Australian National University

Working Papers in Trade and Development

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June 2018
Working Paper No. 2018/14

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Abstract

This paper examines the growth trajectory and the current state of Indian automotive industry, paying attention to factors that underpinned its transition from the import-substitution phase to export orientation through integration into global production networks. Following the liberalisation reforms, India has emerged as a significant producer of compact cars within global automobile production networks. Interestingly there are no significant differences in prices of compact cars sold in the domestic and foreign markets. This suggest that cost competitiveness of Indian cars sold in foreign markets is not rooted solely in the prevailing high tariffs on imported cars in India. Market confirming policies implemented over the past two decades, which marked a clear departure from the protectionist past, have been instrumental in transforming the Indian automobile industry in line with ongoing structural changes in the world automobile industry. Capacity development propelled by the entry of global carmakers and parts and components producers to set up production bases in the country and leaning through competition in foreign markets have been the key factors behind India's emergence as a production base within global automobile production networks.

Key words: India, automobile industry, global production networks, trade policy, foreign direct investment.

JEL Codes: F13, F14, L92, L98.

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1. Introduction

The automobile industry is one of the first targets of industrial development through import substitution in many developing countries. It is seen as a driver of broad-based growth through technological innovations and as a source of dynamic externalities to other industries via backward and forward linkages. However, only a handful of developing countries have managed to develop an internationally competitive automotive industry. In many developing countries, automobile production has turned out to be a high cost activity, which depended heavily on government support through tariff protection, tax concessions, and other preferential treatments. Consequently, there has been a growing emphasis in these countries in recent years on restructuring the industry with a greater export orientation to reap gains from ever increasing globalization of the industry.

Until about the mid-1980s, auto firms were predominantly engaged in multi-market operations by setting up production bases in individual countries to serve those markets. Since then the automobile industry has become increasingly globally integrated in the sense that manufacturing, sourcing and marketing has become increasingly cross-national (Shapiro 1994, Humphrey 2003), Klier and Rubestein 2008). Production standards have become increasingly universal, accompanied by a palpable shift in production process from generic to modular technology. Consequently parts and components production has grown rapidly to cater for multiple assemblers. In this context, intense competition among carmakers has transformed the geographic spread of the automobile industry beyond the mature industrialized countries. Car assemblers now have to decide which models to produce at what locations, at what prices and quality standards, and for which markets. The search for low-cost production sites have led to new waves of setting up production plants by automotive MNEs in peripheral countries. This massive transformation in the structure, conduct and performance of world auto industry over the past three decades or so, has opened up opportunities for countries in the periphery to join the global automotive production network. However, an important unresolved question is whether the government in these countries should follow the conventional 'carrot and stick' (activist) approach to promote export orientation of 'indigenous' industry with significant

domestic value addition or 'market-conforming' approach in which multinational enterprises (MNEs) play the leading role in integrating domestic industry into global production networks (GPN).

The purpose of this paper is to contribute to this policy debate by examining the emergence of India as a significant production hub within the global automobile networks against the backdrop of a longstanding import substitution phase, focussing on passenger cars and commercial vehicle segments of the industry. Indian automobile industry is an ideal case study of this subject given its long protectionist history and the significant structural changes following the liberalization reforms initiated in the early 1990s gathered momentum from about 2000. For over a half a century from the late 1940s, the Indian automobile industry remained a canonical example of a high-cost industry evolved and survived heavy trade protection. However, over the past two decades, the industry has shown promising signs of gaining significant capabilities and global competitiveness through integration into global automobile production networks. Between 1999 and 2016, India's share in global passenger car production (in terms of number) increased from 1.3% to 5.1%[1]. Between these two years, India's ranking among the producing countries increased from sixteenth to sixth. Most of the world's leading auto companies now have well-established production bases in India.

A study of automobile industry is also relevant for the policy debate in India given its contrasting growth experience compared to other major manufacturing industries in the country. A stylized fact is that India's economic growth has been primarily driven by the service sector while manufacturing growth has been sluggish. Manufacturing output accounts for only about 17% of India's GDP as compared to about 30% for China. As far as the participation in GPNs is concerned, India's manufacturing sector remains generally cut off from global production sharing activities (Athukorala, 2014, Krueger 2010). The automobile industry, however, is an exception in that it has been recording impressive growth and export expansion with an increasing participation in global automobile production networks. In order to illustrate this contrast, the paper provides a comparative profiling of India's automobile industry with that of electronics industry that has been the major driver of export growth in China and other dynamic East Asian countries.

[1] These figures are based on OICA database; http://www.oica.net/category/production-statistics/.

To preview the key findings, the analysis suggests that just granting trade protection, in the absence of enabling conditions for foreign technology transfer, is not an effective strategy to build a globally competitive automotive industry. Learning and capacity development through foreign market participation and entry of parts and components producers to set up production bases has been the key factor behind India's emergence as a production base within automobile global production networks. Market confirming policies in automobile sector over the past two decades (opening the sector for private sector and MNE participation), which constituted a notable departure from the protectionist past, have played a key role in transforming the Indian automobile industry. Interestingly, there are no significant differences in prices of cars sold in the domestic market and foreign markets. This suggests that cost competitiveness of Indian cars sold in foreign markets is not rooted solely in the prevailing high tariffs on completely built-up (CBU) cars in India. An important question in the present context of globalisation of the industry is, therefore, whether trade protection outlived its purpose. This question is relevant given that Indian cars have become highly price competitive in the international market, the economies of scale enjoyed by carmakers in the large domestic market and the bulky nature of the product (unlike most electronics goods), which would continue to provide some degree of natural protection for the industry from imports.

The remainder of the paper is organized as follows. Section 2 and Section 3 sets the background by providing a survey of the evolution of Indian policy regime relating to the automotive industry and by describing the entry of the main players in the Industry. The growth and composition of automobile production is examined in Section 4, with emphasis on the experience following the policy transition from import substitution to global integration since the early 2000s. Section 5 analyses the extent of India's engagement in GPN in terms of the involvement of MNEs in the domestic industry, export expansion from the host country (India), and international sourcing of components. Section 6 provides a comparative perspective on automotive and electronics industries with a view to highlight the importance of differences in the underlying policy regimes and industry characteristics as possible explanations for India's contrasting performance in these industries. Finally, Section 7 summarises the main findings and provides the policy implications.

2. Policy Context

The automobile industry has figured prominently in India's industrialisation strategy since independence in 1947. In terms of the nature of the policy regime relating to the automobile industry, the post-independence period can be grouped into four distinct phases: the period from late 1940s to mid-1970s was characterised by progressive regulation, protection and indigenisation; the period from late 1970s into 1990 witnessed some easing of restrictions and a drive towards technological upgradation through foreign collaboration and a relatively liberal import policy for capital goods and components; the period from 1991 to 2000 saw partial liberalization as part of a process of structural adjustment program for the economy; and finally there have been major liberalisation and global integration initiatives from 2000.

2.1. Late 1940s to mid-1970s: progressive regulation, protection and indigenization

In 1948, automobiles and tractors were included in the list of industries that were subjected to "central regulation and control". Subsequently, the customs duties on certain components were raised, imports of completely built-up (CBU) vehicles were banned, and local manufacturing was encouraged. From 1953, only companies with a plan for progressive manufacture of components and complete vehicles were allowed to operate while mere assemblers of imported CKD were asked to terminate operations in three years. Later, the Tariff Commission of 1956 recommended that the automobile industry (including ancillaries) should be granted protection for a period of ten years ending December 31, 1967 (Tariff Commission 1957, Kathuria 1987).

Starting with the early phase of import substitution, the government encouraged the participation of private sector in the automotive sector. As per the 1956 Industrial Policy Resolution, the automobile industry was included in Schedule C, which means that its future development was left to the initiative and enterprise of the private sector subjected to state control through a system of industrial licensing. In this respect, the treatment meted out to the automobile industry was clearly different from other capital-intensive industries (such as iron and steel, machinery and electronics) where the prime responsibilities for capability development rested with the public sector firms[2]. Establishment of regular institutional support for the industry began with the setting up of the

[2] Other capital-intensive industries were included either in Appendix A (exclusively for the public sector) and Appendix B (progressively state owned industries where the private sector would just supplement the effort of the state).

Development council by the government in 1959 to periodically review the problems faced by the industry[3].

Some new regulations were put in place during the first half of the 1970s. First, with the establishment of MRTP commission in 1970, it became mandatory that all expansion plans have to be approved by this body. Second, a gradual but mandatory increase in local content termed 'phased manufacturing program' (PMP) was started since the 1970s. Third, the Foreign Exchange Regulations Act of 1973 stipulated that foreign holdings in Indian companies could not exceed 40 per cent.

2.2. Late 1970s to 1990: easing of restrictions and a drive towards technological upgradation.

The period from late 1970s to 1990 witnessed a major drive towards technological upgradation through foreign collaboration and a relatively liberal import policy for capital goods and components (D' Costa, 1995). The state loosened its tight grip in favour of increased competition at home and greater participation of foreign capital. In January 1985, the facility of broad-banding was extended to motorized four-wheelers, so that companies were allowed to adjust the product mix and produce a range of related products instead of one kind as decreed by the industrial license. Further, the norms relating to capacity expansion were eased and ancillary industry was delicensed though some of the automotive components were reserved for exclusive production by the small-scale sectors.

2.3. 1991 to 2000: period of partial liberalisation

As part of the overall structural adjustment program, a number of reforms were undertaken in India's manufacturing sector since the early 1990s. First, de-licensing was announced for commercial vehicles and auto-component production in 1991 and in the passenger vehicle segment in 1993 along with the elimination of the need for MRTP clearances. Second, automatic approval for foreign holding of up to 51% of equity was announced in a number of sectors including automobiles in 1991. The phased manufacturing program was abolished in 1991 for the new units and in 1994 for the existing units. Since 1997, import of capital goods and auto-components were placed under Open General License, and permitted free import. The import tariff rates for completely knocked down (CKD) units and

[3] This period also witnessed the setting up of industry associations such as Automotive Component Manufacturers Association of India (established in 1959) and Association of Indian Automobile Manufacturers (established in 1960). Later, in 1966, Automotive Research Association of India was set up.

parts and components have been gradually brought down from 65% in 1992 to 35% in 2000-01 (see Table 1).

Despite the above changes, the liberalization initiatives during in the 1990s were at best partial as some of the trade restrictions continued and certain new restrictions were introduced. Import of automotive vehicles in Completely Built-up (CBU) form was classified as "restricted" items in the Negative List, which meant that, for all practical purposes, import of cars were banned during the 1990s (Pursell, 2001).

After its abolition for a brief period, indigenization requirements were reintroduced in 1995 making it compulsory for all new joint ventures to indigenise their production up to 70-75 percent over a period of 5 to 7 years. With effect from December 1997, the indigenization requirements were modified and each joint venture firm was required to sign a Memorandum of Understanding (MOU), which stipulated, among other things, that (i) import of ckd or skd kits for "mere assembly" would not t be allowed, (ii) indigenisation of components of at least 50 percent must be reached by the third year of production and 70 percent by the fifth year of production, (iii) exports of cars and/or auto components are required to balance the cif value of imported ckd/skd/components during the MOU period, starting in the third year of production. Manufactures of commercial vehicles were not subjected to these restrictions (Pursell, 2001).

2.4. Post 2000: major liberalization and global integration initiatives

The early 2000s witnessed some major policy initiatives which were instrumental for the integration of India's automotive industry in global production networks. First, in 2001, as part of commitments under the membership of the World Trade Organisation (WTO), all quantitative import restrictions (QRs) on used vehicles and new completely built units (CBUs) were removed while imposing high tariffs (Table 1), and the local content requirement for automobile production were removed. Second, 100 per cent foreign ownership was permitted for firms in both the automobile and the component production sectors, enabling several MNEs to enter the industry by setting up wholly-owned subsidiaries. Third, the customs duties on commercial vehicles, CKD and components have been progressively reduced, from 35% in 2001-02 to about 10% by the end of the decade. Since 2011-12, CKD in pre-assembled form attracted a higher duty of 30% while those not in pre-assembled form attracted lower rate of tariff at 10%.

In addition to these liberalisation measures, the government announced specific policies to exploit India's potential in the sector, which includes "Auto Policy-2002" (aiming at making India an international hub for manufacturing of small cars), Automotive Mission Plan 2006–16 (aiming at strengthening technological competencies) and National Automotive Testing and R&D Infrastructure Project (aiming to achieve global performance standards).

The excise duties on cars were progressively reduced from 40% during the 1990s to 32% in 2001-02 and 25% in 2003-04 (see Figure 1). The excise duty on smaller cars was reduced further to 17% in 2006-07 while bigger cars attracted higher rates of 25%. During the period 2008-09 to 2015-16, excise duties for small cars remained in the range of 9%-13.5% while higher rates in the range of 21%-28% were imposed on bigger cars. Further, additional fixed levies in the range of Rs 15000 – Rs 20000 were imposed on bigger cars. Clearly, the tax structure shows a bias in favour of small cars.

3. Entry of the Main Players

Table 2 summarizes details on the timing and mode of entry of multinational enterprises (MNEs) in the passenger vehicle and commercial vehicle segments of India automobile industry. The wholly owned subsidiaries of General Motors and Ford Motor Company of Canada started assembly of CKD trucks and cars in India during the late 1920s. Later, during the first half of the 1940s, Hindustan Motors and Premier Automobiles entered the market under license agreements with Morris and Chrysler, respectively. Ashok Motors (later changed to Ashok-Leyland) started manufacturing of Austin cars and Leyland commercial vehicles in 1948. General Motors and Ford withdrew from India as a result of tightening of regulations, particularly the government decision to refuse permission to assemble imported vehicles without increasing local content. Tata Engineering and Locomotive Co (TELCO) started manufacturing of commercial vehicles in 1954 in collaboration with Daimler-Benz. Mahindra and Mahindra, another important player in commercial vehicles segment started production of Willys jeep in 1955. Bajaj Tempo began producing light commercial vehicles in 1958 under license from Vidal and Sohn Tempo-Work of Germany.

Until the mid-1980s, the auto industry remained a low-volume, high-cost industry with a few prominent private players. There were only two key firms in the passenger car segment (Hindustan Motors and Premier Automobiles) while other firms manufactured commercial vehicles (Tata Motors,

Ashok-Leyland, Mahindra and Mahindra and Bajaj). The various measures that the government undertook since independence did not deliver the intended results of expanding the industry (especially in passenger car production) until the advent of Maruti-Suzuki in mid 1980s (Hamaguchi 1985).

By the mid-1980s, Japanese business started responding to an emerging Indian market and deregulation by introducing capital and technology in several joint ventures in four wheeler segment (Suzuki Motors, Toyota, Mitsubishi, Nissan, and Mazda) and in components industry. The advent Maruti Udyog Limited (later renamed as Maruti-Suzuki) in 1983, in collaboration with Suzuki, is a major landmark in the history of the automotive industry in India. Maruti-Suzuki, the first MNE to enter the Indian market in collaboration with the government, soon dominated the passenger car market and continues to do so. When Maruti Udyog Limited was formed, the government owned 80 per cent of the equity. However, the government share was reduced over the years and when the government sold the remaining 18 per cent of shares in 2007, its participation in the company virtually ceased.

Policy reforms that allowed 51% equity participation by foreign companies and industrial de-licensing in the early 1990s, enabled several global players to enter into the Indian market as joint ventures in that decade. The important joint ventures established included Mercedes-Benz with TELCO (1994), GM with HML (1994), Peugeot with PAL (1994), Daewoo with DCM-Toyota (1995), Honda Motors with Siel Ltd. (1995), Ford with Mahindra & Mahindra (1996) Fiat with Tata Motors (1997) and Toyota with Kirloskar Group (1997). Hyundai and Volvo entered Indian market as fully owned subsidiaries in 1996 and 1997, respectively. Domestic commercial vehicle manufacturing companies such as Tata Motors and Mahindra & Mahindra have diversified in passenger car segment during this period.

Following the abolition of ownership restrictions in 2000, several global car makers (Skoda-Volkswagen, Nissan, BMW and Isuzu Motors) have established fully owned subsidiaries during the post 2000 period. Further, companies that first entered as joint ventures, such as Honda, Ford, Fiat, Renault etc, later severed link with their local partners and established 100% subsidiaries[4]. Further, a

[4] An interesting article on this issue is here: http://uk.reuters.com/article/uk-india-autos/ditching-joint-ventures-carmakers-drive-alone-in-india-idUKLNE83F01D20120416

host of tier 1 international component suppliers, including Bosch, Delphi, Visteon and Denso, have set up production facilities in India.

4. Growth and Composition of Production

Trends in the real values of gross value added (GVA) for India's automobile industries as per the 3-digit level of National Industrial Classification (NIC) for the period 1999-00 to 2013-14 is depicted in Figure 2. The industry groups for which comparable GVA data could be obtained include (i) 'manufacture of motor vehicles (NIC 341), (ii) 'manufacture of bodies (coach work) for motor vehicles; manufacture of trailers and semi-trailers' (NIC 342) and (iii) 'manufacture of parts and accessories for motor vehicles and their engines' (NIC 343). The average annual growth rates of GVA for these three industry groups are reported in Table 3. As can be seen, all the three industries recorded double digit growth rate during the post-2000 period. The 'motor vehicles' industry, which includes both passenger and commercial vehicle segments, grew at the rate of an impressive 13.2% during 2000-01 to 2013.14 as compared to about 6% during the 1990s and 1980s. It can also be seen that real GVA in 'parts and accessories' grew faster (16.8%) than 'motor vehicles' (13.2%) during the post-2000-01 period.

Disaggregated time series data on GVA across the two segments within motor vehicles – that is, passenger vehicles versus commercial vehicles – is not available. However, data on the number of vehicles produced is available at the disaggregated level and for a much longer time period. Figure 3 shows the trends in the production of passenger vehicles and commercial vehicles, in terms of number of vehicles, during the period 1950-2016. It can be seen that the number of vehicles produced remained low (less than 100 thousand units) and comparable for commercial and passenger vehicles until the mid-1980s. The production of passenger vehicles gradually increased during the second half of the 1980s, picked up pace during the 1990s, and then grew much faster since the early 2000s. The growth rate of production for the two segments (passenger vehicles and commercial vehicles) diverged significantly since 2001. The share of passenger vehicles in total number of vehicles produced increased from 56% in 1985 to 82% in 2015. Production of passenger vehicles crossed the 1 million mark in 2004 while that of commercial vehicles remained below 1 million throughout the period.

The category of passenger vehicles includes 'passenger cars' and 'utility vehicles' while commercial vehicles include 'light vehicles' (LCV) and 'medium and heavy vehicles' (M&HCV). The share of cars within passenger vehicles remained mostly above 80% since the mid-1980s while the share of LCV within commercial vehicles increased significantly over the years from 21% in 1972 to 40% in 1986 and to 57% in 2016. Within the group of M&HCV, heavy trucks accounts for more than 85% while buses constitute the remaining.

Figure 4 shows the distribution passenger car production by three size categories: small (up to 4000mm), mid-size (4001-4500 mm) and large (> 4500mm). It can be seen that small cars accounts for the bulk of total production (more than 80%) followed by mid-size cars while large cars accounts for a negligible share.

Table 4 reports the market share of individual car makers across size categories as well as the degree of concentration (Herfindhal Index) in each category[5]. Maruti Suzuki with a market share of 51% and Hyundai with a market share of 27% clearly dominate the small & compact car segment. The market structure for small & compact cars remain highly concentrated with a Herfindhal Index of 0.346 in 2014-15 (down from 0.381 in 2009-10). As compared to the small & compact car segment, the market structure for mid-size cars appears less concentrated with a concentration index of 0.150 in 2014-15, with the main players in the market being Honda (21%), Volkswagen (18%), Maruti Suzuki (16%) and Hyundai (15%), and Nissan (12%). The entry of new companies in the mid-size segment (Volkswagen, Nissan and Toyota Kirloskar) led to a decline in the concentration index from 0.225 in 2009-10.

The dominant companies in the utility vehicle segment include Mahindra & Mahindra and Maruti Suzuki, with the market shares of 28% and 26% respectively in 2014-15. Other companies in this segment include Ford (13%) and Toyota Kirloskar (10%). The concentration ratio in the utility segment has declined from 0.251 to 0.186. Turning to the market structure in commercial vehicles, Tata Motors accounts for the largest share in LCV (43%) and M&HCV (54%) segments, with the second largest player being Mahinda & Mahindra (39.8%) and Ashok Leyland (29.2%), respectively.

[5] Herfindhal index of concentration is defined as: $HI = \sum_i si^2$, where s*i* is the share of the *i*th company in total production in a given size category

Both the segments show a high degree of market concentration with values of Herfindhal index in 2014-15 being 0.351 and 0.392 in LCV and M&HCV, respectively[6].

5. Engagement in Global Production Network (GPN)

India's engagement in GPN should be understood in the context of a major structural shift taking place in the global auto industry. Manufacturing, sourcing and marketing in the auto industry has become increasingly cross-national since the mid-1980s. In order to bring down the cost of production, car companies manufacture components of an automobile at different sites across the world and then bring them together for final assembly. The search for low-cost production sites have led to new waves of setting up production plants by automotive MNEs in peripheral countries (Klier and Rubestein 2008, Shapiro 1994).

At the same time, with the growth of per capita income, automobile demand is growing at a faster rate in emerging economies than in advanced countries. As demand is shifting to emerging economies, MNEs are setting up new assembly bases to serve these markets. As a result of the combined effect of the international fragmentation of the production process and shifting demand to emerging economies, production in the home country of major car makers as a share of their total production has declined significantly over the years. Home country production accounted for about 61% total production for 15 largest car makers of the TRIAD in the year 2000. This proportion has declined to 34% in 2014, meaning that about 2/3rd of production by the major car companies had taken place in locations outside their home countries (Traub-Merz, 2017).

Against this background, we analyse in this section India's engagement in GPN in terms of (i) involvement of MNEs in the domestic industry, (ii) export expansion from the host country (India), and (iii) increased international sourcing of components.

[6] The concentration ratio was higher at 0.44 in both LCV and M&HCV segments in 2009-10.

5.1. Involvement of MNEs in the domestic industry

Learning and capacity development through participation by MNEs has been the key factor behind India's success in the automobile industry. The learning process was kick-started during the early phase of the industry with technological collaboration and joint ventures with MNEs. Referring back to Table 2, from independence and until the mid-1990s, almost all automakers in India (including major companies such as Tata Motors, Ashok-Leyland and Mahindra & Mahindra) commenced production either as a joint venture or with license agreements with MNEs. With progressive liberalization of FDI, the dominant mode of entry changed over time from license agreement to joint venture to wholly owned subsidiaries. Hyundai was the first foreign company to establish a 100% subsidiary in the country while Volkswagen, Nissan, BMW and Isuzu motors followed suit. Companies such as Honda, Ford, Fiat, Renault etc first entered as JV but later established 100% subsidiaries. A host of tier 1 international component suppliers (Bosch, Delphi, Visteon and Denso etc) have also set up production facilities in India. The automobile industry has attracted inward FDI worth $15.79 billion during the period April 2000 to September 2016[7].

5.2 Trends and Patterns of Exports

We begin with a comparison of the dollar values of India's export and import patterns across the major auto industry groups at the 4-digit level of ISIC (see Figure 5 and Figure 6)[8]. The export and import baskets reveal a major contrast in that while assembled motor vehicles (ISIC 3410) constitute the bulk of India's export basket (62% in 2016), parts and accessories (ISIC 3430) accounts for the major share on the import side (80% in 2016). This pattern is consistent with the emergence of India as an assembly centre for automobiles. The export value of assembled motor vehicles increased significantly from about 225 million dollars in 2001 to 8224 million dollars in 2016 while that of parts and accessories increased from 408 million dollars to 4912 million dollars during the same period. The pattern is quite different on the import side, with significantly faster growth for parts and accessories as compared to assembled vehicles. In 2016, the import value of assembled vehicles stood below 1000 million dollars in contrast to about 4500 million dollar imports of parts and accessories.

[7] http://dipp.nic.in/English/Publications/FDI_Statistics/2016/FDI_FactSheet_April_Sep_2016.pd

[8] It may be noted that the classification at the 4-digit level of ISIC (International Standard Industrial Classification) corresponds to India's NIC (National Industrial Classification). The NIC classification is used for reporting gross value added in Figure 2 and Table 3.

In order to analyse the composition of motor vehicle export, we use data at the 4-digit level of Harmonised System (HS) of trade data classification, which provides the break up for passenger vehicles and commercial vehicles. It is clear that export growth has been mainly driven by passenger vehicles (Figure 7). Data on the number of vehicles exported gives a similar picture (Figure 8). Export of passenger vehicles increased from less than $1000 million in 2005 to nearly $5400 in 2015. In comparison, the value of commercial vehicles export barely crossed $1000 million in 2015. Passenger vehicles accounted for 84% of the value of total vehicle exports in 2016. In terms of the number of vehicles, export of passenger vehicles increased from about 446 thousand units in 2009-10 to 622 thousand units in 2014-15. Within passenger vehicles, cars account for the bulk of the share – that is, i.e., 87% of total number of vehicles exported in 2014/15. Within the segment of commercial vehicles, LCV accounts for higher share – that is, 64% in 2014-15 (up from 55% in 2009-10).

What is the share of export in total production? Table 5 provides this information separately for passenger vehicles and commercial vehicles. It can be seen that the share of export in production is significantly higher for passenger vehicles (in the range of 15%-19%) as compared to commercial vehicles (in the range of 8% - 12%). Within passenger vehicles, export orientation for passenger cars (in the range of 18%-24%) is significantly higher than that for utility vehicles.

Having noted that export growth of automobiles has been primarily driven by passenger cars, we now turn analyse the composition of car exports by size categories, by making use of data at the 6-digit level of HS (see Figure 9). It is evident that small and compact cars account for about 78% of total passenger vehicle exports from India. The share of compact cars (spark ignition engine 1000-1500cc) increased phenomenally from less than 4% in 2000 to 55% in 2015. During the same time period, the export share of small cars (spark ignition engine less than 1000cc) declined from 73% to 23%. The share of bigger cars and other passenger vehicles remain mostly unchanged during the period.

How does the pattern of India's passenger vehicle exports by size categories compare with that of the world (excluding India)? As can be seen in Figure 10 the pattern of Indian exports in terms of the size distribution is notably different from that of global patterns. Bigger cars (spark ignition engine 1500-3000cc) and other utility vehicles account for about 85% of world exports while small and compact cars constitute only the remaining 15%. Thus, it is clear that India's specialization pattern within the passenger vehicle segment is quite different from that of the world. India has carved

out a niche in the small and compact car segments while the advanced countries mostly export bigger cars and utility vehicles. Between 2000 and 2015, India's share in world exports of compact cars has increased from a paltry 0.01% to 3.7% while that of small cars has increased from 0.9% to 5.3%[9]. India's world market shares in bigger cars and utility vehicles remain meagre. India's ranking, among the top 20 countries that exported small & compact cars (spark ignition engine less than 1500 cc), increased notably from 18th in 2002 to 9th in 2015. Other major countries such as UK, USA, China, Thailand etc ranked below India in this segment[10].

Data on dollar value of export, number of units exported, value and quantity shares in the export basket, and unit values for passenger vehicle at the HS 8 digit level are summarised in Table 6. Small and compact petrol cars accounts for about 87% of the total value of passenger vehicles exported from India during 2011-14. While the share of compact cars increased from 10% during 2003-06 to 70% during 2011-14, the share of small cars declined from 55% to 16% during the same period. Bigger petrol cars and all categories of diesel cars account for negligible share in the export basket. The unit values show an increase over the years in each of the size categories. Further, as expected, export unit values tend to increase with the size of the cars.

The top 25 destinations for the export of compact cars is listed in Table 7. It can be seen that the markets in middle income countries account for 45% exports while high income countries account for 37%. Among the middle income group, the top individual country destinations include South Africa (16.4%), Algeria (7.6%), Swaziland (5.2%) and Mexico (3.8%). Among the high income countries, the top destinations include UK (10.3%), Spain (4.5%), UAE (3.9%), Australia (3.9%), Netherland (3.6%), Italy (2.7%) and Germany (2.1%). It is clear that, in contrast to what is generally believed, the markets for Indian cars are not restricted to developing countries[11].

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[9] World market shares are computed using the data extracted from COMTRADE-WITS. World export (denominator of ratio) is estimated by aggregating the data for 116 countries that have consistently reported trade data for the period 2000-2015.

[10] The countries which ranked above India in this segment, in the order of their ranking, are: Germany, Spain, Korea Rep., Czech Rep., France, Japan, Belgium and Mexico.

[11] As far as parts and components of automobiles (ISIC 3430) is concerned, high income countries account for a significantly larger share (61% in 2016) of the total value of exports from India as compared to assembled motor vehicles (ISIC 3410) (35.6% in 2016). Source: estimated using COMTRADE-WITS database.

Having shown that India has been successful in carving out a niche in the export markets in both developed and developing countries for small and compact cars, a pertinent question is how do Indian cars compare with those of the competitors in terms of price? In order to address this question, we compare India's export unit values with that of the USA (Table 8). The choice of USA as the comparator country is dictated by the availability of comparable data. However, the comparison is pertinent given that India has a significant market presence in developed countries where it may face direct competition from car makers from advanced countries, including the USA.

It is clear that Indian unit values are significantly lower than that of the USA in both small and compact cars and throughout the period, with the difference being particularly large for compact cars. Unit values of Indian cars, in the compact car segment, is about half that of the USA. Thus, price competitiveness appears to be an important factor behind India's export success in the segment of compact cars. Further, the export prices seem to be comparable to domestic prices (ex-showroom) of cars in each segment. For example, the average ex-showroom price for Maruti Alto, the major brand exported in the small car (<1000cc) segment, was about $5710 in the year 2012. Similarly, the ex-showroom price for Hyudai i10, the major exported brand within the compact car segment (1000-1500cc), was about $7320 in 2013[12]. These prices are not significantly different from the reported export unit values in Table 8. This suggests that cost competitiveness of Indian cars sold in foreign markets is not rooted solely in the prevailing high tariffs on imported cars in India.

Which are the Indian companies that have a significant presence in the export market? Table 9 shows the shares of different car makers in the total export from the country within each of the size categories. It also reports the Herfindhal index of concentration in the export market[13]. It is evident that Hyundai accounts for the largest share (41.6%) in the export of small & compact cars, followed by Maruti Suzuki (25.5%) and Nissan (20.2%). With the entry of several new players in this segment (Nissan, Ford, Toyota Kirloskar, Volkswagen and Honda), the degree of concentration in the export market has declined significantly from 0.528 in 2009-10 to 0.284 in 2014-15.

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[12] The domestic prices were obtained from various newspaper clippings. See, for example: http://economictimes.indiatimes.com/automobiles/maruti-alto-800-launched-at-a-starting-price-of-rs-2-44-lakh-gets-10000-pre-orders/articleshow/16833932.cms.

[13] Herfindhal index of concentration in the export market is defined as: $HI = \sum_i xi^2$, where *xi* is the export share of the *i*th company in the total export from the county in a given size category.

In the mid-size segment, Hyundai accounted for a hefty 82% of exports in 2009-10. However, its share fell significantly to 16.8% in 2014-15 as a result of a significant market share gain for the new entrants, such as Volkswagen (40.6%), Nissan (28.1%), Toyota Kirloskar (4.7%) and Honda (2.3%). As a result of the new entries, the concentration ratio in the mid-size segment declined from 0.684 to 0.278. As far the large cars are concerned, almost 100% export from the country was undertaken by a single firm – Fiat in 2009-10 and Honda in 2014-15[14].

Comparing the values of Herfindhal index in production with those of exports, it is clear that the degree of concentration is significantly higher for export sales as compared to domestic sales across all segments and overtime. The degree of concentration has declined significantly over the years in both domestic and export markets, suggesting that the new entries in the market are aimed at not only for capturing the growing domestic market but also to use India as a base for the export of compact cars.

5.3. International Sourcing of Components

The analysis of export patterns in the previous section shows that India has emerged as an important assembly centre for small and compact passenger cars. A number of MNEs have set up subsidiaries in India not only with an eye on the growing domestic demand but also to use India as an export base for small and compact cars. It is generally observed that in many countries with a sizeable market and a national production of 1 million units or more, foreign tier 1 suppliers have established component production next to their traditional OEMs (Traub-Merz, 2017). As noted earlier, a number of foreign tier1 suppliers have established production facilities in India too. Yet, participation in automotive assembly activities within GPN may imply that a significant share of the parts and components have to be sourced internationally.

India's imports of parts and components grew significantly faster than assembled motor vehicles (Figure 6). The value of the imports of parts and components increased from about $330 million in

[14] In 2014-15, the leading exporters in the utility vehicle segment are: Ford (68.6%), Maruti Suzuki (15.1%), M&M (8.5%) and Renault (4.6%). Tata Motors is the leading exporter in the CV segment – both LCV (55.2%) and M&HCV (51.3%). The second largest exporter in LCV and M&HCV segments are respectively M&M (37.4%) and Ashok Leyland (36.6%).

2001 to $4511 million in 2016. As noted earlier, parts and components accounts for about 80% of India's total automotive imports in 2016.

A pertinent question in the context of an industry's increasing participation in GPN is related to the extent of domestic value addition generated from gross exports. In general, when a country specialize in the assembly related activities in an industry, the share of domestic value added (DVA) in gross export tend to be low due to the heavy reliance on imported parts and components. The DVA share of gross exports is a measure that illustrates how much value-added is generated throughout the economy for a given unit of exports. A lower ratio of DVA to exports implies that the foreign value added content of exports is proportionately higher[15]. Thus, DVA to gross export ratio in an industry can be used as a measure of the import content (direct plus indirect) of gross exports.

Table 10 reports the available estimates on the ratio of DVA to gross exports for India's motor vehicle industry[16]. To provide a comparative picture, the table also reports the estimates for Thailand, China, Brazil, Mexico and Korea. The estimates by Veeramani and Dhir (2017) show that the ratio DVA to gross exports declined significantly over the years from 0.836 in 1999-00 to 0.637 in 2012-13, a trend consistent with India's increasing participation in global automotive production networks. The estimates of DVA to export ratio for the latest available years for India are broadly comparable to those of China and Korea, significantly higher than that of Thailand and Mexico, and lower than that of Brazil.

6. Comparison with Electronics Industry

It is well known that, based on imported parts and components, China has emerged as a major hub for electronics assembly. However, India has missed the bus in the case of electronics industry as the country has failed to integrate itself with the GPN in electronics. Electronics and electrical goods account for only a tiny share of India's exports. An important question in this context is: what are the

[15] It must be noted that while greater participation in GPNs may imply that DVA *per unit* of a good produced is low, the *total* DVA from these activities could be considerably high due to the scale effect of producing for the world market. For example, the often-cited case study by Dedrick et al (2010) shows that although the factory-gate price of an assembled iPod from a Chinese factory is $144, only about $4 of this constitutes of Chinese value added with much of the rest being captured by US, Japan and Korea. However, despite the low DVA per unit, the aggregate DVA in China from iPod assembly is very high due to the scale effect of producing for the world market.

[16] Note that the estimates are available only at the aggregate level for motor vehicles as a whole. Separate estimates for passenger vehicles and commercial vehicles are not available.

specific conditions which made it possible for India to successfully participate in the GPN for automotive industry but not in electronics? We argue that the factors responsible for the divergent outcomes are related to (i) differences in the policy regime and (ii) differences in industry characteristics.

As discussed in Section 2, in the case of automotive industry, the government policy has always been more accommodative, even during the heydays of import substitution, to permit participation by MNEs and private sector firms. In the case of electronics, in contrast, the major responsibility for capability development was assigned to the public sector and small scale sector with little recourse to foreign capital and technology until the 1980s. Foreign collaborations were not allowed in the field of electronic consumer goods, except in the case of 100 per cent export oriented units (Narayana and Joseph, 1993). Organised private sector was not given any significant place during the import substitution period (Subrahmanian and Joseph, 1988). These policies hampered the development of domestic capabilities in electronics as opposed to automobiles. A long history of market confirming policies in the automobile sector, as opposed to electronics, in terms of opening the sector for private sector and MNE participation, played a key role in the success of the former.

Turning to industry characteristics, it may be noted that unlike electronics and electrical goods, automotive are bulky and low "value-to-weight" goods and hence transport cost is a key determinant of market price. There is also a need to design the product to suit the taste and affordability of the consumer. Therefore, there is a natural tendency for final assembly plants to be located in countries with large domestic markets. Once auto makers choose to set up assembly plants in a given country, parts and components producers follow them. This is mainly because auto parts also have low value-to-weight ratios, which makes it too costly to use air transport for the timely delivery required for just-in-time production schedules of the final assembler (Hummels, 2007). Once a complete production base (involving both final assembly and component production) is established in a large country, exporting to third countries becomes a viable option for automakers.

In contrast to automotive, electronic goods are high value-to-weight goods and hence transport cost is not a key determinant of market price. Therefore, it is not necessary for assembly plants to be located in countries with large domestic market. The manufactures tend to locate production facilities in fewer countries (which have good air connectivity) and export to other countries (Athukorala 2014).

7. Concluding Remarks

From about the early 2000s, Indian auto industry has undergone a remarkable transformation from the domestic-market oriented production patterns prevailed for over a half century to global integration. During the past two decades, a number of MNEs have set up wholly owned subsidiaries in India to produce for both the growing domestic market as well as to use India as the production base to global markets of compact cars. A number of foreign tier 1 parts and component suppliers have also established production facilities in India. As a result, the country has emerged as a major assembly centre for small and compact cars. Our analysis shows that Indian cars are highly price competitive in the international market. There are also no significant differences in prices of cars sold in the domestic market and foreign markets. This suggest that cost competitiveness of Indian cars sold in foreign markets is not rooted solely in the prevailing high tariffs in India.

Our analysis also suggests that just granting trade protection, in the absence of enabling conditions for foreign technology transfer, is not an effective strategy to build a globally competitive automotive industry. Learning and capacity development through foreign market participation and entry of parts and components producers to set up production bases has been the key factor behind India's emergence as a production base within automobile global production networks. Market confirming policies in automobile sector over the past two decades (opening the sector for private sector and MNE participation), which constituted a notable departure from the protectionist past, have played a key role in transforming the Indian automobile industry.

Both car manufacturing and component production in India are dominated by foreign firms, with local firms mostly involved as suppliers of parts and components. But, this does not seem to make a case for government intervention to promote local interest; increased involvement of foreign firms in both car assembly and parts production has been a universal phenomenon driven by a structural shift in global auto industry from the traditional multi-market mode of production to a globally integrated system of production. In the new era of 'world car', strategic alliance forged between the key players in the industry and firms of different national origin has become the norm of cross-border operation. This by no means implies that Indian companies do not have the ability to move up the production ladder as they acquire expertise and technological capabilities over time. There are already indications of this happening.

An important aspect of the performance of Indian automobile industry, which requires further research, is the coexistence of high tariff protection (which implies an anti-export bias) and rapid export growth. Viewed from the standard (mainstream) policy advocacy for designing export promotion policy, an interesting issue here is why continuing anti-export bias was not a deterrent to rapid export growth. A possible explanation is that export expansion has been predominantly driven by MNEs, which set up production plants in India to produce for the global market, not just for the India market. The conventional advocacy for removing anti-export bias as a precondition for export expansion is based on the implicit assumption that exporting is an act of domestically owned firms whose marketing decision is driven by the relative profitability of exporting compared to selling in the domestic market. Relative profitability in selling in the domestic market is not a binding consideration for a MNE involved in manufacturing, sourcing and marketing within a global production network.

High trade protection, in the form QRs and import tariffs on imported cars, was presumably important in the early stage attracting foreign firms to set up production bases in India. An important question in the present context of globalisation of the industry is whether trade protection outlived its purpose. Interestingly, there are no significant differences in prices of cars sold in the domestic market and foreign markets. This suggest that competitiveness of Indian cars sold in foreign markets is not rooted in the prevailing high tariffs in India.

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Table 1: Import Tariff Rate

	CV (HS 8702/04)	Cars and Utility Vehicles (HS 8703)				Parts & components (HS 8708)
		General	Used Vehicles	New CBU	CKD	
1990	53	150	QRs	QRs		40
1992	60	65	QRs	QRs		65
1995-96	50	50	QRs	QRs		n.a
1996-97	50	50	QRs	QRs		52
1997-98	40	40	QRs	QRs		40
1998-99	40	40	QRs	QRs		n.a
1999-00	40	40	QRs	QRs		40
2000-01	35	35	QRs	QRs		38.5
2001-02	35		105	60	35	35
2002-03	30		105	60	30	30
2003-04	25		105	60	25	25
2004-05	20		105	60	20	30
2005-06	15		100	60	15	15
2006-07	12.5		100	60	12.5	12.5
2007-08	10		100	60	10	12.5
2008-09	10		100	60	10	10
2009-10	10		100	60	10	10
2010-11	10		100	60	10	10
2011-12	10		100	60	10*/30**	8.57
2012-13	10		100	60/75#	10*/30**	10
2013-14	10		125	60/100#	10*/30**	10
2014-15	10		125	60/100#	10*/30**	n.a

2015-16	10		125	60/100#	10*/30**	10

Note: #for vehicles valued above $40,000; **containing engine or gearbox or transmission mechanism in pre-assembled form; * containing engine, gearbox and transmission mechanism not in a pre-assembled condition; data for Harmonized System (HS) code 8708 are on calendar year (January –December) basis.

Source: (i) Data for the calendar years 1990 and 1992 and for HS 8708 (for all years) are extracted from UNCTAD-TRAINS using WITS software; (ii) Statistical Profile 2014-15, Society of Indian Automobiles (SIAM) for all remaining data.

Table 2: Entry of the Main Players

Company	Mode of entry	Year of entry
Ford Motor Co of Canada	100% subsidiary	1926, left in 1954
General Motors	100% subsidiary	1928, left in 1954
Hindustan Motors	License agreement with Morris Motors	1942
Premier Automobiles	License agreement with Chrysler	1944
Ashok Motors / Ashok-Leyland	License agreement with Austin cars and Leyland	1948
TELCO/Tata Motors	JV with Daimler-Benz	1954
Mahindra and Mahindra	License agreement with Willys Jeep	1955
Bajaj Tempo/Force motors	License agreement with Vidal and Sohn Tempo-Work of Germany	1958
Standard Motor Products	License agreement with Standrard-Triumph	1949, left in 2006
Suzuki	JV with Maruti	1983
Mercedes Benz	JV with Telco	1995
PAL Peugeot	JV with Premier Automobiles	1995
Daewoo Motors	JV with DCM	1995
Honda Seil	JV with Shriram	1995
Ford	JV with Mahindra and Mahindra	1996
General Motors	JV with Hindustan Motors	1996
Hyundai	100% subsidiary	1996
Toyota Kirloskar	JV with Kirloskar	1997
Fiat	JV with Tata Motors	1997
Skoda (Volkswagen)	100% subsidiary	2001
Renault	JV with Mahindra	2005

Nissan	100% subsidiary	2005
BMW	100% subsidiary	2007
Isuzu Motors	100% subsidiary	2012

Source: Assembled from various internet sources

Table 3: Average Annual Growth Rates of Real Gross Value Added (GVA)

	Motor vehicles (NIC 341)	Manufacture of bodies (NIC 342)	Parts & accessories (NIC 343)
1980-81 to1990-91	5.8	9.1	n.a
1991-92 to1999-2000	6.0	7.1	n.a
2000-01 to 2009-10	18.7	26.0	16.3
2000-01 to 2013-14	13.2	28.1	16.8

Note: NIC stands for National Industrial Classification
Nominal values of GVA are converted to real values using the GDP deflator for transport equipment obtained from CSO's National Accounts Statistics

Source: Nominal GVA values are obtained from Annual Survey of Industries (ASI) database extracted from EPWRF website (concordance series).

Table 4: Main Players in the Passenger Car Segment, Percentage Shares of the Total Number of Vehicles Produced.

	Small and compact (upto 4000mm)		Mid-size (4001-4500mm)		Large (>4500mm)
	2009/10	2014/15	2009/10	2014/15	2009/10
Maruti Suzuki	50.8	51.3	37.5	16.4	0.0
Hyundai	33.6	27.5	17.6	14.7	0.8
Tata Motors	9.4	5.6	9.9	0.7	0.0
Nissan	0.0	4.9	0.0	12.0	0.0
Honda	0.6	3.7	17.3	20.8	18.3
Volkswagen	0.0	1.8	0.0	18.4	0.6
Ford	0.5	1.8	10.6	2.5	0.0
Toyota Kirloskar	0.0	1.8	0.0	9.0	18.8
General Motors	3.7	1.1	1.4	1.8	9.5
Fiat	0.9	0.3	0.0	0.0	21.6
Renault	0.0	0.1	0.0	0.2	0.0
Mahindra & Mahindra	0.0	0.1	2.3	0.5	0.0
BMW	0.0	0.0	0.0	0.0	5.3
Hindustan Motors	0.0	0.0	3.4	0.0	0.0
Mercedes- Benz	0.0	0.0	0.0	0.0	6.5
Skoda	0.4	0.0	0.0	3.1	18.5
Total Number	1614539	2021676	265993	372876	52088
Index of concentration (Herfindhal)	0.381	0.346	0.225	0.150	0.166

Source: Authors' estimation using data from "Statistical Profile 2014-15" published by SIAM.

Table 5: Number of Vehicles Exported as a Share of the Number of Vehicles Produced (%)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Passenger Vehicles	**18.9**	**15.2**	**16.2**	**17.2**	**19.3**	**19.3**
--- of which, Passenger Cars	22.9	18.2	19.8	22.4	23.7	22.4
-----Utility Vehicles	1.0	1.1	1.2	1.2	5.9	10.0
Commercial Vehicles	**7.9**	**10.1**	**9.9**	**9.6**	**11.0**	**12.3**
---of which, M&HCVs	8.2	8.5	7.4	6.8	10.7	11.4
-------- --- LCVs	7.7	11.5	11.7	11.0	11.1	12.9

Note: M&HCV stands for Medium and Heavy Commercial Vehicles; LCV stands for Light Commercial Vehicles

Source: Authors' estimation using data from "Statistical Profile 2014-15" published by SIAM.

Table 6: Composition and Unit Values ($) of Passenger Car Exports across Types of Cars

Composition and Unit Values of Passenger Car Exports across Types of Cars						
Car Type	Period	Values, $Million	Number	Value share (%)	Quantity Share (%)	Unit Value, $
Spark ignition engine not over 1000cc (ITC 87032191)	2003-06	94.1	23132	54.9	59.7	4117
	2007-10	623.3	120332	33.0	40.7	4835
	2011-14	628.2	108282	16.3	20.8	5829
Spark ignition engine 1000-1500cc (ITC 87032291)	2003-06	20.4	3746	10.3	8.3	6451
	2007-10	1385.6	201141	53.5	50.4	6700
	2011-14	2812.2	373492	70.3	69.7	7512
Spark ignition engine 1500-3000cc (ITC 87032391)	2003-06	62.6	9403	31.7	23.5	7026
	2007-10	73.4	8982	11.2	7.5	8473
	2011-14	404.4	38399	9.4	6.8	10513
Spark ignition engine exceeding 3000cc (ITC 87032491)	2003-06	0.3	3121	0.2	6.0	6315
	2007-10	1.9	209	0.4	0.2	10049
	2011-14	0.7	45	0.0	0.0	27674
Diesel engine not over 1500cc (ITC 87033191)	2003-06	2.5	757	1.5	1.7	4887
	2007-10	33.4	3549	1.2	0.8	8904
	2011-14	147.0	12275	3.2	2.1	10568
Diesel engine 1500cc-2500cc (ITC 87033291)	2003-06	2.0	239	1.2	0.6	8602
	2007-10	5.7	553	0.3	0.2	9738
	2011-14	33.7	2509	0.7	0.4	14224
	2003-06	0.3	34	0.2	0.1	8372

Diesel engine over 2500cc (ITC 87033391)	2007-10	2.6	295	0.3	0.2	9397
	2011-14	3.3	330	0.1	0.1	21135

Note: Unit value is defined as value ($) divided by number; ITC stands for Indian Trade Classification
Source: Authors' estimation using data from Directorate General of Commercial Intelligence and Statistics, Ministry of Commerce, Government of India.

Table 7: Top 25 Destinations for India's Exports, Cars with Spark Ignition Engine 1000-1500cc (ITC 87032291), Cumulative Sum for the Period 2011-14.

Countries	Income Group	$ Million	Number	Share in value (%)
UK	High Income	115.4	14890	10.3
SPAIN		50.8	6322	4.5
UAE		43.7	4444	3.9
AUSTRALIA		43.7	4578	3.9
NETHERLANDS		40.8	4933	3.6
ITALY		30.8	4293	2.7
GERMANY		23.7	3374	2.1
ISRAEL		17.1	2153	1.5
SAUDI ARAB		15.6	1709	1.4
CHILE		15.1	2462	1.3
BAHARAIN IS		11.3	1168	1
IRELAND		8.9	896	0.8
Total High Income		*416.9*	*51222*	*37.0*
SOUTH AFRICA	Middle Income	184.3	24196	16.4
ALGERIA		85.6	13609	7.6
SWAZILAND		58	2252	5.2
MEXICO		43.1	7194	3.8
INDONESIA		21.7	3251	1.9
LEBANON		18.8	2438	1.7
COLOMBIA		18.2	3829	1.6
LIBYA		15.8	2643	1.4
TOKELAU IS		14.9	1652	1.3
ANGOLA		14.6	1747	1.3
PERU		13	2178	1.2
TURKEY		11.8	1263	1.1
PANAMA REPUBLIC		8.7	1180	0.8
Total middle income		*508.5*	*67432*	*45.3*

Other countries		198	26386	17.6

Source: Authors' estimation using data from Directorate General of Commercial Intelligence and Statistics, Ministry of Commerce, Government of India.

Table 8: Unit Value ($) of Exports for India and USA, Small and Compact Cars, Exports to the World

Year	Spark ignition engine not over 1000cc		Spark ignition engine 1000-1500cc	
	India	USA	India	USA
2003	3871.7	4696.6	5696.8	8776.2
2004	4436.9	4946.0	4622.3	8618.3
2005	4284.1	5390.2	5601.4	9100.2
2006	3876.6	5500.0	9828.4	13011.6
2007	3778.6	5579.8	5752.6	15061.3
2008	3887.7	5951.9	6135.1	15274.3
2009	6475.4	6324.3	6868.8	15325.9
2010	5199.5	7454.4	6945.5	15164.3
2011	5740.3	7402.3	6848.8	15318.1
2012	5494.3	7872.7	7395.3	15763.0
2013	5742.5	7985.7	7346.5	15232.3

Source: (i) Unit values for India is estimated using data (8-digit ITC) from Directorate General of Commercial Intelligence and Statistics, Ministry of Commerce, Government of India.
(ii) Unit values for USA for the same product description is obtained from U.S. Census Bureau (http://usatrade.census.gov/)

Table 9: Main Exporters of Passenger Cars from India, Percentage of Total Number of Cars Exported in Each Size Category

	Small and compact (upto 4000mm)		Mid-size (4001-4500mm)		Large (> 4500mm)	
	2009-10	2014-15	2009-10	2014-15	2009-10	2014-15
Hyundai	63.76	41.59	82.21	16.83	0.00	0.00
Maruti Suzuki	34.82	25.52	2.33	4.71	0.00	0.00
Nissan	0.00	20.18	0.00	28.10	0.00	0.00
Ford	0.00	5.78	6.65	2.29	0.00	0.00
Toyota Kirloskar	0.00	2.76	0.00	4.68	0.00	0.00
Volkswagen	0.00	2.21	0.00	40.65	0.00	0.00
Honda Cars	0.01	1.00	0.23	2.25	0	98.90
General Motors	0.10	0.50	0.35	0.00	0.83	0.00
Tata Motors	1.13	0.45	3.89	0.49	0.00	0.00
Fiat	0.18	0.01	0.00	0.00	99.17	1.10
Mahindra & Mahindra	0.00	0.00	4.33	0.00	0.00	0.00
Total Number	418245	403966	23103	137934	361	182
Index of concentration (Herfindhal)	0.528	0.284	0.684	0.278	0.984	0.978

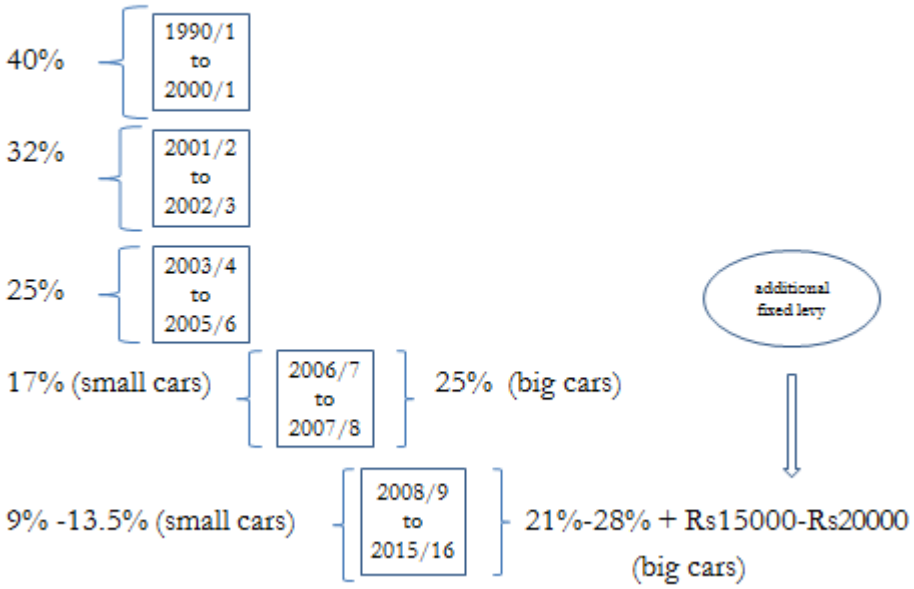
Source: Authors' estimation using data from "Statistical Profile 2014-15" published by SIAM.

Table 10: Ratio of Domestic Value Added to Gross Exports for Motor Vehicles

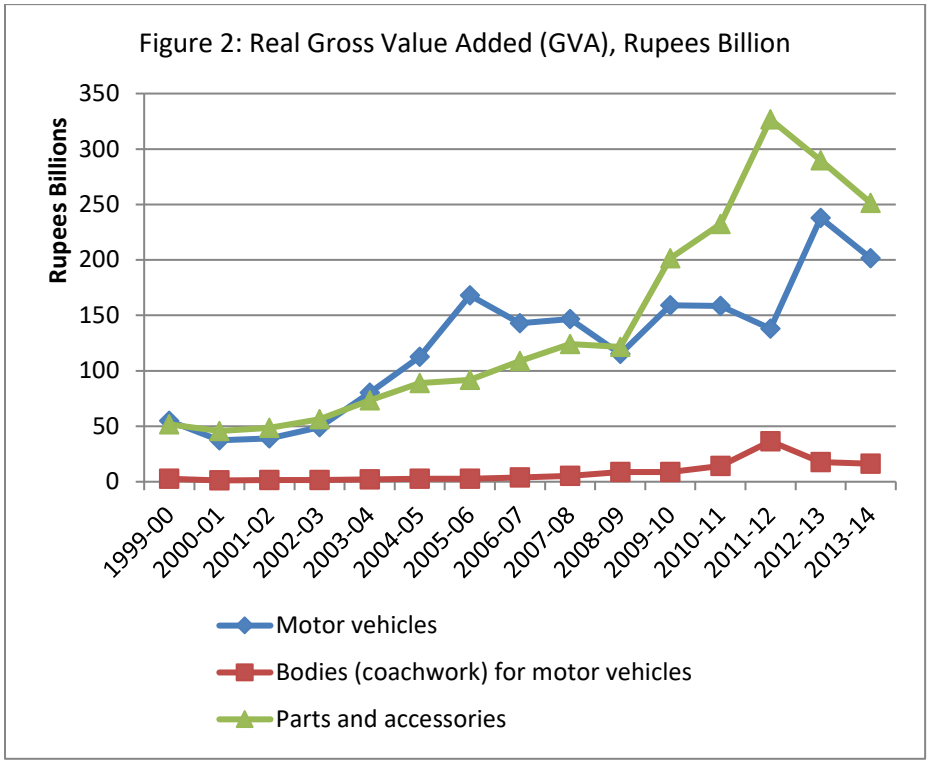
	Veeramani and Dhir (2017)	OECD TiVA Database					
	India	India	Thailand	China	Brazil	Mexico	Korea
1999-00	0.836	0.821	0.485	0.46	0.821	0.512	0.712
2000-01	0.83						
2001-02	0.839						
2002-03	0.834						
2003-04	0.833						
2004-05	0.785						
2005-06	0.752	0.777	0.484	0.589	0.799	0.53	0.685
2006-07	0.727						
2007-08	0.714						
2008-09	0.666	0.669	0.467	0.671	0.777	0.522	0.61
2009-10	0.67	0.705	0.538	0.689	0.816	0.502	0.65
2010-11	0.645	0.697	0.492	0.686	0.816	0.49	0.637
2011-12	0.609	0.675	0.436	0.668	0.801	0.504	0.623
2012-13	0.637						

Source: (i) Veeramani and Dhir (2017), http://www.igidr.ac.in/pdf/publication/WP-2017-008.pdf
(ii) OECD-TiVA database, http://www.oecd.org/industry/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm

Figure 1: Excise duty structure

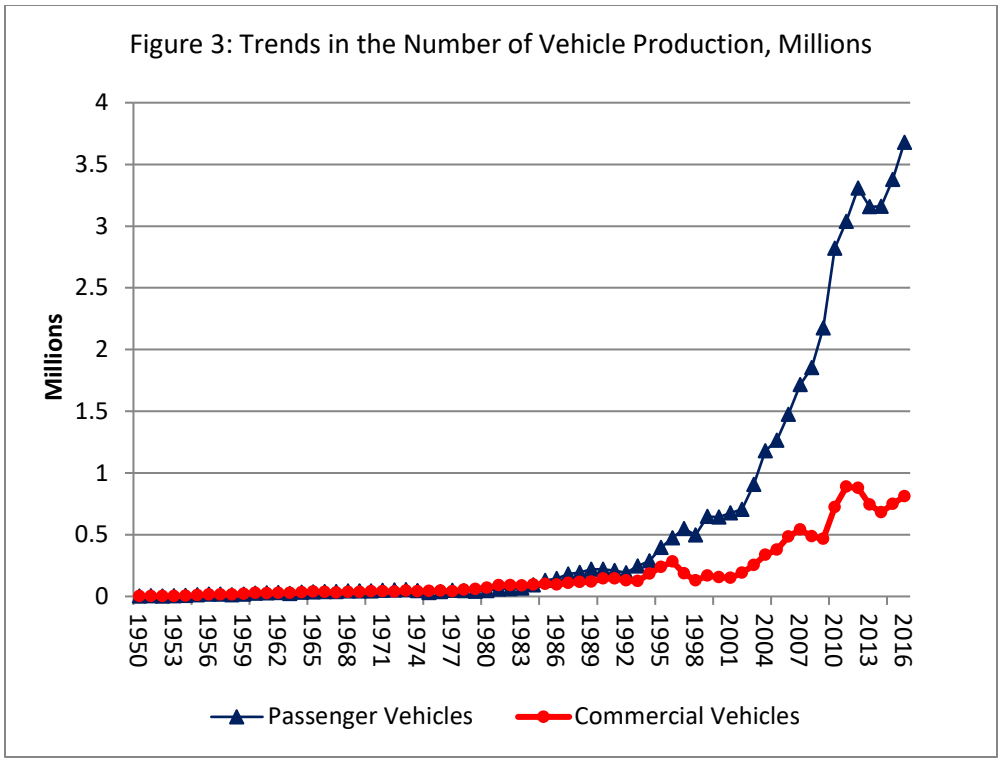


Source: Constructed using data from "Statistical Profile 2014-15" published by SIAM.



Nominal values of GVA are converted to real values using the GDP deflator for transport equipment obtained from CSO's National Accounts Statistics

Source: Nominal GVA values are obtained from Annual Survey of Industries (ASI) database extracted from EPWRF website (concordance series).



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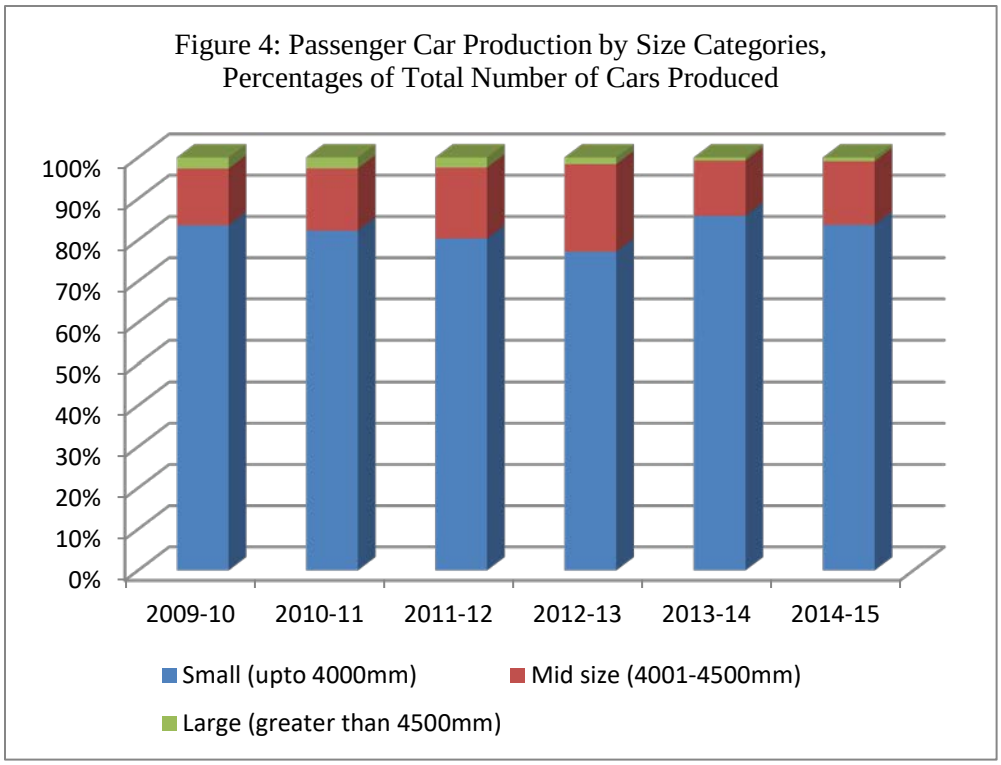

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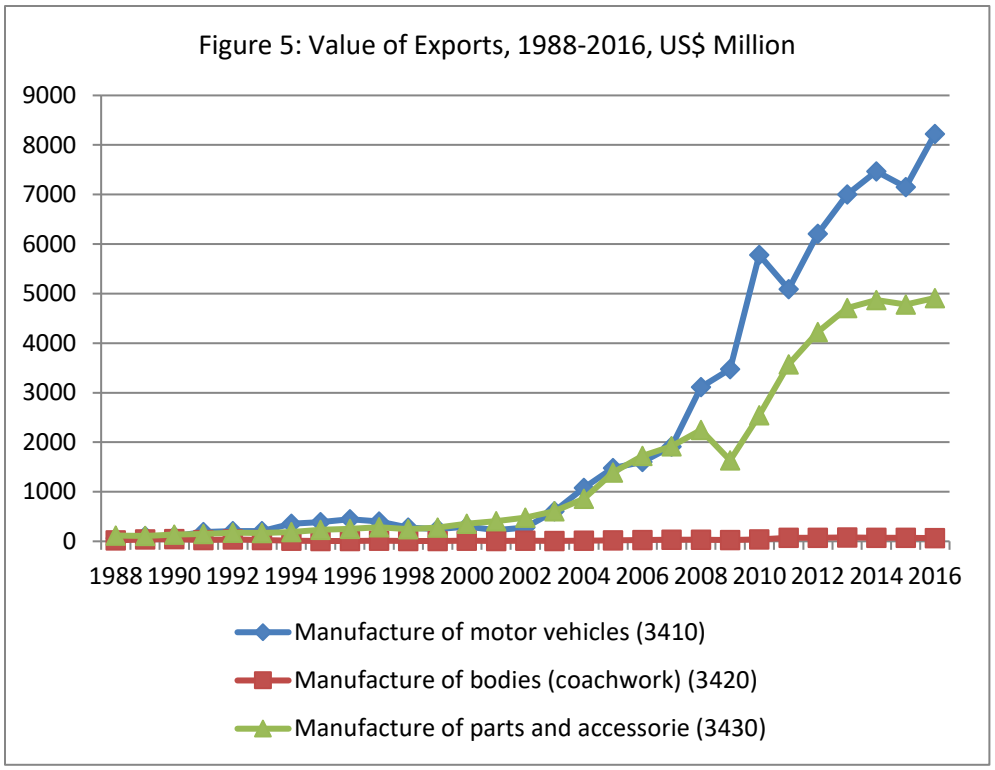
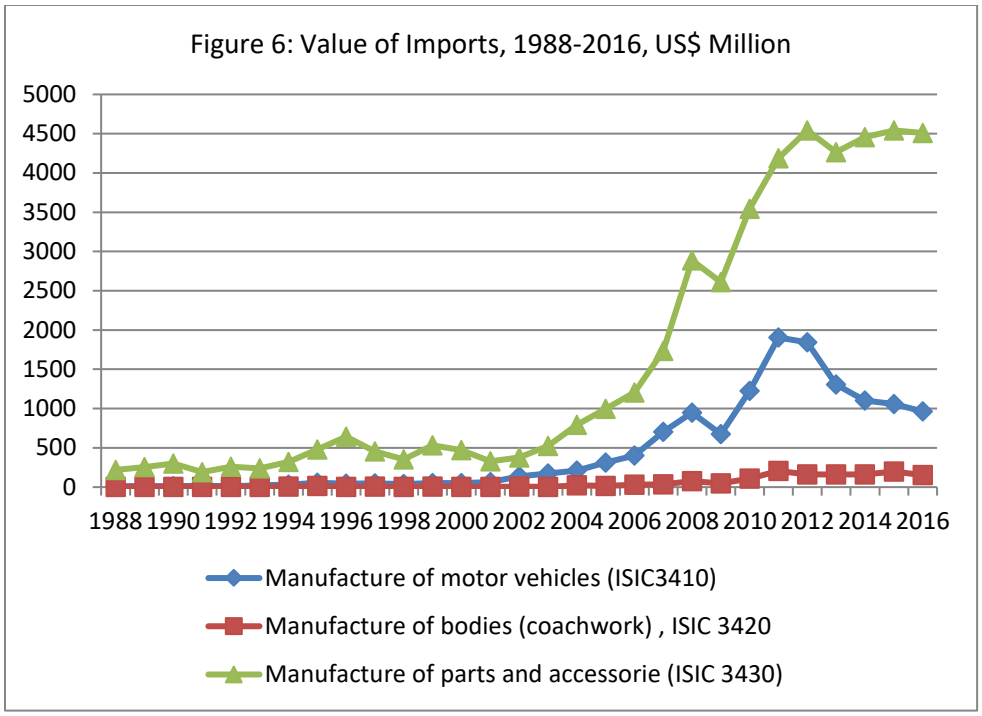
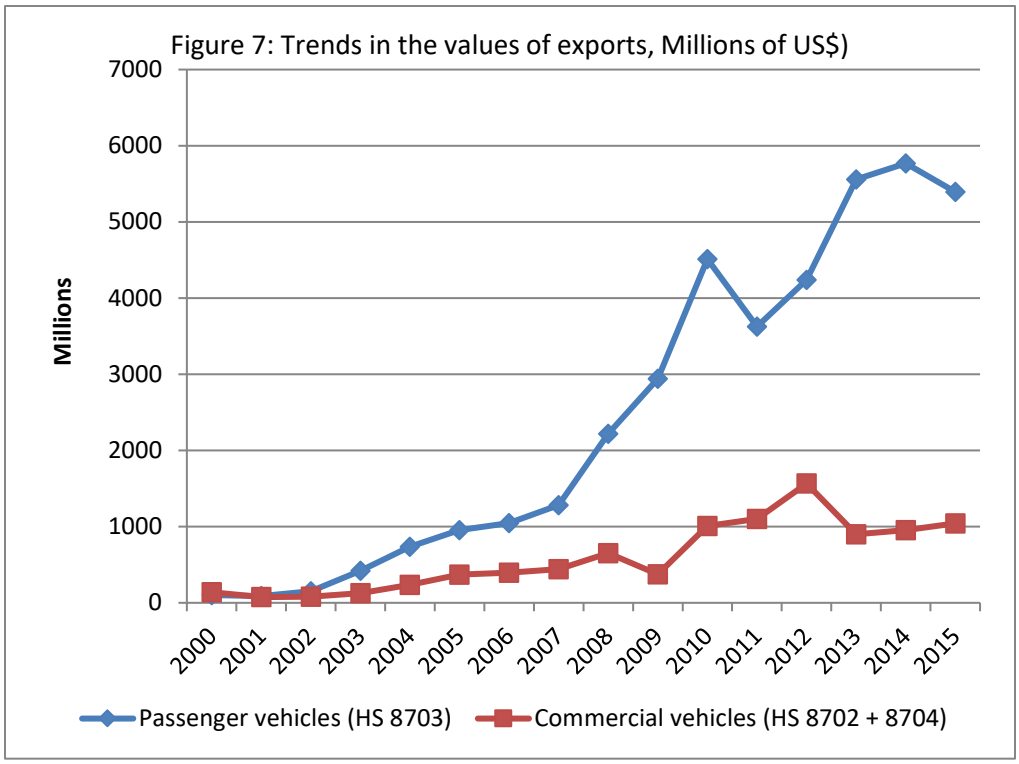


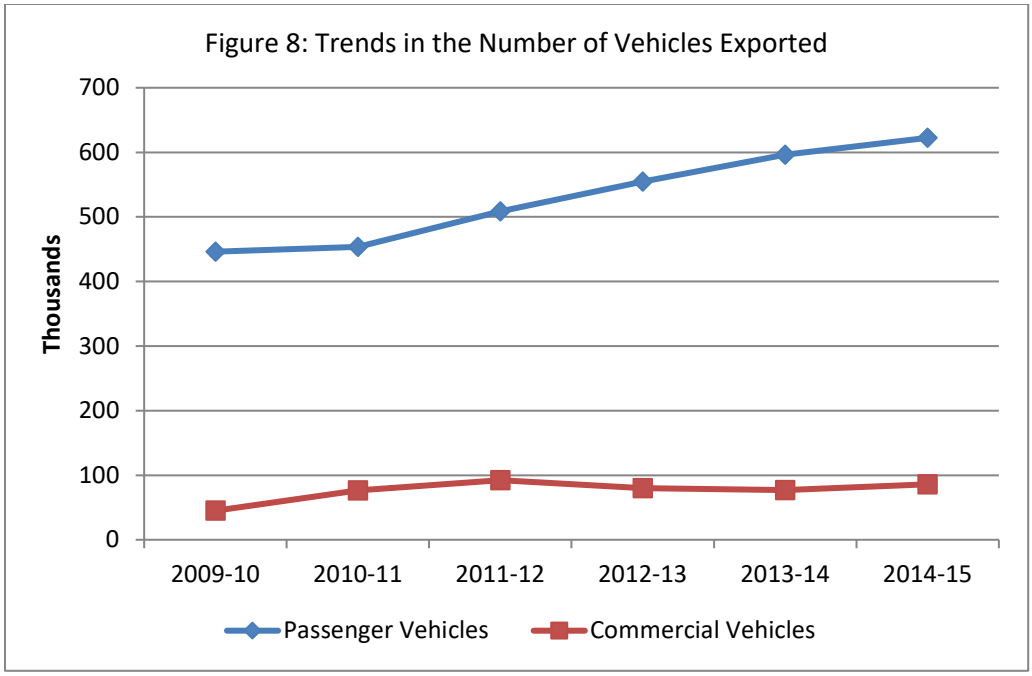
Note: Data based on International Standard Industrial (ISIC) Classification; ISIC codes in parentheses
Source: Constructed using UN-COMTRADE data accessed using WITS



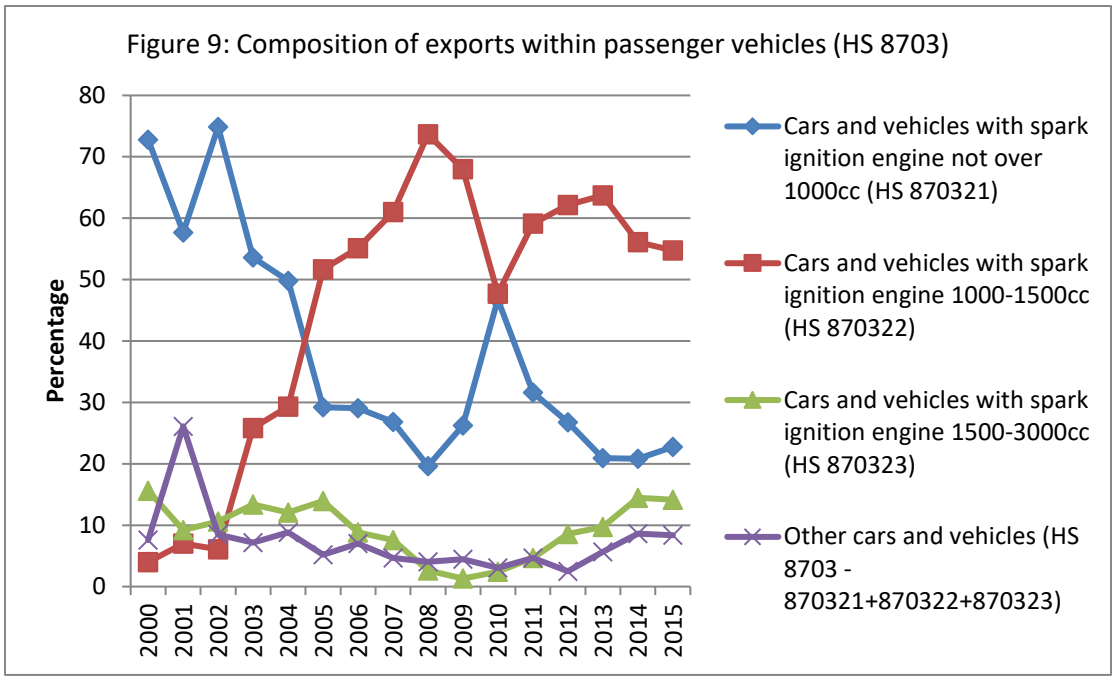
Note: Data based on International Standard Industrial (ISIC) Classification; ISIC codes in parentheses
Source: Constructed using UN-COMTRADE data accessed using WITS



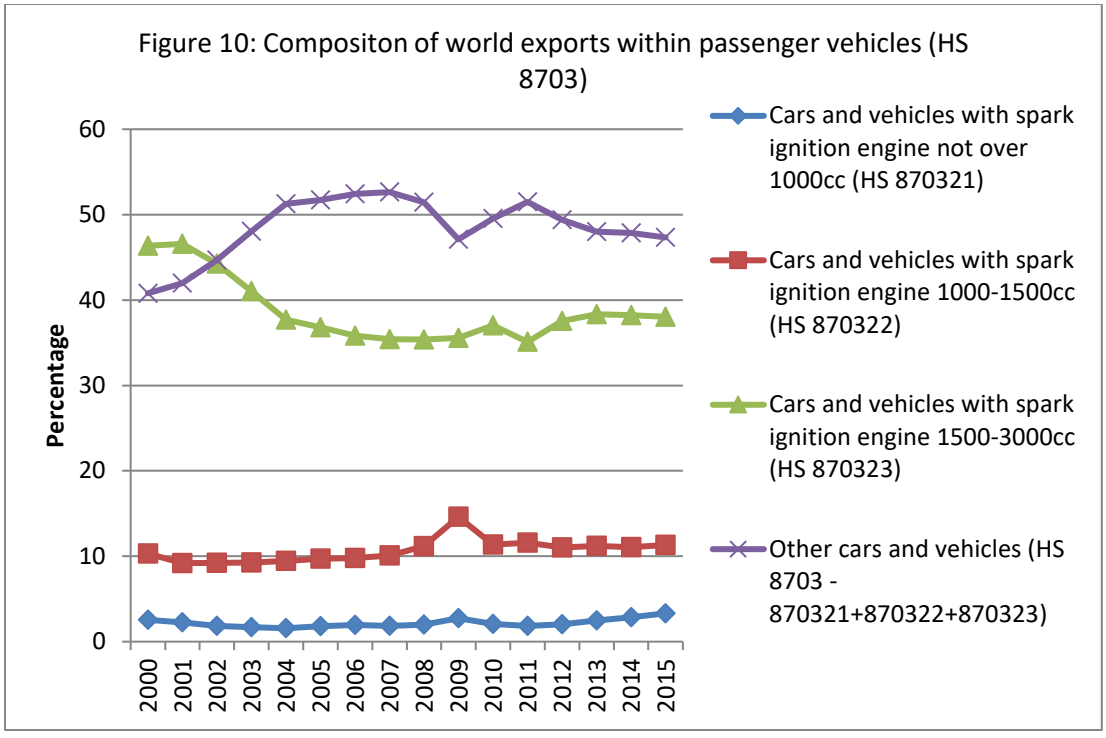
Note: Data based on Harmonized System (HS) Classification; HS codes in parentheses
Source: Constructed using UN-COMTRADE data accessed using WITS



Source: Constructed using data from "Statistical Profile 2014-15" published by SIAM.



Note: Data based on 6-digit Harmonized System (HS) Classification; HS codes in parentheses
Source: Constructed using UN-COMTRADE data accessed using WITS



Note: Data based on 6-digit Harmonized System (HS) Classification; HS codes in parentheses
Source: Constructed using UN-COMTRADE data accessed using WITS