

2020

Chinese Automobile Industry's Position in the Global Value Chain and Its Development Paths Under New Circumstances

Wang Yuanbin

University of International Business and Economics

Wang Chunyu

University of International Business and Economics

Zheng Xuedang

Ministry of Industry and Information Technology, PRC; China Council for the Promotion of International Trade

Follow this and additional works at: <https://css.researchcommons.org/journal>



Part of the [Social and Behavioral Sciences Commons](#)

Recommended Citation

Yuanbin, Wang; Chunyu, Wang; and Xuedang, Zheng (2020) "Chinese Automobile Industry's Position in the Global Value Chain and Its Development Paths Under New Circumstances," *Contemporary Social Sciences*: No. 3, Article 5.

Available at: <https://css.researchcommons.org/journal/vol2020/iss3/5>

This Research Article is brought to you for free and open access by Contemporary Social Sciences. It has been accepted for inclusion in Contemporary Social Sciences by an authorized editor of Contemporary Social Sciences.



Chinese Automobile Industry's Position in the Global Value Chain and Its Development Paths Under New Circumstances

Wang Yuanbin

University of International Business and Economics

Wang Chunyu

University of International Business and Economics

Zheng Xuedang*

Ministry of Industry and Information Technology, PRC; China Council for the Promotion of International Trade

Abstract: While analyzing how the global automobile landscape has shifted and what role the Chinese automobile industry is playing in the global value chain, this paper points out that traditional automobile superpowers are being overtaken by emerging markets and countries; though China's position in the global automobile industry keeps rising, it is yet to be intimately involved and incorporated into each link of the global value chain. China is now somehow stuck in the middle reaches of the global value chain and is susceptible to being replaced by other countries and regions in the global automobile trade. Under new circumstances, the Chinese automobile industry must step up its transformation from depending on scale and speed to seeking quality and profitability. Not only must China consistently and steadily promote openness within its automobile industry and steadfastly hold on to trade liberalization and economic globalization, but also must deepen its reform to improve the internal institutional environment for the development of its automobile industry.

Keywords: automobile industry, landscape shifts, global value chain

* Wang Yuanbin, School of Continuing Education and Distance Education, University of International Business and Economics(UIBE); Wang Chunyu, School of International Studies, UIBE; Zheng Xuedang, Center for International Economic and Technological Cooperation, Ministry of Industry and Information Technology, PRC; Electronics & Information Industry Sub-Council, China Council for the Promotion of International Trade.

Wang Chunyu is now at School of International Trade and Economics, UIBE.

This paper is the research result of "A Study on the Chinese Countermeasures to the International Digital Trade Barriers", a project of the National Social Sciences Fund of China (17BGJ017) and is supported by the Fundamental Research Funds for the Central Universities (15YB12).

Correspondence concerning this article should be addressed to Zheng Xuedang, Center for International Economic and Technological Cooperation, Ministry of Industry and Information Technology, PRC, Beijing. E-mail:zhengxuedang666@126.com

Introduction

Driven by a new round of scientific revolution, major developed countries in the world are striving to come up with manufacturing rejuvenation plans to help transform and upgrade their manufacturing industries. For example, there are the USA reshoring manufacturing strategy and industrial internet strategy, German “industry 4.0”, French industry rejuvenation plans, and Japanese strategy to develop smart robots. Meanwhile, China is also quickening its pace in innovation to fuel its economic transformation. High-input, high-output, high-tech and capital-intensive, the automobile industry features a long value chain, highly correlative sectors and a wide range of jobs. Through forty years of reform and opening up, as China is increasingly integrated into the global network of production during its deepening opening up, its automobile industry has passed the initial stage of uncertainty and has gone global. China has risen to become a major global automobile producer and seller. However, the situation remains that the Chinese automobile industry is weak in independent innovation, and uses key technologies with strings attached. It still has a long way to go before its “size” finally turns into “quality”. This paper, by analyzing landscape shifts in the global automobile industry and how they have affected the Chinese automobile industry in recent years, tries to find quality-centered development paths for the Chinese automobile industry.

Landscape Shifts in the Global Automobile Industry

Landscape of production.

The expanding global networking of production and consumer markets have led to the rapid international development of the automobile industry. As global automobile production is on a steady rise, traditional automobile superpowers, such as Germany, the USA and Japan are giving way to emerging markets and countries like China and India, which suggests a subtle shift in the global automobile industry landscape. According to statistics from the Organisation Internationale des Constructeurs d' Automobiles (OICA), in 2017, global automobile production reached 97.3025 million, a 1.73-fold increase since 2001. China, the USA, Japan, Germany and India ranked as the five largest automobile producers.^① Chart 1 reveals that, compared with 2001, in 2017 there was a sharp increase in the automobile production of both China and India which sharply increased their proportion of global automobile production. Meanwhile, the USA, Japan and Germany saw their share of global automobile production decline. France, Canada and Italy also saw production decrease from 13.75 percent in 2001 to 5.72 percent in 2017. Countries such as Mexico, Thailand, Turkey, Iran, Czech Republic, Indonesia and Slovakia, owing to their lower cost, maturing support for manufacturing and sophisticated raw material industries, became destinations where developed countries transferred their

① Source: Retrieved September 10, 2018 from website of OICA: <http://www.oica.net/productionstatistics/>.

automobile manufacturing, processing and assembling. Accordingly, the above seven countries' total share of global automobile production increased from 6.79 percent in 2001 to 13.26 percent in 2017.

Chart 1 Automobile Production of Major Automobile Manufacturers (in 2001 and 2017)

Country	Year 2001		Year 2017	
	Production/ Ten Thousand Vehicles	Share of Global Automobile Production/%	Production/ Ten Thousand Vehicles	Share of Global Automobile Production/%
China	233.44	4.15	2,901.54	29.82
USA	1,142.47	20.29	1,119.00	11.50
Japan	977.72	17.36	969.37	9.96
Germany	569.17	10.11	564.56	5.80
India	81.46	1.45	478.29	4.92
ROK	294.63	5.23	411.49	4.23
Mexico	184.10	3.27	406.84	4.18
Spain	284.99	5.06	284.83	2.93
Brazil	181.72	3.23	269.97	2.77
France	362.84	6.44	222.70	2.29
Canada	253.27	4.50	219.98	2.26
Thailand	45.94	0.82	198.88	2.04
UK	168.52	2.99	174.94	1.80
Turkey	27.07	0.48	169.57	1.74
Russia	125.07	2.22	155.13	1.59
Iran	32.32	0.57	151.54	1.56
Czech Republic	46.53	0.83	142.00	1.46
Indonesia	27.92	0.50	121.66	1.25
Italy	157.97	2.81	114.22	1.17
Slovakia	18.20	0.32	100.15	1.03

Source: calculation based on OICA statistics.

Developed countries, despite their saturation in automobile production, are able to adjust their automobile production structure and pattern and cut the production of traditional vehicles to push the upgrading and transformation of their automobile industry. Meanwhile, the emerging markets and countries in the automobile industry draw on their advantages in resources, entice major automobile powers to transfer advanced technologies to them and to make investments in production capacity in their place, whereby they enhance their automobile production efficiency, scale up their automobile production, take a bigger role in the global automobile production landscape and become a major driving force in the automobile industry. Thus, here is the undeniable fact: global automobile production has pivoted from developed countries to emerging markets and countries. The trend is becoming increasingly clear that automobile manufacturing, once monopolized by developed countries, is yielding to a multi-polarization landscape.

Landscape of trade.

According to the database of the UN's International Trade Center (ITC),^① statistics on the automotive vehicle^② trade of the world, major countries and regions reveal that in 2017 the global trade volume of automotive vehicles achieved US\$ 2.9 trillion, a 2.58-fold increase since 2001. As shown in Chart 2, in 2001 the USA, Germany, Japan, Canada and France were the top 5 automotive vehicle traders. In 2017 the USA and Japan saw a 4.79 and 2.34 percent decrease respectively in their share of the global automotive vehicle trade compared with 2001; Germany witnessed a slight increase; and China, growing the fastest, in 2017 became the fourth largest automotive vehicle trader in the world. Its share of the global automotive vehicle trade leaped from 0.83 percent in 2001 to 5.06 percent in 2017. In terms of exports, in 2001 Germany, Japan and the USA topped the list of automotive vehicle exporters; in 2017, Germany maintained its prior share, while the USA and Japan declined a little bit. Emerging markets and countries such as China are claiming a larger share. China's share in global automotive vehicle exports rose from 0.86 percent in 2001 to 4.68 percent in 2017, which brought it to 5th place in the automotive export rankings. In terms of imports, the USA was the largest automotive vehicle importer but its share of global automotive vehicle imports decreased from 28.04 percent in 2001 to 20.22 percent in 2017; the runner-up was Germany, which saw its proportion increased from 7.37 percent in 2001 to 8.55 percent in 2017; China came the third. Its proportion of global automotive vehicle imports jumped from 0.8 percent in 2001 to 5.44 percent in 2017. This indicates that although the global automotive vehicle trade is still highly concentrated, it is yielding to a trend towards increasing decentralization and emerging markets and countries are making their voices heard in the global automotive vehicle trade. The emerging markets and countries, such as China, are reshaping the landscape of the global automotive vehicle trade, yet the trade is still controlled by traditional automobile superpowers such as Germany, Japan and the USA. Still, the trade landscape has not fundamentally changed and the three countries' dominance in the automotive vehicle trade is still prominent (Liu & Gao, 2014).

① Unless otherwise specified, the statistics in this paper on the trade of automotive vehicles (including completed vehicles and spare parts) are all calculated based upon the database of the UN's ITC. Retrieved September 5, 2018 from <https://www.trademap.org/Index.aspx>.

② In international trade, automotive vehicles refer to the goods included in HS Code Chapter 87 (vehicles other than railway or tramway rolling-stock, and parts and accessories thereof). The completed vehicles thereof include those of heading HS8701 (tractors), heading HS8702 (motor vehicles for the transport of ten or more persons, including the driver), heading HS8703 (motor cars and other motor vehicles principally designed for the transport of persons, other than buses), heading HS8704 (motor vehicles for the transport of goods), heading HS8705 (special purpose motor vehicles), heading HS8709 (motor vehicles for short-distance transport of goods), heading HS8711 (motor cycles, including mopeds), heading HS8712 (bicycles and other cycles, not motorized), and heading HS8713 (vehicles for invalid); the parts thereof include those of heading HS8706 (chassis fitted with engines), heading HS8707 (bodies for the motor vehicles, including cabs), heading HS8708 (parts and accessories of the motor vehicles of headings 8701 to 8705), heading HS8714 (parts and accessories of vehicles of headings 8711 to 8713), heading HS8715 (baby carriages and parts thereof) and heading HS8716 (trailers and semi-trailers and other vehicles that are not mechanically propelled, and parts thereof).

Chart 2 Automotive Vehicle Trade of Major Automotive Vehicle Traders (in 2001 and 2017)

Country	Year 2001		Year 2017	
	Trade Volume/ US\$ 100 million	Proportion of the Global Automotive Vehicle Trade/%	Trade Volume/ US\$ 100 million	Proportion of the Global Automotive Vehicle Trade/%
USA	2,184.65	19.45	4,246.85	14.66
Germany	1,415.04	12.60	3,828.59	13.22
Japan	916.33	8.16	1,686.53	5.82
China	93.09	0.83	1,465.89	5.06
Mexico	450.21	4.01	1,433.82	4.95
Canada	913.03	8.13	1,368.05	4.72
UK	660.16	5.88	1,269.01	4.38
France	685.61	6.10	1,159.38	4.00
Belgium	503.84	4.49	1,028.79	3.55
Spain	514.24	4.58	994.79	3.43
Italy	469.86	4.18	923.27	3.19
ROK	172.05	1.53	776.44	2.68
The Netherlands	214.42	1.91	584.74	2.02
Czech Republic	83.03	0.74	560.58	1.94
Sweden	148.27	1.32	396.41	1.37
Austria	149.98	1.34	355.27	1.23
Australia	102.36	0.91	312.49	1.08
Brazil	82.36	0.73	259.60	0.90
Switzerland	80.73	0.72	174.19	0.60
Portugal	87.87	0.78	164.54	0.57

Source: calculation based on ITC database statistics.

Chinese Automobile Industry's Position in the Global Value Chain

China's Position in the Global Automotive Vehicle Trade

The trade of automotive vehicles includes that of completed vehicles and automotive parts. In recent years, the latter has outperformed the former in speed of growth. In 2017, automotive parts accounted for 31.03 percent of global automotive vehicle exports, a rise from 27.57 percent in 2001, and their proportion of global automotive vehicle imports also increased from 27.31 percent in 2001 to 30.92 percent in 2017. In terms of exports, Germany and Japan topped the ranking of completed vehicle exports, while for the export of automotive parts, Germany and the USA were the champions. In terms of imports, while Germany's share in the global automotive parts imports grew from 7.88 percent in 2001 to 10.74 percent in 2017, the USA saw a decline from 18.44 percent in 2001 to 16.34 percent in 2017. In 2017, China ranked 9th and 3rd in the world respectively in the trade of completed

vehicles and automotive parts, with its exports of completed vehicles and automotive parts achieving US\$ 25.675 billion and US\$ 41.683 billion (as reflected in Chart 3). China's proportion of global exports of automotive parts leaped from 1.78 percent in 2001 to 9.38 percent in 2017. Parts became a major force of Chinese automotive exports, accounting for 56.77 percent of exports in 2001 and 61.88 percent in 2017. China's automotive parts exports feature low-value-added products with high energy consumption of raw material-intensive and labor-intensive production, such as automotive glass, tires and brake discs, while engines, transmissions and the more technically sophisticated automotive electronics products represent a smaller proportion. Its automotive parts imports mainly comprises the transmission system, body accessories, engine parts and automotive electronics (vehicle parts, automotive electronic control devices and vehicle electronic control devices), whereupon Fu Junwen (2011) pointed out that, as the automobile groups from European and American developed countries transferred the raw-material-intensive and labor-intensive production of the automotive parts to China and other emerging markets and countries to reduce their production cost, the divisions between different automotive trades in all the countries, developed or emerging, began to be replaced by the divisions within a trade or even within a product.

Chart 3 Statistics on China's Exports and Imports of Completed Vehicles and Automotive Parts (2001–2017)

Year	Completed Vehicles				Automotive Parts			
	Imports/ US\$ 100 million	Proportion of All Automotive Imports/ percent	Exports/ US\$ 100 million	Proportion of All Automotive Exports/ percent	Imports/ US\$ 100 million	Proportion of All Automotive Imports/ percent	Exports / US\$ 100 million	Proportion in All the Automotive Exports/ percent
2001	17.76	39.19	20.65	43.23	27.56	60.81	27.12	56.77
2002	32.54	50.26	23.31	40.24	32.20	49.74	34.62	59.76
2003	53.04	45.00	35.04	43.28	64.83	55.00	45.93	56.72
2004	54.72	41.76	46.84	39.62	76.31	58.24	71.39	60.38
2005	52.28	42.47	65.21	39.30	70.81	57.53	100.73	60.70
2006	76.55	44.89	92.16	41.19	93.97	55.11	131.57	58.81
2007	110.73	50.02	145.47	45.73	110.64	49.98	172.63	54.27
2008	153.76	57.03	182.43	46.45	115.87	42.97	210.30	53.55
2009	155.76	54.92	112.31	40.21	127.87	45.08	167.00	59.79
2010	309.70	62.56	150.57	39.21	185.35	37.44	233.41	60.79
2011	435.87	66.61	209.66	42.32	218.52	33.39	285.74	57.68
2012	478.88	67.83	238.63	43.30	227.09	32.17	312.54	56.70
2013	491.74	66.32	233.67	39.91	249.74	33.68	351.82	60.09
2014	611.53	68.32	246.73	38.44	283.57	31.68	395.19	61.56
2015	452.58	65.00	235.96	37.69	243.70	35.00	390.04	62.31
2016	451.74	63.17	219.15	36.44	263.32	36.83	382.30	63.56
2017	512.80	64.72	256.75	38.12	279.51	35.28	416.83	61.88

Source: calculation based on ITC database statistics.

On the Position of the Chinese Automobile Industry in the Global Value Chain

The USA, Germany and Japan, as the core and controlling powers in the global automotive parts trade that have bred a batch of internationally leading automotive parts giants, can almost represent the highest level of automotive industrial development in the world. As the model for global resource allocation in the automobile industry matures, multinational automobile groups are transforming their production and operations away from traditional and vertical integrations with a large scale and wide range to a professional production model that focuses on developing completed vehicles. They make sure that a larger scale of production is accompanied by a lower rate of self-manufactured automotive parts. All automotive parts are purchased from the international market, and the supply of these parts relies on the external automotive parts manufacturers. According to a report by Qianzhan Industry Research Institute in 2018, the world's top ten automotive parts suppliers each own more than 100 production bases. For example, Germany's Bosch has 440 production bases in 60 countries, ZF Group has 230 in 40 countries, and the USA's Delphi has 126 in 46 countries.^① The parts production in the world is now increasingly marked by unified organizations, high technologies, systematic supplies and globalized operations. As the international automotive parts suppliers quicken their pace in setting up joint ventures or foreign-owned enterprises in China, the Chinese automotive parts industry, while facing fiercer challenges, is also being pushed forward, and accordingly, China's position in the global automotive parts trade is rising. Meanwhile, Chinese automotive parts manufacturers are beginning to seek cooperation throughout the world (for example, by 2017, China's CITIC Dicastal, Johnson Electric and Minth Group had established 123 production bases in 32 countries^②), and tap into foreign markets to increase their share of the international automotive parts market.

The development of Chinese automobile manufacturers is still hampered by incompetence in research and development and the lack of core technologies. Chinese automotive parts, in particular, lag far behind developed countries in technology. Those automotive parts suppliers supported by foreign investments, though failing to match Chinese local suppliers in their ownership of enterprises above the designated scale, do occupy a major share of the Chinese automotive parts market. In hi-tech fields such as automotive electronics and key engine parts, and the field of key parts such as the engine management system, their proportion of the market exceeds 90 percent. Wen Liqiang and Li Weili held that China, as the largest automobile manufacturer in the world, is deficient in its ownership of truly internationally influential automotive parts manufacturers with independent brands (Wen & Li, 2013, pp. 98-101). Those manufacturers, on the whole, cannot match their more capable foreign counterparts, and for the most part are stuck in a production stage that is characterized by low technologies, low added-value, high energy consumption, high raw-material consumption and

① Qianzhan Industry Research Institute. The competitive landscape of the global automotive parts industry: Behemoths are quickening their global deployment [R/OL]. (2018-01-30) [2018-04-05]. <https://www.qianzhan.com/analyst/detail/220/180130-b0617546.html>.

② Qianzhan Industry Research Institute. The competitive landscape of the global automotive parts industry: Behemoths are quickening their global deployment [R/OL]. (2018-01-30) [2018-04-05]. <https://www.qianzhan.com/analyst/detail/220/180130-b0617546.html>.

intensive labor, in which they only engage in the processing parts of the production. They are located in the middle of the global value chain. In contrast, the large multinational automobile groups from developed economies like Europe, the USA and Japan, lie in the upstream part of the chain that is known for R&D and core technologies. These automobile giants then, by providing high value-added services based on their automobile brands, also occupy the downstream part of the global value chain. In terms of the technical complexity of exports, Li Yan held that currently, traditional automobile superpowers such as Germany, Japan and the USA are exporting the most technically complex automotive products while the Chinese automobile industry falls into the raw-material, automotive parts and vehicle assembly parts of the “smiling curve”, which describes the added-value distribution within the global value chain (Li, Lv & Huang, 2018, pp. 24-35). From the perspective of the length it occupies in the global value chain, the Chinese automobile industry claims a longer length inside China than it does outside China, which indicates that the Chinese automobile industry is yet to be intimately involved and integrated into each link of the global value chain. Liu Huizheng and Zhu Guang (2018) further proposed that China is still weak in high-tech automotive products, such as gas turbines, engines, and related parts and accessories, and under-performs in the international competition around core automotive products.

The Quality-oriented Development Paths for the Chinese Automobile Industry Under New Circumstances

After forty years of reform and opening up, the automobile industry has become a pillar industry of the Chinese economy. China's automobile production has ranked first in the world for many years. Particularly since the WTO entry, China has made active efforts to merge into the global production network systems and seriously deliver on its promise to open its automobile industry, which has proved to be beneficial for the Chinese automotive vehicle trade while seeking to advance its standing in global economic integration and trade liberalization. However, China is a large but not strong automobile supplier. Its automobile industry is still located in the middle of the global automotive value chain. Therefore, to achieve high-quality development in the Chinese automobile industry, it is necessary to further promote openness, emphasize reform and improve the internal institutional environment for the development of the Chinese automobile industry.

Steadily Push Forward Openness and Grasp the Trends of International Competition

Adjust the structure and market deployment.

First, automobile enterprises must keep a close watch on changes in the international environment. They must thoroughly investigate whether their automotive products are replaceable and to what degree the international market needs and relies on their products, and then if possible, gradually adjust the structure of their products and their market deployment.

Second, China must keep pushing for openness and firmly support the multilateral trading system

revolving around the WTO. As a beneficiary of globalization and free trade, China, against the rising wave of anti-globalization and trade protectionism, must persist in safeguarding the international free trade order, and join hands with traditional automobile superpowers, such as Europe, the USA and Japan, to discuss and set rules for the international automobile trade (Zhang, 2018).

Make strategies for international development.

Given the status quo of the Chinese automobile industry and the competitive dynamics in the global automobile market, the Chinese automobile industry must seek international development in a gradual manner.

First, it can start from the low-end markets and strengthen its independent automotive brands. When those brands are recognized in the foreign markets, it can then tap into the mid-range markets. When it has finally accumulated enough experience in product manufacturing and market operation, it can enter the high-end markets.

Second, the Chinese automobile industry must be more international, and the Chinese financial industry and insurance industry must be encouraged to provide vehicle-purchasing services for their foreign customers so as to help open overseas markets.

Third, there must be a coordinated plan to solve key problems one by one. At the beginning of its outward expansion, the Chinese automobile industry can rely on its most competent commercial vehicles to quickly occupy the emerging markets. It can first win the underdeveloped markets, then gradually tap into the developed ones. When its commercial vehicles gain a good reputation, it can begin promoting its passenger vehicles in the foreign markets.

Achieve an incomparable height in the new-energy automobile industry.

To counter energy deficiency and transform transport fuels, developed countries devote great efforts to innovating new-energy automobile technologies. China must draw on their experience to focus more on the top-level designs of the new-energy automobiles and strive to achieve an incomparable height in the global new-energy automobile industry.

First, a national steering group must be established for the new-energy automobile industry to help push forward major new-energy automobile programs, tackle related technical problems, increase major investments and market the new-energy automobiles.

Second, the tax incentives for the development of new-energy automobiles must be improved. Cheng Xiaojun and Li Shaolin proposed that new-energy automobile consumers should be offered a once-and-for-all financial subsidy; new-energy automobile suppliers should be provided with low-interest or interest-free loans; new-energy automotive parts importers should be granted tariff reductions or exemptions, and new-energy automobile consumers and manufacturers should be enabled to enjoy preferential tax rates (Cheng & Li, 2018, pp. 78-86).

Further Reform the Science and Technology System to Enhance Independent Innovation

Implement a national automobile industry innovation project.

Improving the Chinese automobile industry's innovation capabilities and international competence

is a huge, complicated and systematic project. It requires the integration of a variety of resources such as policies, labor and money. The following five measures can help with the effective implementation of a national automobile industry innovation project.

First, a management committee and an expert committee, steered and directed by national authorities, should be established to coordinate and plan the development of the Chinese automobile industry and breakthroughs for key technical problems.

Second, an innovation platform of automotive technologies and management must be set up to make sure the plans are successfully implemented.

Third, strategies for the development of new-generation smart cars, medium and high-grade cars and cost-effective cars must vary according to China's national conditions and the status quo plus technical performance of the Chinese automobile industry.

Fourth, a national automobile industry innovation project must be increasingly supported through reliable policies, funds and labor.

Fifth, the development of intellectual property and equity must be optimized according to the business scope of each involved party, whereof intellectual property is the core and equity is the basis. Ouyang Yao and Xu Shu held that only when playing a proactive role in automotive development can the Chinese automobile industry be more competent (Ouyang & Xu, 2007, pp. 317-320).

Encourage independent innovation.

Automobile manufacturers must concentrate on fundamental and key technologies, push for an export pattern that no longer focuses on scale and speed but pursues quality and profitability, and cultivate new, comprehensive competitive advantages that revolve around technologies, brands, qualities, services and standards.

First, it is necessary to cultivate innovative automobile entrepreneurs. Entrepreneurs are the major driving power behind automotive technical innovation, and their central and leading role in independent innovation must be encouraged and supported.

Second, independent innovation must always be encouraged. If automobile manufacturers want to own independent technologies, they must pay attention to the advanced technologies and mature administrative experiences of their foreign counterparts and then introduce, digest, assimilate and improve them to realize their own independent innovations (Ye et al., 2014).

Third, enterprises must increase their investments in R&D and their products' added value, thoroughly merge into the global automobile industrial chain, shift to the higher-end of the industrial chain and strive to play a predominant role in the international division of labor.

Improve the supporting system for technical personnel.

An important reason for the lack of independent innovation in the Chinese automobile industry is the shortage of talent (Zhang & Lv, 2017). The following measures must be taken to improve the supporting system for technical personnel.

First, improve the incentive mechanisms and optimize the environments for the growth of talent. Zhu Chengliang and Zheng Shilin held that the government must encourage more talent to locally

settle down, improve the entrepreneurship-related policies and other top-level plans, and make more efforts to cultivate local high-level technical talents and support them with preferential policies (Zhu & Zheng, 2014, pp. 30-38). The enterprises must create an ecological environment that can enhance the talents' innovation capabilities and subjective initiatives, develop innovative ways for foreign talents to contribute to the domestic automobile industry, and provide sufficient room for talents to display their abilities.

Second, strengthen the construction of automotive disciplines in universities, cultivate higher-quality automotive talents in vocational colleges, and support the combination of the cultivation of high-level R&D talents in universities and that of engineering and technical talents in vocational colleges.

Third, improve the evaluation system for professional and technical competence, build an automotive talents evaluation system that is based on social and peer evaluations, make the evaluations more socialized, and also perfect the professional and technical position appointment systems and the professional qualification systems.

Enhance Institutional Innovation and Optimize the Environment for Automotive Industrial Development

Transform government functions.

First, the government must transform itself from the “big butler” to a strategically planning, motivating, safeguarding, supervising and policy-making role. It must, according to the market, make effective strategies to develop automotive technologies, and rationally plan the landscape for automobile industry development.

Second, an orderly and fair environment with full competition must be built, and the market players must be effectively supervised.

Third, multiple policies must be fully used as incentives for innovation, and a variety of measures must be taken to support the development of Chinese independent automotive brands.

Fourth, an automotive service platform must be established, where the release of information about trends in the automobile industry can be improved, automotive technical trends and market updates inside and outside China can be tracked and predicted, the role of information services can be strengthened, and services such as international standard certifications and technical regulations can be offered.

Fifth, let the government play its role in making, promoting and supervising automobile industry-related policies, make active efforts to build regional financing systems and build a favorable environment for the regional development of the automobile industry.

Enhance institutional innovation.

First, a unified, open and nationwide automotive market, which plays a fundamental role in the automobile industry's resource allocations, must be established. Accordingly, while private and foreign capital should be given an entry permit, it is also necessary to further loosen the equity ratio

limits and allow automobile manufacturers to engage in automotive sales and leasing. A unified, open and nationwide automotive market will break the barriers of local and departmental blockades and protectionism to encourage fair competition between automobile manufacturers from different regions and prohibit discriminatory policies by administrative regulations.

Second, the automobile industrial policies must be constantly adjusted. It is necessary to encourage the alliance between giants, merging and reorganization by making related preferential policies. Advantageous enterprises must be encouraged to merge small and medium-sized businesses.

Third, cutting-edge, high-risk R&D projects must be subsidized and supported by preferential policies.

Fourth, the policies concerning car consumption must be improved, offering consumers more tax advantages, cutting taxation items, and waiving a multitude of unreasonable charges.

REFERENCES

- Cheng Xiaojun & Li Shaolin (2018). Research on the development strategy of the new-energy automobile industry against the background of the supply-side reform. *Theory Journal*, 2, 78-86.
- Fu Junwen (2011). The Changes of China and Japan in the international division of labor since China entered WTO: Take automobile and parts industry for example. *World Economy Studies*, 11, 3-7.
- Li Yan, Lv Pin & Huang Qingbo (2018). The position of the Chinese automobile industry in the global value chain: An analysis based on Koopman's position indexes and Fally's length indexes. *Journal of International Trade*, 4, 24-35.
- Liu Huizheng & Zhu Guang (2018). Research on the position of Chinese equipment manufacturing industry in the international labor division and the path for its development. *International Business (Journal of University of International Business and Economics)*, 5, 13-24.
- Liu Yao & Gao Yanjie (2014). Quantitative measurement of the changes in the trade landscape of the global automobile industry and its meanings to China. *Industrial Organization Review*, 3, 107-122.
- Ouyang Yao & Xu Shu (2007). The present international competence of the Chinese automobile industry and the measures for its improvement. *Journal of Central South University (Social Sciences)*, 3, 317-320.
- Wen Liqiang & Li Weili (2013). Build competitive advantages and advance the upgrading of the Chinese automobile industry. *Auto Review*, 11, 98-101.
- Ye Shanhu, Han Yonghui & Zou Jianhua (2014). Microcosmic measurement of total factor productivity in the Chinese automobile industry. *South China Journal of Economics*, 1, 61-76.
- Zhang Binghui & Lv Yabo (2017). Research on the improvement of the Chinese automobile industry's ability to grow under the new economic normal. *Economic Review Journal*, 2, 88-92.
- Zhang Yuhuan (2018). Trump administration's foreign economic and trade policies and the economic and trade relationship between China and the US. *Foreign Affairs Review (Journal of Foreign Affairs College)*, 3, 12-36.
- Zhu Chengliang & Zheng Shilin (2014). Measurement of the Chinese automobile industry's total factor energy efficiency and evaluation of its growth mode. *Review of Industrial Economics*, 7, 30-38.

(Translator: Xu Qingtong; Editor: Xu Huilan)

This paper has been translated and reprinted from *International Business*, No. 3, 2019, pp. 59–68.