance of Swedish multinational affiliates in that country. The paper identifies certain changes in behavior and performance which support the goals of economic reform, although these changes have been modest to data.

I. Introduction

In recent years, many developing countries have turned away from regulation and protectionism and embraced market-oriented economic reforms in order to stimulate long-run growth and development. The most radical reforms have taken place in the former socialist economies of Eastern Europe and East Asia, but the liberalization of domestic markets and international trade has been an essential ingredient of reforms in most other countries as well. Chile, India, Mexico, Thailand, and Turkey are only a few prominent examples of economies where more liberal and outward-oriented policies have been implemented to promote improvements in efficiency and economic growth.[1]

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1. For a recent discussion of the reforms in Latin America and the Middle East, see Dornbusch and Edwards (1995). World Bank (1993) outlines the experiences of some East Asian economies. Hassan, Ismail and Kimenyi (1995) examine the effects of IMF/World Bank stabilization programs implemented in the Sudan between 1977 and 1985.

One important element of the various reforms has been the creation of a more open environment for inward foreign direct investment (FDI). In fact, UNCTAD reports that only five of the 373 changes in national investment regimes during the period 1991-1994 involved increasing controls, while the remaining 368 changes were in the direction of liberalization or promotion of inward FDI (UN, 1995, pp. 272ff). Limitations on the maximum shares of foreign ownership have been relaxed, and new sectors have been opened for foreign investment. Many of the restrictions and regulations governing the behavior of foreign multinational enterprises (MNEs) have also been eased. For instance, the reforms have often made it easier for foreign affiliates to repatriate profits, make payments for home country technology, and import intermediate goods.

The increasing market orientation and liberalization have contributed to growing inflows of FDI to many of the reforming countries. The changes are most impressive in some of the countries where FDI was not allowed before the reforms - for instance, both Vietnam and China have become attractive host countries since the mid - 1980s - but the stocks of inward FDI have grown significantly in many other reforming economies as well (see UN, 1995, Annex Table 3). There is much less evidence regarding the effects of liberalization on the behavior and performance of already existing foreign affiliates, although these could well be important elements of the aggregate impact of economic reforms.

One of the few studies directly addressing this topic examines the responses of British MNEs to structural adjustment in sub-Saharan Africa during the period 1989-94 (Bennell, 1995). The study indicates that the reforms coincided with wide-spread disinvestment by the multinationals, in spite of slight increases in rates of return to capital. This type of contraction could obviously be a threat to the growth objectives of the reform programs, but the experiences from sub-Saharan Africa are probably not generalized.[2] One would expect

2. The disinvestment in sub-Saharan Africa appears to be caused by a combina- tion of weak "fundamentals", i.e., pessimistic economic and political forecasts, and remaining restrictions on foreign exchange transactions that complicate dividend remittances. See further Bennell (1995).

that MNEs, if anything, are typically less constrained than domestically owned firms by scarcities of financial capital and managerial expertise. They should therefore be in a better position to respond to the threats and opportunities created by changes in their environments. As an illustration, Blomström and Lipsey (1993) demonstrate that MNE affiliates reacted significantly faster than locally owned firms to the Latin American debt crisis of the early 1980s, with a sharp reorientation from domestic sales to exports. However, given the paucity of evidence, the reaction of foreign affiliates to economic reforms in developing countries is still largely a matter of conjecture.

This paper describes the impact of the Indian economic reforms introduced in the early 1990s on the behavior of Swedish-owned foreign affiliate in the Indian manufacturing sector. Our review highlights distinct responses in some areas, e.g. increases in equity ownership and investments in physical capital, but slow or no reactions in other areas, such as employment and exports. To some extent, this reflects the broad range of policies that impact upon MNE behavior, only some of which changed as a result of the reform process. It may also reflect the fact that pre-reform policies stressed goals such as employment, and efficient responses to reforms involve "corrections" of resource allocations that were imposed by host governments. An implication of this study is that successful economic reform requires patience and commitment on the part of the reforming governments. In particular, employment and export goals may take time to be realized. Nevertheless, some positive responses by incumbent MNEs are identifiable even in the short run, and these should serve as encouragement to host governments to persist in their reform efforts.

The paper proceeds as follows. Section II outlines the recent Indian reforms particularly as they affect MNEs. Section III discusses the responses of Swedish MNE affiliates in India to those reforms. Section IV provides a summary and a set of policy conclusions.

II. Indian FDI Legislation: From Regulations to Reforms

Regulation of Inward FDI, 1968-1991

From the mid-1960s until the mid-1980s, the Indian government's policy toward inward FDI and foreign MNEs was increasingly restrictive and hostile. The controls that were introduced during this period limited the extent of foreign participation in several industries and regulated many aspects of the operations of foreign firms. India's restrictive FDI policies were centered around two important institutions. In 1968, the Indian government established the Foreign Investment Board (FIB) and introduced cumbersome FDI licensing procedure.[3] The Foreign Exchange Regulation Act (FERA), introduced in 1973, made up the other major restriction to FDI, limiting the foreign ownership of Indian companies to 40 percent. Higher foreign ownership shares were allowed only in foreign affiliates in high priority sectors - with "sophisticated" technology or significant exports - but their operations were still circumscribed by stringent regulations. Imports of intermediate products were strictly controlled (and in principle prohibited if "comparable" products were available from Indian suppliers), expansion and diversification plans were thoroughly screened, and the companies involved were subject to higher taxes than companies with lower foreign ownership shares. Technology payments from the Indian affiliates were restricted, and even the hiring of foreign technicians was regulated by FERA. Remittances of dividends required the prior approval of the Reserve Bank of India (RBI), and foreign companies were not allowed to acquire or hold immovable property in India even for carrying out business activities.[4]

The operations of foreign-owned affiliates were also hampered by the more general policy environment. For instance, the Monopoly and Restrictive Trade Practices (MRTP) Act stated that firms could be

3. The Indian FDI policies from the late 1940s to the mid-1960s were relatively liberal, and FDI was considered a necessary source of financial capital, technology, and capital equipment. See Kidron (1965).

4. Joint venture companies with foreign ownership shares below 40 percent were formally treated as domestic firms. For more detailed discussions, see Mathur (1992) and Jacobsson and Alam (1994).

considered "large" or "dominant" in their markets with as small an asset base as 200 million rupees, corresponding to about USD 16 million in the mid-1980s.[5] Such firms were obliged to obtain prior approval from the government for the establishment of new operations, for substantial expansion, or for the merge or takeover of other companies. The weak patent regime - with relatively short patent terms and no protection for product patents in important areas like drugs, foods, and chemicals - constituted another disincentive to FDI (Stoever, 1991).

Consequently, India was not considered an attractive location for FDI, in spite of its large market. The average annual FDI inflows accounted for less than 0.3 percent of the country's gross fixed capital formation during the 1980s, as compared to an average of about 3 percent for all developing countries (UN, 1995, Annex Table 5). The tightening restrictions also led to some highly publicized withdrawals of FDI projects by leading MNEs like IBM and Coca Cola (in the late 1970s). In addition, it is likely that the various controls distorted the investment and production decisions of the foreign MNEs that remained in the country. The restrictive FDI policies did not begin to ease off until the mid-1980s, when Rajiv Gandhi came to power. However, the liberalization attempts were disrupted by the instability that dominated Indian politics in the late 1980s, and the reforms were generally considered as insufficient.

Reforms and Liberalization, 1991-

In June 1991, finding itself in the midst of a financial crisis (triggered by the increase in oil prices caused by the Gulf War), the Indian government was forced to introduce a new radical reform program entitled the New Industrial Policy (NIP). Although the short run objective of the reforms was traditional macroeconomic stabilization - lower inflation and reductions of the current account and fiscal deficits - the medium to long run aims focused on structural transformation and accelerated growth rates.[6]

Among other measures, the policy package entailed a significant

5. The threshold was increased to 1 billion rupees in 1985. See Revelius and Sami (1995).
6. For an overview of the reforms, see e.g. Ahluwalia (1994).

liberalization of the environment for FDI. Perhaps most importantly, the NIP defined 35 "high priority industries" in which new foreign investments or any increase in the equity participation of existing companies up to 51 percent foreign ownership were to be given automatic approval within 15 days. The licensing procedures for FDI in other industries were simplified, and license applications were to be decided upon within 45 days compared with the pre-reform situation where delays in the licensing procedure could amount to several years. Several new activities were also opened up to FDI, so that only the "small scale sector" and six industries reserved for public investment remained out of bounds for foreign investors. In addition, a Foreign Investment Promotion Board was established to speed up the processing of investment applications of "special national importance".

The reforms continued after 1991. The discriminatory treatment of companies with foreign ownership shares above 40 percent (as outlined in the FERA) was eliminated in January 1993, implying that all companies in India were to be treated equivalently to domestically-owned companies. As a consequence, foreign affiliates can freely remit dividends and other profits abroad. Moreover, they are free to borrow and raise deposits in India, to acquire or hold immovable property in India for business purpose, and to take over any Indian business, with the restriction that increases in foreign ownership beyond 51 percent still require special permission from the authorities.

The MRTP Act has also undergone extensive changes. Most importantly, the reforms have abolished the use of standard threshold levels to identify "large" and "dominant" firms. This means that the requirements of prior permission for any expansion, merger, or takeover have been lifted for many foreign affiliates. Instead of restricting the growth of companies, the Indian government has declared an increased emphasis on "controlling and regulating unfair and restrictive trade practices" (Government of India, 1991, pp. 6).

Other reforms affecting the activities of MNE affiliates include a substantial reduction in the number of goods subject to import license requirement, significant tariff cuts, devaluations of the rupee coupled to liberalization of the foreign exchange market, and simplifications of application procedures for technology transfer and licensing agreements.

Taken together, it appears that the reforms established in the wake of the NIP have encouraged a large inflow of foreign investment into the country, and the stock of inward FDI has tripled between 1990 and 1995 in nominal US dollar terms. The largest investment commitments during the period 1991-1994 came from the United States, followed by Switzerland, Japan and the United Kingdom. Overseas Indians, mainly residing in Dubai, the United States, and the United Kingdom, have also been large investors. Much of the new investment has taken the form of increases in the equity stakes of existing MNE affiliates.

Ⅲ. Responses to Reforms by Swedish MNEs

To examine how the Indian economic reforms have influenced the behavior and performance of foreign MNEs, we have collected detailed information on the operations of Swedish MNE affiliates in the Indian manufacturing sector during the period 1988-1994.[7] Swedish manufacturing MNEs have been present in the country since the 1920s, with non-electrical and electrical machinery as the leading industries. However, compared to other foreign multinationals, Swedish enterprises play a modest role in the Indian economy, ranking as only the 21st largest foreign investors. The 21 companies included in this study represent almost nine-tenths of the population of Swedish manufacturing affiliates with production in India both before and after the establishment of the NIP in 1991.[8] Table 1 identifies the 21 affiliates,

7. The company data were obtained from annual reports and interviews with company representatives in New Delhi, Bombay, Poona, Hyderabad, and Bangalore during the period September-November 1994. For details on data collection, see Revelius and Sami (1995).
8. The term "Swedish MNE affiliate" refers to Indian companies with at least 10 percent of shares owned by Swedish MNEs. There were three additional companies fulfilling the criteria of Swedish ownership shares and production in India both before and after 1991- Ericsson India Pvt. Ltd., Frigoscandia Winner Food Process Systems Ltd, and Quick Thread Pvt Ltd. These three companies were also contacted, but we were unable to acquire detailed quantitative data from them. Other excluded companies include: affiliates that were established after 1991, manufacturing companies with Swedish ownership shares below 10 percent, and Swedish trading and service companies in India. The Swedish Export Council (1994) reports that approximately 200 FDI licenses were granted to Swedish investors during the period 1982-1992.

their Swedish parents, their industry of operations, and year of establishment in India.[9] The companies are ordered in two groups according to the size of the international operations of the parents: the first group includes some of the world's largest MNEs, like ABB and SKF, while the parent companies in the second group are significantly smaller.

What reactions might we expect from the MNEs? Some anticipated reactions are fairly obvious. For example, the liberalization of foreign ownership restrictions should encourage many foreign MNEs to increase their equity shares in joint ventures to majority positions, and the reforms of the MRTP Act should facilitate the growth of existing affiliates. In other cases, the expected effects are less obvious. For instance, it is not obvious *a priori* what the specific responses will be to increased competition from inward FDI and imports. Potentially relevant changes include improvements in productivity, increases in exports and imports, associated with increased specialization of production, increased investments in plant and equipment. Given the essential empirical nature of MNE response patterns, the remainder of this section considers different indicators of MNE behavior.

Equity, Capita Stock, and Output

As expected, and like MNEs from other countries, most Swedish multinationals have responded to the Indian economic reforms by increasing their investments in that country. Such increases have taken two forms: increases in equity and investments in physical capital. The second and third columns of Table 2 show that the Swedish equity shares of their Indian affiliates increased in 8 of the 21 companies between 1990 and 1994, while only one MNE reduced its ownership share. All but two of the 10 largest MNEs now hold majority positions in their Indian affiliates. Before the reforms, only Sandvik, Fläkt, and Höganäs had Swedish majority ownership.[10] The responses of the

9. Some of the Swedish parent companies - e.g. Esab AB and Nife AB - have recently been acquired by foreign MNEs, but we have decided to keep them in the sample since the India affiliates are still in collaboration with Sweden. Moreover, ASEA Brown Boveri is considered a Swedish MNE, although it is formally headquartered in Switzerland.

smaller MNEs have been less pronounced than those of the larger MNEs. Only one smaller company has increased its equity share to a majority position.

Columns four and five of Table 2 show that the increased equity holdings have often been accompanied by increased investments in machinery and equipment. The gross fixed capital stock increased in 13 of 21 affiliates between Indian fiscal years 1990/91 and 1993/94, among them most of the affiliates of the larger MNEs.[11] It should be noted that the capital stock figures in the tables are expressed in current prices and overestimate physical investments - the wholesale price index increased by about 35 percent between 1990/91 and 1993/94. Taken together, the 21 companies in the sample increased their aggregate stock of fixed capital by well over 1,000 million rupees (about 50 percent in current prices or 35 percent in real terms) between 1990/91 and 1993/94, and over 600 million rupees worth of FDI approvals for new projects were granted to Swedish investors during the same period (SIA Newsletter, various issues). However aggregate employment in Swedish affiliates changed only modestly, falling from 18,216 to 18,073 during the period.[12]

Increased investment has been accompanied by a significant increase in the aggregate production in Swedish MNE affiliates. Columns six and seven of Table 2 illustrate substantial increases in value-added in 18 of the 21 affiliates. Aggregate value-added in the 21 companies increased by 29 percent in real terms between 1990-91 and

10. The Swedish ownership share of Atlas Copco was reduced to 40 percent when the FERA was introduced in 1973 and had not been raised at the time of writing. However, the remaining 60 percent is spread among a large number of individuals and institutions, which means that the Swedish parent retains effective control of the affiliates operations.
11. The capital stock data reported in the tables are from the Indian companies' annual reports, and they are calculated according to the perpetual inventory accumulation method. This means that depreciation is disregarded. Clearly we risk overestimating the capital values. However, the resulting bias is not likely to be very serious given the short time period covered, i.e. 1990-1994. This method of valuing capital stock in Indian companies follows the practice of other studies. See e.g. Ahluwalia (1991) and Ghosh and Neogi (1993). Most of the companies in the sample base their accounting year on the Indian fiscal year, i.e., April 1 to March 31, and the data presented in the tables generally refer to fiscal years 1990/91 and 1993/94.
12. In the absence of reliable information about actual hours of work, we measure labor as the total number of employees in the affiliates, including staff and supervisory personnel.

1993-94, which corresponds to an average annual growth rate of about 9 percent.

Changes in Capacity Utilization

A striking feature of the Indian economy has been the low levels of capacity utilization. Even in periods of relatively rapid growth, capacity utilization has been low, typically around 50 percent.[13] This is a fairly typical situation for countries that follow import-substituting development strategies. Import-substitution policies tend to emphasize capacity creation rather than the economic exploitation of capacity through specialization and exporting. Indian government policies prior to the reforms also retarded adaptation of production to demand fluctuations by allocation import licenses in proportion to installed capacity rather than to the highest bidders. Delays in granting import licenses also caused slowdowns in production adjustments.

Table 3 reports estimated capacity utilization ratios for our sample of Swedish-owned affiliates for pre- and post-reform periods. We have chosen to report averages for the three-year periods immediately before and after the reforms, in order to minimize the impact of short-run demand fluctuations. As expected, the sample companies show relatively low rates of capacity utilization in the period before the reforms. Capacity utilization rates in the second period, while still relatively low, increased modestly. It should be underscored that the increasing capacity utilization rates have often coincided with increases in the affiliates' production capacities, as shown by the earlier data on gross investment.

Changes in Capital-Labor Ratios

The reforms discussed in the preceding section could be expected to encourage increases in establishment-level capital-labor ratios, since, among other things, tariff reductions significantly reduced the cost of importing machinery and equipment from abroad. Estimated values of

13. See Jacobsson and Alam (1994).

the capital-labor ratios for the accounting years 1990-91 and 1993-94 are reported in the second and third columns of Table 4. The majority (14 of 21) of affiliates increased their capital-labor ratios between the two periods, with the average ratio for the entire sample increasing from about 115,000 rupees per employee in 1990-91 to 176,000 rupees in 1993-94 (in current prices).[14]

Labor Productivity

It is reasonable to expect economic reforms to stimulate improvements in productivity levels among domestic companies, since, among other changes, it became easier to import new capital equipment embodying new technology. Moreover, increased competition associated with increased inward FDI could be expected to stimulate restructuring and other cost-saving strategies within domestic firms.

One conventional productivity measure is labor productivity, defined as the ratio of gross value-added to total employment. In this study, value-added is calculated as the difference between sales and the cost of purchased raw materials, components, and finished goods. Labor is measured as described earlier. Improvements in labor productivity will reflect increases in other factor inputs relative to labor, as well as improvements in the efficiency with which labor inputs are used. The fourth and fifth columns of Table 4 report estimated values of labor productivity for the sample companies. All but one of the companies show increases in nominal value-added per employee. Adjusted for inflation, 18 of the 21 affiliates in the sample (Hilton Rubbers, Höganäs India, and Sandvik Asia being the exceptions) exhibit increasing labor productivity. For all 21 firms in the aggregate, real value-added per worker increased by a respectable 29 percent between the two years. The increase is especially noteworthy, since the Indian economy underwent a serious recession following the introduction of the NIP which, by itself, would contribute to reduced capacity utilization and lower labor productivity.

14. The large reduction in the capital-labor ratio for Noble Explochem Ltd should be discounted, since it is largely the result of an explosion in 1992 that destroyed parts of the company's factory.

Wages

A potentially important impact of liberalization is its effects on domestic wages. In particular, higher average real wages would represent an important gain to the host economy from the inward FDI stimulated by economic liberalization.

Wage data were available for 20 of 21 companies in our sample. In all but three companies, average nominal wage changes were positive over the period 1990 - 1994. Including all firms, average nominal wages increased by about 80 percent over the sample period. Excluding the top two performers, whose estimated wage bills may be exaggerated, the average nominal wage increase was approximately 45 percent. Given that the wholesale price index increased by about 35 percent over the sample period, a conservative estimate of the average real wage increase over the period is approximately 8 percent.

Capital Productivity

The expected impact of India's New Industrial Policy on capital productivity is ambiguous.[15] On the one hand, for reasons discussed above, it can be argued that economic liberalization promotes a more efficient use of all factor inputs, including capital. On the other hand, economic liberalization can also be expected to encourage increased capital investment, which would depress the ratio of value-added to capital, all things constant. Columns 6 and 7 in Table 4 report estimates of capital productivity for the two sample periods. It is difficult to discern any clear pattern. About half of the companies (12 of 21), among them most of the affiliates of large MNEs, exhibit lower capital productivity ratios in the post-reform period. Yet, over the entire sample, capital productivity increased by about 10 percent. It is notable that capital productivity increased over the sample period in spite of the generally higher capital-labor ratios discussed earlier.

15. Capital productivity is defined here as the ratio of gross value - added to gross capital stock.

Total Factor Productivity

Total factor productivity (TFP) is a composite measure of technical change and changes in the overall efficiency with which known technology is applied to production. Several alternative TFP indices can be estimated. In this study, TFP estimates are derived assuming a transcendental logarithmic (Translog) production function. The TFP estimate is essentially the log of value-added minus the weighted shares of log of capital and log of labor, where the weights are the income shares of the factors.[16]

However, it should be noted that the assumed competitive equilibrium conditions which justify the use of income shares as weights in the translog function - i.e., that capital and labor earn their marginal products - may well be violated in the Indian context. Hence, the TFP results must be interpreted with caution.

TFP estimates for the two sample periods are reported in columns 8 and 9 of Table 4. Ten of the 21 affiliates in our sample exhibit decreases in TFP values between the two periods, while 11 companies show increasing total factor productivity. The overall sample TFP value increases by approximately 5 percent. However, many of the estimated TFP changes are quite small, and the sensitivity of the TFP estimates to the assumption of competitive equilibrium in factor markets arguably makes the relatively small observed differences unreliable. On balance, the estimated increases in the partial productivity indices are probably more reliable guides to the productivity changes caused by the Indian reforms.

Other Measures of Performance

Over the entire sample, the mix of foreign versus local procurement of inputs did not change significantly between the pre and post-reform periods. This result may be explained by the fact that for many simple components and related inputs, reductions in customs duties still left foreign-made products more expensive than domestically produced inputs. However, interviews with the sample companies

16. The TFP estimations are discussed in closer detail in Revelius and Sami (1995). For another discussion of the application of TFP analysis in the Indian context, see Ahluwalia (1991).

indicated a tendency among the larger affiliates to increase their share of imported inputs in the more technologically sophisticated product categories, either because Indian-made versions of the inputs were unavailable or because they were of insufficient quality.

Similarly, earning from exports as a percentage of total sales did not show any clear direction of change for our sample of affiliates comparing the two sample periods. While all of the surveyed affiliates agreed that exporting had become a more viable strategy in the post-reform period, they also indicated that they had entered India to serve the large, protected domestic market. Hence, it was expected that conversion to export-based strategies would take time. In addition, concerns were expressed about exporting goods from Indian affiliates before the quality of those goods was comparable to the quality produced in other affiliates. The main concern of the MNEs was that poor quality Indian-made goods might erode the reputation for quality possessed by the parent company.

Taken together, the results suggest that Swedish affiliates responded in a modest but positive and largely predictable way to the Indian economic reforms. It is, of course, impossible to state what an "optimal" response pattern would have been. However, it is possible to offer several explanations of the relatively modest response in several areas, such as employment. One is that several of the affiliates had initiated large investment programs in anticipation of the reforms actually being implemented.[17] A second is that significant deterrents to economic restructuring remain, notwithstanding the reforms. Among the existing restrictions on MNE responses to reforms are political and trade union activism which make it difficult for foreign-owned firms to close down inefficient or unprofitable parts of their business. It is also still very difficult to lay off or reassign redundant employees. Although the reductions in customs duties have been substantial, domestic tariff rates in India continue to be among the highest in the world. Poor transportation and other infrastructure weaknesses continue to hamper the productivity performance of both foreign and domestically owned

17. For instance, Sandvik started a comprehensive program for replacing and modernizing old machinery in 1988. SKF set up a new state-of-the-art plant in Bangalore in 1988. See Revelius and Sami (1995).

firms. Finally, corruption continues as a form of extra-legal regulation of MNE activities.

Ⅳ. Conclusions

By and large the response to economic reform in India, at least as evidenced by Swedish MNEs, support several broad goals of liberalization, i.e. increased investment and improved productivity. These results for India offer a sharp contrast to those reported by Bennell (1995) for Africa. The differences may reflect much more positive prospects for the Indian economy which encourage investments with relatively large "sunk cost" components. They may also reflect the fact that Indian reforms more closely reflect the productive capabilities of the economy, an important characteristic of successful structural adjustment programs as noted in Hassan, Ismail and Kimenyi (1995).

The relatively weak response in terms of employment is not surprising. Prior to the reforms, Indian companies were arguably "over-manned" with excessive employment levels--part of the cost of serving the domestic market as a foreign affiliate. Economic reforms provided MNEs with an opportunity to move toward more efficient capital-labor ratios. However, continued restrictions on employee lay-offs encouraged most of the change in factor-proportions to take place through adjustments on the capital stock. The relatively weak response in terms of imports and exports is more surprising, and no ready explanation can be offered. Perhaps the competitive pressures that encourage an "outward orientation" and production specialization take time, and the competition associated with increased production capacity will soon be manifested in trade pattern adjustments.

Obviously, this is only one specific case-study of MNE responses to economic reform in developed countries. Hence, any conclusions must be cautiously drawn. Nevertheless, we believe the study offers useful insights precisely because so little evidence exists, to date, on the phenomenon. On balance, we see the results for India to be supportive of economic reform initiatives and the useful role that MNE affiliates play as agents of change in developing countries.

Table 1 Companies Included in Survey

Indian Company	Swedish Parent	Industry	Year of Establishment
Alfa Laval Ltd	Alfa Laval AB	Dairy Equipment	1937
Asea Brown Boveri Ltd	Asea Brown Boveri AB	Electrical Machinery	1950
Astra-IDL Ltd	Astra Pharmaceuticals AB	Pharmaceuticals	1979
Atlas Copco Ltd	Atlas Copco AB	Construction and Mining	1960
Esab India Ltd	Esab AB	Industrial Equipment	1987
Fläkt India Ltd	Fläkt AB	Electrical Machinery	1960
Höganäs India Ltd	Höganäs AB	Processing	1986
Kanthal India Ltd	Kanthal AB	Processing	1984
Sandvik Asia Ltd	AB Sandvik	Steel and Tools	1960
SKF Bearings India Ltd	AB SKF	Industrial Equipment	1961
Bygging India Ltd	Bygging Uddemann AB	Construction	1983
Dinol Shroff Pvt Ltd	Dinol AB	Processing	1985
Hilton Rubbers Ltd	Trellex AB	Industrial Equipment	1973
Hägglunds Denison Ltd	AB Hägglunds & Söner	Industrial Equipment	1989
IDL Chemicals	Nitro Nobel AB	Chemicals	1961
Morgårdshammar India Ltd	Morgårdshammar AB	Steel	1983
Noble Explochem Ltd	Chematur Engineering AB	Chemicals	1982
Primus-Kabsons Ltd	Primus AB	Gas Equipment	1985
SAB Nife Power Systems Ltd	Nife AB	Electrical Equipment	1986
Siporex India Ltd	Siporex AB	Construction	1969
Tega India Ltd	Skega AB	Processing	1976

Table 2 Changes in Equity, Capital Stock and Value-added in Swedish MNE Affiliates

Company	Swedish Equity (percent)		Capital Stock (million Rs)		Value-added (million Rs)	
	1990	1994	1990/91	1993/94	1990/91	1993/94
Alfa Laval Ltd	39.9	51.0	85.4	274.9	397.1	816.5
Asea Brown Boveri Ltd[a]	36.8	51.0	155.6	321.2	750.8	1489.5
Astra-IDL Ltd	25.8	25.8	15.3	31.9	129.4	229.6
Atlas Copco Ltd	39.9	39.9	35.0	16.8	251.7	387.8
Esab India Ltd	39.5	51.0	12.2	130.2[b]	114.6	666.3
Fläkt India Ltd[a]	51.0	51.0	26.3	40.8	165.6	247.5
Höganäs India Ltd	51.0	51.0	16.9	49.1	23.6	62.1
Kanthal India Ltd	40.0	51.0	17.4	21.8	17.4	45.6
Sandvik Asia Ltd[a]	54.9	54.9	78.1	149.5	475.0	530.3
SKF Bearings India Ltd	40.0	51.0	1154.9	1674.7	1133.1	1707.7
Bygging India Ltd	40.0	40.0	10.6	17.0	4.7	11.8
Dinol Shroff Pvt Ltd	40.0	40.0	0.2	1.4	1.1	6.3
Hilton Rubbers Ltd	16.6	20.0	85.7	82.9	205.2	149.4
Hägglunds Denison Ltd	26.0	26.0	6.0	11.7	27.8	38.4
IDL Chemicals Ltd	40.0	40.0	107.0	86.4	279.0	452.9
Morgårdshammar India Ltd	40.0	51.0[d]	1.3	0.8[d]	9.9	13.8[d]
Noble Explochem Ltd	11.4	11.4	223.1	158.8[e]	66.2	119.1
Primus-Kabsons Ltd	40.0	40.0	0.2	17.4	5.1	29.2
SAB Nife Power Systems Ltd	40.0	22.2	23.9	22.2	30.9	61.8
Siporex India Ltd	10.0	12.0	1.0	33.3	17.3	54.3
Tega India Ltd	40.0	40.0	33.9	25.5	41.6	41.8

Notes: All data are in current prices

a. Data on capital stock and value-added are for roman calendar years 1990 and 1993.

b. Esab India acquired a company three times it own size in 1991.

c. The Swedish parent terminated the collaboration with its earlier Indian Partner and established a new majority-owned joint venture (Danieli Moregårdshammar India Pvt Ltd) in August 1994.

d. Data for Indian fiscal year 1992/93.

e. A large part of Noble Explochem's capital stock was destroyed in an explosion on June 18, 1992.

Table 3 Capacity Utilization Rates for Swedish MNE Affiliates' Main Product Groups Before and After Reforms.

Company	Product Groups	Capacity Utilization (Percent)	
		before	after
Alfa Laval Ltd	Oil Separator	141[a]	164[a]
	Pumps. Refrigeration	25	28
	Dairy Equipment	139[a]	2[b]
Asea Brown Boveri Ltd	Switch Gears	51	80
	Motors/Generators	46	54
	Electric Furnaces	52	57
Astra-IDL Ltd	Formulation Tablets	65	81
	Formulation Liquids	51	57
Atlas Copco Ltd	Air/Gas Compressors	38	42
	Rock Drills and Pusher Legs	54	70
Esab India Ltd	Welding Electrodes	107[a]	53
Fläkt India Ltd	Fans and Blowers	49	53
	Electrostatic Precipitators	82	70
	Pollution Control Equipment	36	46
Höganäs India Ltd	Iron Powder	57	70
Kanthal India Ltd	High Resistance Electrical Strips	28	91
	Thermostatic Bimetal	14	24

Table 3 Continued

Company	Product Groups	Capacity Utilization (Percent)	
		before	after
Sandvik Asia Ltd	Tungsten Carbide Products	24	21
SKF Bearings India Ltd	Bearings	100[a]	63
Bygging India Ltd	Hydraulic Slipform Equipment	n.a.	n.a.
Dinol Shroff Pvt Ltd	Sealant	n.a.	24
	Penetrant	n.a.	13
Hilton Rubbers Ltd	Conveyor Beltings	69	79
Hägglunds Denison Ltd	Pumps and Valves	37	36
IDL Chemicals Ltd	Detonators	59	70
	High explosives	81	80
Morgårdshammar India Ltd	Rolling Mill Guide System Equip.	88	88
Noble Explochem Ltd	Explosives	37	42
Primus-Kabsons Ltd	Lantern Attachments	21	20
	Cooker Attachments	14	14
SAB Nife Power Systems Ltd	Nickel Cadmium Batteries	46	28
Siporex India Ltd	Concrete Slabs and Blocks	64	59
Tega India Ltd	Wear resistant products	33	37

Notes: The reported capacity utilization rates are averages for the three years immediately before and after the reforms.

a. Installed capacity is measured on a single shift basis. In exceptional cases, the government could grant permission to run double shifts, resulting in a utilization degree above 100 percent.

b. A separate majority - owned subsidiary (Diary Farm Equipment Ltd) created in December 1992 took over most of Alfa Laval Ltd's dairy related operations.

Table 4 Changes in Capital-Labor Ratios and Productivity in Swedish MNE Affiliates

Company	Capital-Labor Ratio ('000 Rs)		Labor Productivity ('000 Rs)		Capital Productivity		TFP	
	1990/91	1993/94	1990/91	1993/94	1990/91	1993/94	1990/91	1993/94
Alfa Laval Ltd	63.3	203.6	357.5	604.8	4.65	2.97	1.50	1.17
Asea Brown Boveri Ltd[a]	43.4	89.5	194.3	415.1	4.83	4.64	1.63	1.59
Astra-IDL Ltd	21.0	43.9	202.2	315.8	8.46	7.19	1.68	1.69
Atlas Copco Ltd	48.2	23.2	359.6	534.2	7.19	23.02	1.62	1.96
Esab India Ltd	8.4	90.0	63.0	460.5	9.42	5.12	1.70	1.77
Fläkt India Ltd[a]	26.9	41.7	164.3	252.8	6.28	6.06	2.13	2.12
Höganäs India Ltd	248.5	722.4	714.2	912.7	1.39	1.26	0.41	0.40
Kanthal India Ltd	195.1	244.9	177.1	512.7	1.00	2.09	0.66	0.82
Sandvik Asia Ltd[a]	69.7	133.4	393.8	473.5	6.08	3.55	1.52	1.50
SKF Bearings India Ltd	403.7	585.4	433.7	596.9	0.98	1.02	0.92	1.10
Bygging India Ltd	235.4	377.2	118.6	261.6	0.45	0.69	1.74	1.28
Dinol Shroff Pvt Ltd	6.6	55.8	34.0	250.6	6.38	4.49	0.94	1.58
Hilton Rubbers Ltd	414.0	400.3	996.1	721.7	2.39	1.80	0.98	1.08
Hägglunds Denison Ltd	32.4	62.9	132.6	206.6	4.62	3.29	1.34	1.38
IDL Chemicals Ltd	32.8	26.5	81.0	138.9	2.61	5.24	2.54	2.30
Morgårdshammar India Ltd	20.5	12.6[b]	150.3	211.9[b]	7.45	16.77[b]	1.68	2.02[b]
Noble Explochem Ltd	609.5	434.0	201.9	325.5	0.30	0.75	0.01	0.40
Primus-Kabsons Ltd	1.2	103.8	87.9	173.6	25.09	1.67	1.94	0.57
SAB Nife Power System Ltd	72.0	66.9	118.2	186.2	1.29	2.78	0.97	1.43
Siporex India Ltd	3.9	127.9	83.2	208.7	17.26	1.63	2.60	1.05
Tega India Ltd	204.5	153.6	154.5	251.8	1.22	1.64	1.03	0.71

Notes: All data are in current prices

a. Data on capital stock and value-added are for roman calendar years 1990 and 1993.

b. Data for Indian fiscal year 1992/93.

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