Impact of Economic Reforms on Tyre Industry

This paper attempts to assess the impact of economic reforms on the automotive tyre manufacturing industry. The analysis focuses on the dominant truck and bus tyre segment. With the entry of MNCs in the post-reform period, the sector is on the verge of a major shake-up, underlining the need for nationalisation of the product mix, favouring radical tyres with large-scale investment.

S Mohanakumar, Tharian George K

An important feature of the development strategy pursued in less developed countries (LDCs) in the post-colonial era has been the focus on building up a highly protected indigenous production base entailing horizontal extension to exports by exploiting the locally available resources. The import substituting and inward-oriented development strategy coupled with high levels of protection pursued in India since independence may be viewed against this backdrop. This development strategy was continued with marginal changes till the late 1970s. The economic reforms initiated in the late 1970s under the IMF-induced package, gathered momentum in the 1980s, culminating in the structural adjustment programme having far-reaching implications on the organisation of production and external trade in 1991. The subsequent policy changes on external trade are mandatory with the signing of the GATT treaty in 1994. Theoretically, the economic reforms are justified on the ground that a highly protected, import substituting and inward-oriented trade regime offered little incentive to cost reducing measures as the rigid regulatory framework ensured a sheltered and profitable domestic market for the Indian industry [Debroy 1992].

The consequences of economic reforms varied across industries depending on the factors such as the extent of protection, the income and price elasticity of the product concerned and the divergence in technological sophistication between the domestic and external markets. The automotive tyre manufacturing industry in India was one of the industrial sub-sectors which enjoyed a high level of protection during the pre-reforms period. Despite the insignificant share of the industry in the total value added (1.72 per cent in 1995-96) in the Indian industrial sector, a study on this sub-sector in the context of economic reforms assumes importance on account of the following factors: (1) the industry from its initial phase of external dependence has grown enough to fully meet the domestic demand for tyres and has achieved export capabilities resulting in favourable trade balance since the early 1970s and (2) the export component of the dominant truck and bus tyre segment has been more than 23 per cent of production during the 1990s.[1]

The challenges posed to the industry since 1991 have to be viewed in the backdrop of the theoretical perspective elucidating domestic demand-driven export growth embedded in the broad paradigm of comparative cost advantage. Among the different streams of thought within the paradigm of comparative cost theory, this line of argument appears to have relevance in the case of Indian automotive tyre manufacturing industry as the large and captive domestic market has been subsidising the exports [Basevi 1970]. In this perspective, the new entrants to the world market are perceived to be 'price takers' irrespective of losses arising from higher average unit cost of production in relation to export price. However, the loss incurred in the export market are very often more than compensated by the monopolistic market structure in the domestic market [Basevi 1970]. Theoretically, the two necessary conditions underlined for the operational level validity of the domestic demand-driven exports arguments are: monopolistic power in the domestic market and protection from external competition [Basevi 1970].

The objective of the study is to analyse the impact of economic reforms on the Indian automotive tyre manufacturing industry, which has grown over time based on the domestic market.[2] The analysis is focused on the dominant truck and bus tyre segment. The paper is organised in the following manner. The economic and political factors behind the historical development of the tyre manufacturing sector, its characteristic features and production structure are discussed first. The next part examines the response of the tyre manufacturing sector to the reform measures. An analysis of the impact of the policy measures on the degree of protection enjoyed by the tyre manufacturing sector in the domestic market is followed by the conclusion.

Evolution and Growth of Industry

The evolution and growth of Indian tyre manufacturing industry from a state of absolute domination by foreign companies to its present stage of indigenisation involved different phases of structural change broadly reflecting various policy regimes in the economy (Table 1). In the first phase, about 10 brand names representing major foreign companies such as Dunlop (UK), Firestone (US) and Goodyear (US) dominated the trade in tyres through imports from their parent companies [GoI 1988]. The political changes favouring locally manufactured goods coupled with the policy of protection of the colonial interest for its native capital were pivotal in persuading the UK-based Dunlop to set up a tyre manufacturing unit in India in 1936. Other foreign companies which followed suit by setting up local manufacturing units included, Firestone (1939) and India Tyre and Rubber Company (1939) [Mani 1993]. Even though the contextually-specific factors emanating from the political and economic milieu during the initial phase were important, the undercurrents in the supply and demand sides had acted in conjunction with one another in transforming the

nascent industry into an important segment in the organised sector. The major economic factors which had been primarily responsible for the comparative advantage in tyre manufacturing in the country was the adequate availability of natural rubber at a lower price in the backdrop of the International Rubber Regulation Agreement (1934-44), which restricted the quotas earmarked for exports [Mohanakumar and George 1999]. Another important factor supplementing the comparative advantages on the supply side was the local availability of cheap and abundant labour force. On the demand side, the important factors catalytic to the growth of the industry were: a steadily growing domestic market during the second world war and the protection offered to the industry by imposing tariff (30 per cent) on the imports of tyres coupled with the incentives by the colonial government preferring locally manufactured products in order to meet industrial requirements during the inter-war years and the second world war period [Mohanakumar and George 1999]. The cost competitiveness of the Indian tyre industry was evident in its approach, declining further protective measures offered by the government as there existed virtually no threat of imports [GoI 1947]. Moreover, the government of India viewed the rubber goods industry as one of the basic industries which needed to be properly equipped to attain a strong and stable base. Consequently, the tone and tenor of the explicit government intervention during the early phases revolved around the quantitative restrictions on imports of tyres to foster and consolidate the newly acquired indigenous status of the industry. In fact, tyres had been placed under restricted list of imports until 1989 making its import rather difficult [Mani 1993].

Even though the shift from trade in imported tyres to domestic manufacturing during the second phase was a progressive trend, the domestic tyre manufacturing sector remained totally under the domination of the erstwhile foreign tyre companies until 1960. A high degree of market concentration and the resultant implicit collusive agreements in price fixation resulted in higher profits and repatriation of higher dividends compared to other industries in India during this phase. The average dividend declared as a percentage of gross profit during the period 1946-53 was 32.48 per cent [Mani 1933].[3] The issue of collusion and other oligopolistic practices inherent among the foreign tyre companies attracted wide criticism culminating finally in an enquiry by the Tariff Commission in 1955. An important recommendation of the commission which had a strong bearing on the structural changes after 1960s was the measures to permit new entries into the industry [Mani 1993]. Among the five companies which had established tyre manufacturing units subsequently, there were three Indian firms with foreign technical collaboration and two MNCs.[4]

In the third phase, Indian and foreign companies were enticed by the lucrative profit margins in the industry protected with high tariff on imports and entry barriers through licensing. In practice, the requirements of a large capital base and sophisticated technology, exorbitant advertisement cost, implicit and explicit collusive price agreements and finally the established strong brand loyalty in the market acted in collusion with the import restrictions in offering a sheltered and profitable domestic market and insulated it from external competition. An important feature of this phase was the licensing of additional production capacity to meet the growing demand for tyres. As a result, the installed capacity of the industry increased by more than 107 per cent during the 13-year period between 1962 and 1974 [Mani 1993]. Nevertheless, a crucial element in the policy intervention was an implicit discrimination of foreign companies by imposing conditionalities on the proposals for expansion in terms of gradual Indianisation of the ownership structure and export commitments. In spite of the subsequent steady increase in the relative share of Indian companies in the total installed capacity, the foreign companies had been controlling more than 64 per cent of the production capacity till 1974 [Mani 1993]. However, the significance of the policy change was an overtly articulated commitment to reduce the domination of foreign companies and to control the collusive deals in the industry.

In effect, the changes in the policy orientation during the third phase laid down the basis for the entry of large Indian business houses in the next phase. The period from 1975 to 1991 (phase IV) was characterised by two important changes in the tyre manufacturing sector. The first was the gradual extinction of MNCs except Goodyear from the Indian tyre manufacturing scene in the backdrop of the recommendations of the Monopolies Restrictive Trade Practices Commission [MRTP 1969] and regulations of the Foreign Exchange Regulation Act [FERA 1973]. During this phase, large business houses in India, viz, Modi Group (Modi Rubber 1974), Singhania Group [J K Industries 1977], Raunaq Singh [Apollo Tyres 1977], Falcon Tyres (1975), Srichakra Tyres [TVS 1983] and the KTC Tyres (1985) entered the tyre manufacturing industry. As a result, there had been a steady decline in the four firm concentration of installed capacity in the industry from 71.30 per cent in 1975 to 60.52 per cent in 1991 [Mani 1993 and CMIE 1996]. In spite of the decline in the concentration, the industry was reported to have been indulging in collusive practices leading to enquiries by the Bureau of Industrial Costs and Prices in two phases [GoI 1988]. The important features of this

Table 1: Evolutionary Phases of Tyre Manufacturing Sector

Phases	Period	Characteristics	Policy Regime
Phase I	1920-35	No domestic production; domestic demand met through imports by foreign tyre companies and important among them were Dunlop (UK), Firestone and Goodyear (USA)	1 Liberal imports of tyres
Phase II	1936-60	Domestic production was started by erstwhile trading companies, viz, Dunlop, Firestone, Goodyear and India Tyre and Rubber Company	1 Imposition of tariff and non-tariff barriers on imports
Phase III	1961-74	Indian tyre companies, viz, MRF, Premier Tyres and Incheck entered the tyre manufacturing sector with foreign technology; licensing of additional production capacity.	1 Regulations on Capacity expansion and repatriation of profits of foreign companies; 2 Enforcement of export obligation on MNCs; 3 Protection from external competition
Phase IV	1975-91	Entry of large Indian business houses, viz, Singhania, Ranauq Singh and Modi in technical collaboration with MNCs; introduction of radial tyres; vertical integration and exponential growth in tyre production and exports.	1 Delicensing of tyre production; 2 Placing of imports of tyres under OGL with tariff and non-tariff barriers.
Phase V	1992 onwards	External trade liberalisation and the reduction in import duty; re-entry of foreign MNCs either independently or in collaboration with Indian capital	1 Progressive reduction in import duty; 2 Liberalised imports of tyres 3 Permitting the entry of tyre MNCs

Sources: Mani 1993; Government of India 1988; ATMA 1999.

phase of development were the vertical integration of the production process by major Indian business houses and the barriers to enter the domestic production sector until the industry was delicensed in 1989 [Mani 1993] coupled with a high degree of protection in the domestic market through qualitative import restrictions and quantitative ad valorem tariff [GoI 1988]. As a result, the production has been targeted mostly to the domestic market which in turn provided the domestic tyre manufacturing units ample avenues to act in collusion to fix up high prices for their products [GoI 1988]. The committees instituted by the government to probe into the aspects of pricing behaviour of the industry reported that the prices for tyre products in the domestic market were fixed under tacit collusive agreements and that the prices so fixed were far in excess of cost of production [GoI 1988]. It was observed further that there existed non-price competition by means of product differentiation; a classical example of Chamberlainian small group behaviour of the industry [GoI 1988]. Another notable facet of the change was the technological sophistication attained through R and D by the Indian companies in order to reduce external dependency on technology. This phase ushered in an era of exponential growth in tyre production and exports notably from the second half of the 1980s[5] [ATMA 1998].

The observed growth in production and exports of tyres during the phase IV with the entry of large Indian business houses into the industry call for further examination. Theoretically, the main objective behind the expansion of production is to minimise average unit cost of production by exploiting the scale economies. Although the increased production was mainly in response to the growth of a protected domestic market, exports of tyres with discriminatory price policies had been a prerequisite in order to minimise the long run average unit cost of production. This strategy of the industry in phase IV had effectively been maintained by three factors: (1) a highly protected domestic market ensuring a higher price to the tune of more than six times compared to the export price; (2) oligopolistic structure and collusive price agreements as reflected in a four firm concentration ratio of more than 60 per cent share in the total installed capacity and (3) subsidising about 77 per cent of the difference between the cost of production and the export price during this phase [GoI 1988; Mani 1993]. These specific features of the industry during the 1980s broadly confirm to the theoretical paradigm of domestic demand-driven export growth. However, in phase V, the industry has increasingly been exposed to external competition on account of dilution in import barriers and liberalisation of the policy framework facilitating the entry of MNCs in the domestic market.

The emerging trends during the post-reforms period (phase V) underline the possibility of a total reversal of the policies favouring Indian capital pursued since independence. The two major policy components of the reform package, viz, external trade liberalisation and the removal of barriers on the entry of foreign capital have been complementary with sequential effects on the industry. Initially, the MNCs adopted a well designed strategy of 'test marketing' to establish brand loyalty with the ulterior motive of launching manufacturing facilities in India. The progressive reduction in import duty and the removal of non-tariff barriers resulting from the external trade liberalisation supplemented by lower unit prices of imported tyres led to an unprecedented increase in import including that of used tyres. The three important MNCs, which have vigorously explored the domestic market potential are: Bridgestone (Japan), Kumho (South Korea) and Michelin (France). In spite of the observed similarities in 'test marketing' in the early years of the post-reforms phase, the subsequent strategies for consolidation of market power differed in the identification and establishment of manufacturing facilities. The Goodyear India, which is a subsidiary of the US-based MNC has expanded its production capacity by establishing another manufacturing unit at Aurangabad in Maharashtra in 1996. The newly established unit is reported to be exclusively designed for the production of radial tyres for light commercial vehicles (LCV) and passenger cars. Conversely, Bridgestone which is the top ranked tyre MNC in the world market started its production at Indore of Madhya Pradesh in 1998 as a joint venture with Associate Cement Company concentrating only on radial passenger car tyres. The other two MNCs, viz, Michelin and Kumho are in different stages of progress in their attempt to launch tyre manufacturing facilities in India.

Though the apparent similarity between the evolutionary phases (I and II) and the phase V indicates a trend in reversal of the organisational structure of the industry, there are substantial differences in the objective circumstances arising mainly from the limitations of the policies patronising Indian capital in the post-reform phase. An important feature of the entry of MNCs in the post-reform phase has been the dominant foreign equity participation as evident from the cases of South Asia Tyres (99.60 per cent) and Bridgestone (76.10 per cent). In tandem with the emerging scenario, Goodyear India has also increased its foreign equity participation from 59.93 per cent in 1988 to 74 per cent in 1998 [Mani 1993 and personal correspondence with ATMA August 6, 1999]. Compared to phase II in which foreign companies dominated the entire spectrum of the domestic market, the MNCs in phase V have been targeting the emerging radial tyre segment of all the categories of tyres. For instance, Bridgestone, which started production in August 1998 has already attained fourth place in the radial passenger car tyre segment within a short span of less than a year. The production target of passenger car tyres by the company for the year 2000 is in excess of the total size of the domestic market by 0.40 million tyres [Kurup 1999]. The competitiveness of the MNCs in quality and price are based on a very large capital base and global marketing network constantly animated by a huge R and D set up to excel in a borderless world in the ongoing process of market integration.[7] However, the Indian tyre companies moulded in the national frame of economic decisions are often bounded by their inherent constraints of a relatively higher inward market orientation and weaker R and D support. If the global trends in the tyre sector since 1960s are any guide, the possibilities of mergers and acquisitions in India are more explicit than in the past.[8] The vulnerability of Indian tyre companies to the changing economic environment is already evident from the breakdown of production at least in the case of two factories owned by the Indian business houses.[9]

Structure of Industry

The pace of growth of Indian tyre manufacturing industry has been unprecedented since 1970s. The number of tyre companies increased from six to 29 and the installed capacity and actual production have increased by 708 per cent and 630 per cent, respectively, between the 1971 and 1998 [Mani 1993; ATMA 1998]. The

total turnover of the 29 major and minor tyre firms spread over 48 tyre manufacturing plants with an installed production capacity of 37 million units per annum was Rs 95,000 million in 1998 [ATMA 1998]. In the total number of tyres manufactured, two- and three-wheeler tyres is the largest segment (38 per cent) followed by tyres for truck and bus (31 per cent) and passenger car tyres (12 per cent). Another important structural characteristic of the Indian tyre manufacturing industry is its high degree of production concentration [ATMA 1998]. The four major tyre manufacturing firms, viz, MRF, CEAT, J K industries and Apollo together control 68.36 per cent of the production.[10] The reported capacity utilisation of the industry is 92 per cent during 1997-98 [ATMA 1998]. Unlike in the advanced countries, the predominance of truck and bus tyres in India can be attributed to the demand emerging from goods traffic especially of the agricultural sector and a heavy dependence on the public transport system. Therefore, it is plausible to presume that the impact of external trade liberalisation is likely to be relatively more serious on this segment of the industry.

Although the extent of radialisation is often considered as a yardstick of technological advancement in tyre manufacturing, in India the progress in radialisation in the dominant truck and bus segment is negligible whereas the tyre manufacturing in advanced countries has either been completely radialised or is heading towards total radialisation. However, in the passenger car tyre segment, the extent of radialisation is reported to be 45 per cent [ATMA 1998]. Taking cognisance of the relative technological and structural constraints of tyre manufacturing sector in India, the MNCs are increasingly targeting at the growing market potential of the radial tyre segment during the post-reforms phase.

In order to examine the responsiveness of the tyre manufacturing sector to the various policy instruments of liberalisation on the production of important categories of tyres, the rate of growth of production of these categories of tyres for the pre-and post-liberalisation quinquennial periods were estimated (Table 2). It was found that the rate of growth of production of tyres in the post-reforms phase grew significantly for passenger car and two wheelers and truck and bus while tractor tyre segment recorded a slow-down when compared to the pre-reforms phase.[11] The underlying factors behind the observed trend in the rate of growth of production of different categories of tyres could either be domestic or external demand driven arising from the reforms package. The analysis of the rate of growth in vehicle population during these two distinct phases is a crude method of examining the sources of the demand for tyres [Burger et al 1995]. Contrary to the observed trend in the rate of growth of tyre production, the trends in the vehicle production exhibited higher growth rates.

However, the trend in the passenger car segment was distinct in terms of a proportionately higher growth rate in vehicle production during the post-reforms phase. The differences in the rate of growth of production of tyres cannot be exclusively explained by the corresponding changes in the production of vehicles. Nevertheless, it is plausible to state that the two distinct cases of the dominant truck and bus and the passenger car segments are dependent on the relative share of different market segments as well as the impact of the reforms on the two categories of vehicles production. In the post-reforms phase, a higher rate of growth of production of vehicles in truck and bus segment was not matched by tyre production as the combined share of replacement market (62.15 per cent) and export market (21.70 per cent) was 83.85 per cent whereas it was only 51.67 per cent in the case of passenger car segment with a higher original equipment market share of 47.97 per cent [ATMA 1998]. Moreover, in the post-reforms phase, vehicle production in the passenger car segment was triggered by a large-scale influx of MNCs to manufacture passenger cars.

Export Sector

Despite the relatively insignificant share of automotive tyres and allied products in India's external trade (0.74 per cent, 1996-97), the tyre exports increased in value terms from Rs 55.38 million to Rs 7,900 million during the period from 1970-71 to 1996-97. Moreover, the trade balance of tyre and allied products has been positive throughout the period under review, which amounted to Rs 7,289.20 million in 1996-97. The value of tyre exports grew at the trend rate of 20.71 per cent per annum while the corresponding rate for imports was 15.40 per cent, during the period 1970-71 to 1996-97. The net gain in terms of foreign exchange from external trade defined as value of exports less value of imports and expressing the same as the ratio of exports has increased from 0.78 in 1970-71 to 0.92 in 1996-97. The major categories of tyres exported from India include tyres for truck and bus, passenger car, tractors two-and three-wheelers in addition to the off-the-road vehicles. The single largest category of exports, viz, truck and bus tyres, which accounted for 50 per cent of the total value of exports from tyre products in 1970-71 has improved its relative share to more than 98 per cent in 1996-97.

The impact of economic liberalisation on exports is assessed by comparing the growth rates in the value of exports during the pre and post-reforms phase (Table 3). The increase recorded in the value of exports both in rupee and dollar terms in the pre-reforms period (1987-88 to 1991-92) was markedly higher than that in the post-reforms phase (1992-93 to 1996-97) for truck and bus and all categories of tyres (Table 3). As is evident, the growth in the value of tyres exported from India is dependent on the performance of the truck and bus tyre segment. Another important dimension of the observed trend in the rate of growth in value of exports has been the fluctuations in the unit price of truck and bus tyres in dollar terms during the post-liberalisation phase. In 1990-91, the unit value of a truck and bus tyre was US $ 105 and it has declined to US $ 74 in 1994-95,

Table 2: Rate of Growth in Tyre and Vehicle Production by Categories

Period	Truck and Bus Tyre	Tractor	Car	Two-Wheelers
1987-88 to 1991-92	6.08(7.11)	9.28(13.49)	7.05(6.18)	4.00(3.22)
1992-93 to 1996-97	8.01(11.97)	5.79(7.18)	10.78(20.27)	11.58(13.72)

Note: Figures in the parentheses indicate the rate of growth in respective vehicles production.
Source: Indian Rubber Statistics, (relevant issues), Rubber Board, Government of India.

Table 3: Rate of Growth in Value of Exports of Tyres

Period	Truck and Bus		All Categories	
	Rupees	US $	Rupees	US $
1987-88 to 1991-92	40.64	25.88	36.79	21.79
1992-93 To 1996-97	11.32	5.29	11.68	6.97

Source: Monthly Statistics of the Foreign Trade of India, relevant issues, DGCI and S, Ministry of Commerce, Government of India.

the year in which the quantity of exports as percentage of production attained its peak (Table 4). The proportion of the number of truck and bus tyres exported from India as a ratio of its production has significantly grown from 7.64 per cent to 33.87 per cent between the period 1987-88 and 1994-95, and declined from 1995-96.

It is important to note that the average unit value realised during the pre-reforms (US $ 95.45) phase was higher compared to the post-reforms phase (US $ 90.77) and that the unit value realisation did improve only when the quantity of truck and bus tyres exported declined from 1995-96. Within the domestic market, price differentials are significant across the same category of tyres with different technical specifications. In the absence of information on specificationwise unit value of truck and bus tyres exported, a comparison of the ratio between domestic and export prices is rather difficult. Nevertheless, a comparison of the unit price in the domestic and export markets revealed that the value realisation per tyre in the export market varied between 23 to 39 per cent of the domestic price in the post-reforms phase (Table 5). Alongside, the number of destinations to which the tyres have been exported extended from 44 in 1990-91 to 120 destinations in 1994-95 and the external market has started narrowing down again to 95 destinations from 1995-96. The geographical diversification of markets can also be captured using the summary measure, viz. concentration/diversification indices (Table 6). The concentration indices of quantity and value of exports have shown a decline from 0.68 to 0.27 and 0.69 to 0.26, respectively, indicating the widening of the export market in the post-reforms phase. Another characteristic feature of export markets is the market-based price discrimination. In 1996-97, a unit of truck and bus tyre exported to US fetched US $ 85 (against an average unit value realisation of US $ 107.53) whereas the same exported to Egypt fetched US $ 116, the highest price in that year.

In order to identify the factors which have influenced the export demand for the truck and bus tyres, the changes in the value of exports of truck and bus tyres in US dollar was regressed on changes in unit value and production in addition to a dummy variable to capture the impact of non-price factors including the policy changes in external trade during the post-reforms period. The variable which was purposively not incorporated in the model was the world trade in truck and bus tyres as the world trade is predominantly confined to radial tyres whereas more than 95 per cent of the exports from India is of the conventional cross-ply type. The regression result showed that increase in the value of exports of truck and bus tyres in dollar terms was on account of the increase in production of tyres as well as decline in the unit price in dollar terms (Table 7). The observed phenomenon basically resembles the experience of developing countries in the exports of primary commodities over time. The insignificant coefficient of the dummy variable indicated that the non-price factors and the changes in policy regimes had not made any notable impact on the export of truck and bus tyres from India, which is in conformity with an earlier study [Mehta 1997].

Import Sector

The trend in imports of various categories of tyres to India has to be viewed in the backdrop of the changes brought in India's external trade regime from the late 1980s. The major change in policy pertaining to the import of tyres has been introduced with the announcement by the government in June 1989, allowing imports of tyres under open general licence (OGL). However, large-scale imports of tyres were discouraged as there were well defined non-tariff barriers on the imports [Mani 1993].

The main objective of the policy was to restrict the reported collusive practices among the domestic tyre companies rather than initiating a policy for liberalising the imports of tyres. However, the subsequent policy changes on the import of tyres were characterised by progressive reduction in import duties and a gradual dilution of the non-tariff barriers (Table 8). The changes in import duty consisted of a reduction in basic customs tariff from 100 per cent to 40 per cent and a shift in countervailing duty from specific rates to ad valorem rate

Table 5: Domestic and Export Price of Truck and Bus Tyres

Year	Domestic Price	Export Price	Export Prices as Per Cent of Domestic Price
1987-88	na	1198	na
1988-89	na	1348	na
1989-90	na	1638	na
1990-91	na	1892	na
1991-92	8580	2168	25.00
1992-93	8500	2603	31.00
1993-94	8650	2617	30.00
1994-95	9900	2331	23.00
1995-96	10050	3302	33.00
1996-97	9750	3816	39.00

Note: The comparison is based on the unit price of truck and bus tyres exported from India and the price of 10.00-20.00-16 PR of MRF SL tyre reported in the Delhi market in the month of June of each year.

Sources: 1 Wheels of India.
2 *Monthly Statistics of the Foreign Trade of India*, relevant issues, DGCI and S Ministry of Commerce, Government of India

Table 6: Market Concentration Index

Year	Quantity	Value
1990-91	0.68	0.69
1991-92	0.38	0.39
1992-93	0.34	0.35
1993-94	0.27	0.26
1994-95	0.33	0.35
1995-96	0.36	0.33
1996-97	0.27	0.26

Note: The formula used for estimation of the Index is: $\sqrt{\Sigma(xi/\Sigma XI)^2}$ where xi = Export (quantity and value) of truck and bus tyres to USA; XI = Total quantity and value of export of truck and bus tyres from India (for details, see Kelkar, V J 1989).

Table 7: Regression Results

$\ln X_t = \alpha + \beta \ln P_t + \gamma \ln Pd_t + \delta D_t + u_t$

Independent Variables	Coefficient	t-stat
Dummy	–0.585	–1.293
Unit price in US$	–1.779	–1.932*
Production of tyres	4.376	5.908**
Constant	–11.234	–2.045
Period (1981-82 to 1996-97)	R^2 0.86	DW 1.54

where X_t = value of exports of truck and bus tyres in US $
P_t – unit price of truck and bus tyres in US$
Pd_t – production of truck and bus tyres
D_t – dummy variable
β, γ, δ – coefficients of respective variables.

Table 4: Unit Price of Truck and Bus Tyres Exported

Year	Number of Tyres Exported	Tyres Exported as Per Cent of Production	Unit Price in US$	Unit Value Index
1987-88	305951	7.64	92.39	100
1988-89	423600	8.69	93.10	101
1989-90	786448	15.46	98.41	107
1990-91	849138	16.46	105.43	114
1991-92	776801	14.44	87.98	95
1992-93	1514304	24.99	89.88	97
1993-94	1924322	29.42	83.44	90
1994-95	2380385	33.87	74.26	80
1995-96	1806857	23.29	98.77	107
1996-97	1722425	21.49	107.53	116

Source: same as Table 3.

between the period 1990-91 to 1997-98. In the post-reform phase, it was visualised that the devaluation of domestic currency would logically follow an upward shift in the export demand curve for tyre products followed by a fall in imports. Conversely, if imports rose faster, it could be fatal to the domestic industry as imports would carve out an increased share of the domestic market. The trend in the value composition of tyre imports compared to its exports is rather erratic. The major categories of tyres imported in value terms are off-the-road vehicles, passenger car and truck and bus. The 'Others' category include tyres for aircraft, motor cycles, tractors and an unspecified group. The most discernible trend observed during the last three years of the period under review has been a tendency to increase and stabilise the relative shares of three major categories of tyres with a commensurate decline in the share of 'Others'. This trend is further corroborated by the quinquennial growth rates in value and quantity of the major categories of tyres imported during the post-reforms phase (Table-9). The most striking feature observed in the trends in imports is a notably higher increase in the quantity and value of imports of truck and bus tyres. It assumes significance in the Indian context as the truck and bus tyre segment is the largest in terms of its relative shares in tonnage, value and exports. The large-scale imports of truck and bus tyres to India have hitherto been discouraged by poor road conditions and endemic overloading to which tyres have been designed and manufactured by the domestic tyre companies. The two factors which could have facilitated steady increase in imports of truck and bus tyres in the post-reforms phase were:(1) reduction in tariff restrictions on imports and dilution of non-tariff barriers; (2) a significantly lower import prices[12] and the marketing strategy of MNCs to establish brand loyalty. However, the increase in the imports of passenger car tyres could be a combined effect of a growing presence of MNCs with new generation cars preferring radial tyres and the prevalence of a relatively higher radialised passenger car segment in the domestic market.

An important aspect deserving attention in the context of a progressive reduction in import duty and dilution of non-tariff barriers is the changes in the degree of protection enjoyed by the domestic tyre industry. Nominal Protection Coefficient (NPC) and Effective Protection Coefficient (EPC) are the two familiar measures used to assess the degree of protection extended to domestic industry from external competition.[13] The nominal rate of protection for the truck and bus tyre has declined from 239 per cent in 1985 to 178 per cent in 1995-96. Nevertheless, NPC has limitations compared to EPC in explaining the differences in input prices between domestic and world markets which in turn influence the final output prices. Due to paucity of comparable data, the estimate of EPC is confined to 10.00-20.16 ply rating tyre and is related to the terminal year of the study, viz, 1996-97. The EPC for 1996-97 indicated that the rate of protection enjoyed by the industry has declined from 178 per cent in 1985 to 74 per cent in 1996-97. The erosion in the effective rate of protection basically underlines a growing tendency of convergence of the raw material prices in the domestic and world markets. The convergence has been taking place on input as well as final output prices. In the input market, the prices of major inputs in the domestic market has now become or tending to be equal to the world market price in the context of the growing process of market integration. The decline in the level of protection enjoyed by the tyre products in India and the consequent convergence of the domestic market for tyres with the world market may be viewed against this backdrop.

Conclusion

The emerging trends in production, exports and imports of major categories of tyres in the post-reforms phase till 1996-97 warrant further explanation of the potential implications. The analysis indicate that there are well defined limitations in sustaining the domestic demand-driven export growth to reap the advantages of scale-economies. The tyre production sector in India is on the verge of a major shake-up with the entry of MNCs in the post-reforms phase with its concomitant consequences on the structure of production underlining the need for rationalisation of the product-mix favouring radial tyres with large-scale investment. However, the extent to which Indian companies are capable of withstanding the onslaught of MNCs is open to question depending on a complex set of economic and political factors in the near future. Nevertheless, in the emerging globalised production scenario, the possibilities of imbibing the global structure of tyre industry characterised by increased concentration of production loom large in the Indian context.

In foreign trade, the reduction in quantitative tariffs and dilution of qualitative barriers along with the devaluation of rupee envisaged an increase in export earnings vis-a-vis imports. Despite the boom in exports in the initial phase, the exports of truck and bus tyres as a percentage of its production has declined from its peak level of 33.87 per cent in 1994-95 to 21.49 per cent in 1996-97 indicating the inherent limitations of the export-oriented growth strategy of the product. In sharp contrast to the envisaged trend, the truck and bus tyre imports have registered substantial increase in both quantity and value terms. In this context, it is pertinent to examine the capacity of Indian tyre companies to

Table 8: Import Duty on Tyres

Year	Truck and Bus		Passenger Car	
	Basic (Per Cent)	Countervailing (Rs)	Basic (Per Cent)	Countervailing (Rs)
1990-91	100	850-2500	100	200-250
1991-92	100	850-2500	100	200-250
1992-93	65	890-2625	65	210-265
1993-94	85	1130-3320	85	270-340
1994-95	65	1130-3320	65	270-340
1995-96	50	1225-3610	50	290-365
1996-97	52	1225-3610	52	290-365
1997-98	40	30 per cent	40	30 per cent

Notes: In addition to the basic and countervailing duties, 40 per cent of the value of border price was charged as auxiliary duty till 1993-94.

Source: Personal correspondence with ATMA, September 9, 1999.

Table 9: Compound Rate of Growth in Imported Tyres

Period	Quantity/Value	Aircraft	Truck and Bus	Passenger Car	Off-the-road
1987-88 to 1991-92	Quantity	-19.64	8.56	196.18	-28.37
	Value	-0.74	15.36	138.57	-1.51
1992-93 to 1996-97	Quantity	41.58	155.14	91.91	45.15
	Value	38.55	163.59	70.00	38.84

Source: Monthly Statistics of the Foreign Trade of India, relevant issues.

retain the share in the domestic market and to penetrate further into the export market. The critical factors determining the survival of Indian tyre companies are competitiveness in price and quality, technological compatibility to the developments in vehicle geometry and the capacity to overcome the limitations imposed by the growing importance of regional economic groupings. The operational level constraints to achieve the desired competitiveness in the globalised production are too evident. The entry of the MNCs into the production sector and the emerging trends in foreign trade in truck and bus tyres underline a tendency for the historical retreat of the Indian tyre manufacturing industry to its second phase of evolution dominated by MNCs under a different economic context. EPW

Notes

[We are grateful to D Narayana for valuable comments on an earlier draft. The usual disclaimers apply.]

1 In the automotive tyre manufacturing industry in India, the truck and bus tyre segment accounts for about 70 per cent of the tonnage of production and turnover as well as more than 90 per cent of the total value of exports of tyre products [ATMA 1998].

2 The statistics on the quantity and value of exports and imports of tyre products have been culled from the *Monthly Statistics of the Foreign Trade of India*. The quantity and value of exports and imports of truck and bus tyres are provided under the eight digit commodity classification (commodity code no.4011200). The exports and imports of truck and bus tyres include different types of tyres and in the absence of specification wise staustics of the quantity and value of tyres imported and exported, the only alternative is to accept the average unit price assuming that truck and bus tyres exported and imported are of the same specification.

3 During the three-year period between 1949 and 1951, the gross profit as a percentage of the total capital employed in the tyre industry ranged from 35.96 to 38.48 per cent compared to 8.10 to 10.60 per cent in the case of all industries. Moreover, the rate of return on capital employed varied from 18.85 to 77.27 per cent in the case of Dunlop and Firestone during the period between 1947 and 1953 [Mani 1993].

4 Indian companies which established tyre manufacturing facilities were: Primier Tyres in technical collaboration with US Rubber Company (US) in 1962, Madras Rubber Factory (MRF) with the technology of Mansfield Tyre and Rubber Company (US) in 1963 and Indheck Tyres with the Techno-Export Foreign Trade Corporation (Czechoslovakia) in 1963. The MNCs included Goodyear (US) and Ceat International of Switzerland (both in 1961) with 60 per cent equity participation [Mani 1993].

5 During the period between 1985 and 1991, the increase in tyre production and quantity of exports (truck and bus tyres) were 7 per cent and 18 per cent, respectively.

6 Goodyear India is the only one MNC which has continued its manufacturing conforming to the rules and regulations set by the government of India over the years.

7 In 1996, the value and total assets of Bridgestone and Michelin were US$ 15.2 billion and US $ 14.70 billion, respectively. The relative size of the Indian tyre industry is evident from the estimated value of its total assets of Rs 71,203 million during 1997-98. In an operational sense, the total value of assets of all Indian tyre companies constitute only about 11 per cent of the assets of Bridgestone [CMIE 1999 and UNCTAD 1999].

8 The cross-border mergers and acquisitions in the global tyre industry since 1980s are given in the following table. The four firm concentration (Bridgestone, Michelin, Goodyear and Continental) in global tyre market has increased

Mergers and Acquisitions

Acquiring Company	Acquired/Merged Company
Sumitomo (1983) (Japan)	Dunlop (UK)
Uniroyal (1987) (USA)	Goodrich (USA)
Pirelli (1988) (Italy)	Armstrong (USA)
Continental tyre (1988) (Germany)	General Tyre (USA)
Yokohama (1989) (Japan)	Monawk Rubber Company (USA)
Michelin (1990) (France)	Uniroyal-Goodrich (USA)
Goodyear (1999) (USA)	Sumitomo (Japan)*

Note: * Marketing arrangement. Year of acquisition/merger in parentheses

Source: Kaizaki,Y 1999.

from 49 per cent in 1979 to 60.10 per cent in 1998 [Barlow et al, 1994; EIU 1999].

9 It has been reported that the tyre manufacturing units of Modistone and Dunlop are being locked out.

10 Figures on production includes the production of tyres for truck and bus, passenger car, jeep, light truck, tractor and animal-drawn vehicles. The relative shares of major manufacturers of two-and three-wheeler tyres are MRF (29.33 per cent), TVS Shrichakra (26.22 per cent), Falcon (20.27 per cent) and Ceat (15.79 per cent).

11 The choice of the post-reforms phase was guided by the fact that the consequences of the reforms on Indian economy became obvious with respect to the tyre manufacturing industry since 1992-93.

12 In 1996-97, the unit price of an imported truck and bus tyre was only Rs 4,832, whereas the domestic price was Rs 9,750. As a result, the number of truck and bus tyres imported increased from 54 nos to 9,449 nos and the import of passenger car tyres increased from 220 nos to 37,332 nos between 1987-88 and 1996-97.

13 The concept of NPC and EPC were given a systematic treatment by Balassa (1971). In this study, the estimates of the protection coefficient were based on the exportable hypothesis which was justified as India exports more number of truck and bus tyres than its imports. The domestic price used for the analysis is the net dealer price excluding excise duty and octroi [Government of India 1988; Mani 1993]. The border price is defined as the FOB price at Cochin. The present study made use of the methodology suggested by Garry Purseel and Roger Neil, in order to compare with the estimated NPC and EPC in an earlier study [for details see Mani 1993].

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