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Mega-Regionalism in Trade from a Sectoral Perspective. The Case of the Automotive Industry in the Regional Comprehensive Economic Partnership

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Abstract

Theoretical background: The Regional Comprehensive Economic Partnership (RCEP) is the largest mega-regional trade agreement ever signed, accounting for more than 30% of the global population, exports, and gross domestic product (GDP). It is also the largest automotive market worldwide, with significant potential both in terms of automotive manufacturing and sales.

Purpose of the article: The paper's main objective is to characterize China-RCEP automotive trade in the years 2012–2021 with reference to key provisions and implications of the aforementioned mega-regional trade agreement for the automotive industry. In the empirical part of the paper, the authors attempt to verify the hypothesis that trade liberalization under RCEP may contribute to the expansion of the regional automotive industry in terms of trade volume, as well as fragmentation of value and supply chains.
Research methods: The authors conducted an analysis of intra-industry trade disaggregated into 54 six-digit HS tariff codes using the Grubel–Lloyd and Balassa indexes, accompanied by cross sectional analysis and studies of sectoral reports and literature in the field of mega-regionalism in trade.
Main findings: The hypothesis formulated in the introduction of the paper was verified positively –the authors provided an added value to previous empirical studies on RCEP, in the form of a perspective of the automotive industry and in-depth analysis of sectoral trends for the last ten years. The potential for further fragmentation of value and supply chains inside the region was identified, including the possibility of relocation of manufacturing and assembly activities to lower the cost of RCEP Member States to strengthen comparative advantages over extra-regional counterparts (EU, USMCA). The authors pointed at the prospective rising attractiveness of RCEP in automotive manufacturers' location decisions worldwide, considering both costs, retreat from global-oriented manufacturing and export strategies, investment security, sustainable development, as well as geopolitical trends in respect of newly established tariff and non-tariff barriers.

Introduction

The Regional Comprehensive Economic Partnership (RCEP) is the largest mega-regional trade agreement ever signed, accounting for more than 30% of the global population, exports, and gross domestic product (GDP). It involves fifteen countries from Northeast and Southeast Asia and Oceania, i.e. China, Japan, the Republic of Korea, all ASEAN Member States, Australia, and New Zealand. It was established on 15 November 2020, after the conclusion of 31 negotiation rounds in eight years, and entered into force on 1 January 2022 due to ratification by ten signatory parties. Considering the fact that the volume of intra-RCEP trade already exceeds the region's trade flows with the US, Canada and the EU combined (UN Comtrade, 2022), there is a high probability that the successful implementation of the aforementioned mega-regional trade agreement will accelerate the economic center of gravity shifting towards East Asia.

Selection of the automotive industry for further analysis results from the fact that in 2020 RCEP accounted for 43% of the global market in respect of new car sales, with the perspective of reaching 50% of the share by 2040. The authors recognize the importance of the automotive industry in terms of its share in regional trade, as well as the region's division of labor.The paper's main objective is to characterize the China-RCEP automotive trade in the years 2012–2021with reference to key provisions and implications of the aforementioned mega-regional trade agreement for the automotive industry.

In the empirical part of the paper, the authors attempt to verify the hypothesis that trade liberalization under RCEP may contribute to the expansion of the regional automotive industry in terms of trade volume, as well as fragmentation of value and supply chains.

The paper proceeds as follows. In Section 2, the authors review the literature on mega-regionalism in trade and empirical studies on the RCEP agreement published to date. In Section 3, the authors describe the research methodology. In Section 4, they present the characteristics of the automotive industry in the RCEP region, results of statistical analysis of China-RCEP automotive trade using the UN Comtrade database, as well as key sectoral provisions and implications of RCEP. This section is followed by conclusions.

Literature review

Mega-regionalism in trade, including detailed analyses of selected mega-regional trade agreements (M-RTAs), has been the subject of several studies so far. Meléndez-Ortiz (2014, p. 13) defined M-RTAs as deep integration partnerships taking the form of RTAs between countries and/or regions that account for a large share of the global trade and foreign direct investment (FDI) flows while playing an important role in global value chains (GVCs). As argued by the author, M-RTAs are expected to improve market access, as well as compatibility of business and investment regimes. On the other hand, however, as stressed by Bhagwati (2008), M-RTAs may stimulate protectionism through the internal distribution of preferences at the expense of non-participating countries. Plummer (2016) recognized M-RTAs as an attempt to consolidate numerous overlapping regional trade agreements (RTAs), the vast majority of which are bilateral. Palit (2017) analyzed challenges for non-participating developing countries resulting from the preferential of newly established M-RTAs, with long-term consequences for individual countries' growth prospects and global trade governance. Bobowski (2018b) pointed out determinants of M-RTAs' emergence, such as the domino effect in trade regionalism, disappointing results of multilateral dialogue at the level of WTO, as well as geopolitical premises. Ji (2021) connected the emergence of M-RTAs with geo-economic competition between the US, China, and the EU to gain international economic benefits and political influences and to shape the 21st-century global trade rules.

Narayanan and Khorana (2017) stressed the "innovative content" of M-RTAs, such as intellectual property (IP) provisions and competition rules, in respect of their far-reaching implications for global trade policies and regulations. Bown (2017) called for the inclusion of M-RTAs' new provisions in the fields of, among others, IP, competition, public procurement, labor market and environmental standards, investment, e-commerce, state-owned enterprises, and dispute settlement into the WTO's legislation to avoid erosion of multilateral rules of non-discriminatory and transparency and to address the 21st-century trade issues more effectively.

Hamilton (2014) considered the Trans-Pacific Partnership (TPP) and the Transatlantic Trade and Investment Partnership (TTIP) as a response to the stagnation of the Doha Development Round and the rising number of bilateral RTAs. Two aforementioned M-RTAs were also studied by Araujo (2018), who stressed the importance of labor market provisions and related limitations in the field of their execution in practice. Kikuchi et al. (2018) identified gains for Vietnam resulting from membership in M-RTAs such as RCEP, Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), and the European Union (EU) – Vietnam FTA in respect of productivity growth, capital accumulation, and labor supply changes. De Beer (2018) focused his research on three M-RTAs: CPTPP, the US – Mexico – Canada Agreement (USMCA), and the Comprehensive Economic and Trade Agreement (CETA) with the EU, pointing at the importance of those agreements in the global knowledge economy in such fields as IP, innovation policy, and data governance. Kong and Chen (2022) pointed at the role of M-RTAs in respect of ameliorating the negative effects of regulatory diversity in international trade, relying on examples of CPTPP, CETA, and USMCA.

According to Basu Das (2014), China-led RCEP enabled the coexistence of regional powers such as China, Japan, and the Republic of Korea, while serving as a counterbalance to TPP (now: CPTPP). Hamanaka (2014), Wilson (2015), Solis and Wilson (2017) pointed at the less ambitious and shallower agenda of RCEP in terms of an advantage over TPP while recognizing the importance of defensive motives behind RCEP membership, ASEAN centrality, and the US-China geopolitical rivalry. Ji et al. (2018) and Verico (2021) claimed that RCEP, as a manifestation of open regionalism, would generate greater convergence for ASEAN Member States in respect of economic integration than CPTPP with only four Southeast Asian countries involved. As regarded by Bhaskaran (2020), RCEP strengthens the supply chains and intra-industry trade inside the region, whereas Kliem (2019) pointed out the need to balance the soft open regionality and convergence centrality of ASEAN Member States. Flach et al. (2021) empirically confirmed that RCEP has the potential to boost intra-regional trade and further development of regional value chains.

Research methodology

Research methodology based on the Grubel–Lloyd (GL) index has been adopted recently for the purposes of international trade studies by, among others, Baccini and Dür (2018), Baccini et al. (2018), Bobowski (2018a), Bagchi and Bhattacharyya (2019), Anderer et al. (2020), Zarbà et al. (2020), Jošić and Žmuk (2020), Drelich-Skulska and Bobowski (2021). Abd-el-Rahman (1984) is regarded as a pioneer in the field of intra-industry trade studies, with decomposition into a horizontal and vertical pattern using export and import unit values. Greenaway et al. (1994) have popularized this methodological approach.

In the calculations, the authors include 54 six-digit HS codes belonging to Chapters 84, 85, and 87, classified to the automotive industry – they cover both parts, components, and finished goods (Table 1).[1]

Table 1. The six-digit HS codes selected for analysis of the automotive industry

Group of codes	Six-digit HS codes	Group of codes	Six-digit HS codes
Engine parts	840991, 840999, 841330, 842123, 842131, 842542	Engines	840731, 840732, 840733, 840734, 840790, 840820
Electric	850710, 850720, 850730, 850780, 851220, 851230, 851240, 851290, 851829, 852721, 852729, 853921, 853929, 854430	Machinery	848310, 848320, 848330, 848340, 848350, 848360, 848390
Vehicle bodies	870710	Chassis fitted	870600
Transmissions	870840	Vehicle parts	870810, 870821, 870829
Automobiles	870321, 870322, 870323, 870324, 870332, 870333, 870390	Vehicles	870850, 870870, 870880, 870891, 870892, 870893, 870894, 870899

Source: Authors' own study based on (UN Comtrade Database, 2022).

Using the Grubel–Lloyd Index and the following methodology, the quantitative analysis of intra-industry trade in the automotive industry for the years 2012 to 2021 was carried out (Grubel & Lloyd, 1971):

$$GL_i = \frac{(x_i+m_i)-|x_i-m_i|}{x_i+m_i} = 1 - \frac{|x_i-m_i|}{x_i+m_i} \quad (1)$$

$$0 \leq GL_i \leq 1$$

where x_i is the export value of the industry, i and m_i is the import value of industry i.

The imports and exports are perfectly balanced when the GL index is equal to 1. A GL index of 0, however, denotes the absence of intra-industry trade, making a given industry either import- or export-competitive, but never both. The percentage of intra-industry trade in total trade increases as the GL index rises. Inter-industrial reallocation may be sparked by RTAs and M-RTAs. As a result, competitive industries grow during non-competitive ones decline.

In formula (2), the Grubel–Lloyd index was modified by Greenaway et al. (1994), who distinguished between horizontal and vertical intra-industry trading patterns. In the latter instance, additional disaggregation is performed in relation to the relative quality of a certain product's export compared to its import.

$$GL_i = 1 - \frac{\left|x_i^h - m_i^h\right| + \left|x_i^{vl} - m_i^{vl}\right| + \left|x_i^{vh} - m_i^{vh}\right|}{x_i+m_i} \quad (2)$$

[1] We excluded some automotive parts and components classified to Chapters 40, 70, 83, 91 and 94 due to their relatively low statistical relevance.

where x_i^h represents the export value of the industry *i*'s horizontal pattern, m_i^h represents the import value of the industry *i*'s horizontal pattern, x_i^{vl} represents the export value of the industry *i*'s low-quality vertical pattern, m_i^{vl} represents the import value of the industry *i*'s low-quality vertical pattern, x_i^{vh} represents the export value of the industry *i*'s high-quality vertical pattern and m_i^{vh} represents the import value of the industry *i*'s high-quality vertical pattern.

To assess horizontal and vertical intra-industry trade (HIIT and VIIT indexes), the authors modified the Balassa index (3).

$$HB = \frac{\sum_{i=1}^{N_1}[(x_i+m_i)-|x_i-m_i|]}{\sum_{i=1}^{N}(x_i+m_i)} \qquad VB = \frac{\sum_{i=1}^{N_2}[(x_i+m_i)-|x_i-m_i|]}{\sum_{i=1}^{N}(x_i+m_i)} \tag{3}$$

where N_1 represents six-digit codes for industry *i* that exhibit HIIT, N_2 represents six-digit codes for industry *i* that exhibit VIIT, and *N* depicts the total number of six-digit codes for industry *i*, according to the following equation: $B_i = HB_i + VB_i$.

The authors of this paper used the Fontagné and Freudenberg (1997)-developed HIIT and VIIT measurements in their study. When the similarity requirement is satisfied, the horizontal pattern of intra-industry trade is recognized as dominating. Consequently, there are no significant distinctions between the unit values of imports (UV_i^m) and exports (UV_i^x) (4).

$$\frac{1}{(1+\acute{\alpha})} \le \frac{UV_i^x}{UV_i^m} \le 1+\acute{\alpha} \tag{4}$$

The authors computed export and import unit values to distinguish between the product quality (5) (6):

$$UV_i^x = \frac{x_i}{Qx_i} \tag{5}$$

$$UV_i^m = \frac{m_i}{Qm_i} \tag{6}$$

where Qx_i represents the amount of exports made by industry *i* and Qm_i represents the amount of imports made by industry *i*.

The vertical pattern of intra-industry trade either involves exports of higher quality than corresponding imports, which results in significantly higher unit values of exports than imports (7), or exports of lower quality than corresponding imports, which results in significantly lower unit values of exports than imports (8).

$$\frac{UV_i^x}{UV_i^m} < \frac{1}{(1+\acute{\alpha})} \tag{7}$$

$$\frac{UV_i^x}{UV_i^m} > 1+\acute{\alpha} \tag{8}$$

Formally, UV_i^x and UV_i^m stand for the unit value of the industry *i*'s exports and imports at the six-digit level, respectively. A dispersion factor $\dot{\alpha}$ of 0.15 is adopted for both 0.85 and 1.15 thresholds (whereas some authors select 0.25). When it comes to vertical product differentiation, low-quality vertical products are traded when the relative unit value of the exports-to-imports ratio is less than $(1 - \dot{\alpha})$, or 0.85, and high-quality vertical products are traded when the relative unit value is greater than $(1 + \dot{\alpha})$, or 1.15.

Results and discussions

The automotive market in RCEP

The RCEP was the largest M-RTA ever signed, accounting for 30.8% of the global GDP and 30.5% of the global exports in 2021 (Table 2). Even though two M-RTAs involving the EU were slightly larger than the RCEP in respect of the shares in global merchandise exports, economic growth forecasts[2] and population growth[3] in the RCEP, with special regard to China and the ASEAN Member States, may result in a shift of balance towards this region in the forthcoming years.

Table 2. Mega-regional RTAs in the global economy, 2021 (%)

	Share in global GDP	Share in global merchandise exports
CPTPP: Australia, Brunei Darussalam, Chile, Japan, Canada, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam	12.2	15.9
EU-Japan EPA: Japan, EU-27 (Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden)	22.9	33.2
CETA: Canada, EU-27 (Austria, Belgium, Bulgaria,Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden)	19.9	32.1
RCEP: Australia, China, Japan, New Zealand, the Republic of Korea, ASEAN (Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Vietnam)	30.8	30.5

CPTPP – Comprehensive and Progressive Agreement for Trans-Pacific Partnership; EU-Japan EPA – EU – Japan Economic Partnership Agreement; CETA – Comprehensive Economic and Trade Agreement; ASEAN – Association of Southeast Asian Nations

Source: Authors' own study based on (World Bank, 2022).

[2] An average GDP growth for the RCEP region in 2022 was forecasted at the level of 3.61% and 3.62% a year later. For ten RCEP countries classified as emerging markets and developing economies (China and ASEAN Member States, excluding Singapore), those indicators might reach the levels of 4.07 and 4.46%, respectively. The main reasons behind IMF's predictions were related to global financial tightening and expected slowdown in external demand (authors' own study based on IMF, 2022).

[3] Population of RCEP countries already exceeded 2.3 billion of people (Worldometers, 2022).

The RCEP's main goal is to facilitate regional trade through the reduction of tariff and non-tariff barriers. The studied M-RTA embraces the unification of frameworks in respect of, among others, competition, investment, and intellectual property rights while setting technical standards, norms, and harmonized rules of origin (ROO). This, in turn, may enhance both trade creation and diversion effects, resulting in an additional volume of trade in the global economy of up to USD 500 billion by 2030. In 2020, as reported by the CAR Institute of the University of Duisburg-Essen, nearly 27.6 million new cars were sold in RCEP countries, accounting for 43% of the world market, with an expected increase up to 41.8 million (46% of share) by 2030 (Huber-Straßer, 2021).

The RCEP region is a home market for 5 of 10 automotive brands with the highest shares in the global market – three Japanese: Toyota, Honda, and Nissan, and two South Korean: Hyundai and Kia, with a combined share of 28.7% in 2021 (Table 3).

Table 3. Global automotive market shares by brand, 2021 (%)

Brand	Country of origin	Share in global market
Toyota	Japan	10.5
Volkswagen	Germany	6.4
Honda	Japan	5.3
Ford	United States	5.0
Hyundai	Republic of Korea	4.7
Nissan	Japan	4.6
Chevrolet	United States	4.4
Kia	Republic of Korea	3.6
Mercedes	Germany	3.0
BMW	Germany	2.7

Source: (Statista, 2022).

China is the largest automotive manufacturer in the RCEP and worldwide, with nearly 26.1 million units produced in 2021, while Japan ranked third: 7.85 million, and the Republic of Korea – fifth (3.46 million). In the world's top ten, there is also Thailand, with 1.69 million units made[4] (Table 4). When combined, RCEP countries listed in Table 4 manufactured 40.94 million vehicles in 2021, then 51.1% of the global volume, in respect of passenger cars only – 33.29 million units and 58.4% of the share, respectively. Except for Thailand, Australia, and the Philippines, the other RCEP countries from the Table 4 proved to have relatively higher shares in the world production of passenger cars than all the types of vehicles in general, with special regard to China and Japan – shares higher by 4.9 and 1.8%, respectively. Interestingly, when taking into account passenger cars only, the share of the U.S. production in the world total is lower by as much as 8.7%. Lastly, Thailand was the only RCEP country with passenger cars accounting for a minority of automotive production (35.3%).

[4] Interestingly, India, non-RCEP country from South Asia, was ranked fourth worldwide with 4.4 million of units manufactured, including 3.63 million of passenger cars in the same year.

Table 4. Automotive production, all types of vehicles (passenger cars in the brackets), top ten and RCEP Member States, 2021

Country	Production	Share (%)	Country	Production	Share (%)
China	26,082,220 (21,407,962)	32.5 (37.5)	Thailand	1,685,705 (594,690)	2.1 (1.0)
United States	9,167,214 (1,563,060)	11.4 (2.7)	France[a]	1,351,308 (917,907)	1.7 (1.6)
Japan	7,846,955 (6,619,242)	9.8 (11.6)	Indonesia	1,121,967 (889,756)	1.4 (1.6)
India	4,399,112 (3,631,095)	5.5 (6.4)	Malaysia	481,651 (446,431)	0.6 (0.8)
Republic of Korea	3,462,404 (3,162,727)	4.3 (5.5)	Vietnam	163,250 (123,482)	0.2 (0.2)
Germany[a]	3,308,692 (3,096,165)	4.1 (5.4)	The Philippines	83,852 (46,278)	0.1 (0.1)
Mexico	3,145,653 (708,242)	3.9 (1.2)	Australia	5,391 (0)	0.0 (0.0)
Brazil	2,248,253 (1,707,851)	2.8 (2.9)	Myanmar	1,957 (1,519)	0.0 (0.0)
Spain	2,098,133 (1,662,174)	2.6 (2.9)	World	80,145,988 (57,054,295)	100.0 (100.0)

[a] cars and light commercial vehicles only.

Source: (OICA, 2022a, 2022b).

Among 20 automotive manufacturers with the highest output, there were 12 representing the RCEP, i.e. Japan (6), the Republic of Korea (1), and China (5), accounting, when combined, for 45.4% of the world total, with 43.93 million of units produced (Table 5).

Table 5. Top 20 automotive manufacturers, 2017[a]

Brand	Country of origin	Production	Share	Brand	Country of origin	Production	Share
Toyota	Japan	10,446,051	10.8	SAIC	China	2,866,913	3.0
Volkswagen	Germany	10,382,334	10.7	Daimler AG	Germany	2,549,142	2.6
Hyundai	Republic of Korea	7,218,391	7.4	BMW	Germany	2,505,741	2.6
General Motors	United States	6,856,880	7.1	Geely	China	1,950,382	2.0
Ford	United States	6,386,818	6.6	Changan	China	1,616,457	1.7
Nissan	Japan	5,769,277	6.0	Mazda	Japan	1,607,602	1.7
Honda	Japan	5,236,842	5.4	Dongfeng Motor	China	1,450,999	1.5
Fiat – Chrysler	Italy – United States	4,600,847	4.7	BAIC	China	1,254,483	1.3
Renault	France	4,153,589	4.3	Mitsubishi	Japan	1,210,263	1.2
PSA	France	3,649,742	3.8	Others	–	11,886,991	12.3
Suzuki	Japan	3,302,336	3.4	World	–	96,922,080	100.0

[a] the newest data available, based on the OICA correspondents survey.

Source: (OICA, 2022c).

Among the top 20 automotive parts suppliers in respect of sales, there were eight from the RCEP,[5] mostly originating in Japan, followed by the Republic of Korea and China (Table 6). The original equipment manufacturers (OEMs) from Northeast Asia listed in Table 6 have occupied a relatively strong position in the regional market, varying between 50 and 72%, exceeding the shares of the German and French producers on the European market. On the other hand, however, European counterparts used to attract higher shares in the North American automotive market, usually exceeding 20%. The leading Japanese and South Korean OEMs specialize mostly in electronic systems, body, brake, chassis, navigation and audio systems, transmissions, accumulators, as well as engine components.

Table 6. Auto parts suppliers (OEMs) from the RCEP are among the global top 20, 2018[a]

Global rank	Company	Country of origin	Total global sales (million USD)	Share in North American / European / Asian market (%)
1	Robert Bosch	Germany	49 525	17/45/36
2	Denso Corp.	Japan	42 793	23/12/64
3	Magna International Inc.	Canada	40 827	50/42/6
4	Continental	Germany	37 803	28/50/22
5	ZF Friedrichshafen	Germany	36 929	28/47/21
6	Aisin Seiki Co.	Japan	34 999	17/9/72
7	Hyundai Mobis	Republic of Korea	25 624	12/9/76
8	Lear Corp.	United States	21 149	36/41/19
9	Faurecia	France	20 667	25/51/19
10	Valeo	France	19 683	20/46/32
11	Yazaki Corp.	Japan	17 500	31/17/52
12	Panasonic Automotive Systems Co.	Japan	17 466	34/16/50
13	Adient	United States	17 400	30/27/43
14	Sumitomo Electric Industries	Japan	15 402	24/-/-
15	Yanfeng	China	14 506	19/12/69
16	ThyssenKrupp	Germany	14 438	25/65/8
17	Mahle	Germany	14 405	27/48/20
18	JTEKT Corp.	Japan	13 078	19/16/59
19	BASF	Germany	12 931	26/42/23
20	Aptiv	Ireland	12 869	38/31/29

[a] the newest data available

Source: (Top Foreign Stocks, 2022).

Emerging markets belonging to the RCEP, except for six producers from China, proved to play a relatively smaller role as OEMs of automotive parts. However, their role has increased considerably when considering assembly activities in the regional automotive industry. The main R&D facilities of automotive assemblers within emerging markets of ASEAN are located in Thailand (Toyota, Honda, Isuzu,

[5] In the top 100 there were 36 from the RCEP in total, all from the Northeast Asian members of RCEP.

Nissan), Malaysia (Perodua, Proton), and Indonesia (Daihatsu, Honda). The automotive parts producers originated in emerging markets of ASEAN are located mostly in Thailand, Indonesia, Malaysia, and the Philippines, 1/3 of which are classified as Tier-1 suppliers, operating as wholly foreign-owned, local or foreign majority joint ventures. Among the major local automotive parts producers in Thailand, there are Siam Motors Group, Somboon Group, Thai Rung Group, Summit Group, AAPICO Hitech Group, Thai Summit Group, in Malaysia: DR B-HICOM, Delloyd Group, Ingress Corporation Group, APM Automotive, in Indonesia: Astra Group, IndoMobil Group, in the Philippines: Yazaki-Torres. Vietnam is considered a latecomer in the RCEP's automotive industry, specializing mostly in labor-intensive components, such as wiring harnesses; however, it developed through the years as an automotive assembly centre for, among others, VinFast, Thaco, Hyundai, Toyota, Mazda, Ford, Honda, Isuzu, and Transinco. Lastly, less developed countries of RCEP, namely Cambodia, Lao PDR, and Myanmar, attract labor-intensive manufacturing and assembly activities, gaining from proximity to the large Thai market (Natsuda & Thoburn, 2021, pp. 7, 56, 61–67, 209).

China-RCEP automotive trade

Empirical analysis of intra-RCEP trade has been made from the perspective of the largest regional economy in nominal terms, key exporter and importer, i.e. China, using bilateral trade data from the last ten years (2012–2021), extracted from the UN Comtrade.

The authors selected the automotive industry for disaggregated analysis of intra-RCEP trade at the level of six-digit HS codes due to its continuously high share – varying between 43.7 and 47.9% – in total trade between China and 14 RCEP countries (Table 7). In 2021, the automotive trade with China of half of RCEP countries exceeded 45% of total bilateral flows, whereas in the case of the remaining seven shares varied between 5.4 and 20.9%, only. Unquestionable leaders were Vietnam, the Republic of Korea, and Singapore (57.2–61.3%). Going back to 2012, the automotive trade amounted to 45% or slightly more in the case of six RCEP countries, with Singapore, Malaysia, and the Philippines ranked at the top (52.9–58.7%). Through the whole ten years, the most dynamic upward trend in respect of the share of the automotive trade in total trade with China was recorded in the case of Vietnam (17.6%), which resulted in advancement from the seventh position to the third among the RCEP countries. An increase in automotive assortment's share in trade with China at the level of 8.4 and 9.3% was recorded by Singapore and the Republic of Korea, respectively. Except for the aforementioned countries, only Japan has slightly increased the share of the automotive trade in total trade with China – by 1.9%. The most rapid decreases of the studied indicator were recorded by Myanmar (21.8%), Lao PDR (14.0%), and the Philippines (9.8%); however, in the first two cases, it took place at a relatively low volume of trade. In general, the share of the automotive trade in total trade of RCEP countries with China appeared to be stable, with fluctuations of less than ±1.5% in the last eight years. There was the noticeable rising importance of automotive assortment in China's trade with Vietnam, Republic of Korea, and Singapore, the important, stable role of Japan, Thailand, and Malaysia. This is accompanied by the declining role of the analyzed assortment in the case of New Zealand and Brunei Darussalam, as well as less developed RCEP countries, i.e. Cambodia, Lao PDR, and Myanmar.

In the pandemic years 2020–2021, there was no significant change in respect of the share of the intra-RCEP automotive trade in total trade with China – the highest drops were recorded in 2020–2021 in the case of Brunei Darussalam, Myanmar, Malaysia, and Indonesia – by 10.3, 8.0, 5.8 and 5.6%, respectively. On the other hand, countries like Vietnam, Singapore, the Republic of Korea, and New Zealand, recorded an upward trend during the health crisis, with stable indicators for Japan and Thailand.

Table 7. RCEP automotive trade with China, 2012–2021 (share in total trade, %)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Australia	12.9	11.2	11.6	14.3	13.8	12.9	13.1	12.2	12.8	11.8
Brunei Darussalam	9.1	13.7	11.7	9.7	19.7	15.7	38.2	15.7	6.6	5.4
Cambodia	20.0	18.3	14.9	17.2	18.7	18.1	17.1	20.9	20.9	17.7
Indonesia	23.5	23.3	25.2	28.2	27.2	25.0	25.4	26.5	24.8	20.9
Japan	49.7	48.8	50.3	50.8	51.9	52.2	52.8	52.6	52.6	51.6
Lao PDR	30.9	48.9	40.7	22.5	24.5	27.2	21.7	21.8	18.3	16.9
Malaysia	56.7	54.6	55.1	57.6	60.6	58.4	60.6	58.2	57.2	52.4
Myanmar	33.7	28.9	14.9	24.7	27.7	26.9	22.3	19.9	17.6	11.9
New Zealand	14.8	12.1	11.8	14.5	14.2	12.8	13.5	11.8	11.8	12.5
Philippines	58.7	54.3	54.4	54.5	52.9	54.1	54.9	53.4	51.8	48.9
Republic of Korea	49.2	53.2	52.4	57.0	56.9	58.3	59.7	57.1	58.3	58.5
Singapore	52.9	52.4	53.3	53.3	56.5	54.2	54.9	53.2	56.6	61.3
Thailand	46.9	42.7	43.4	45.3	45.3	44.6	45.2	46.0	46.9	45.8
Vietnam	39.6	38.9	39.7	39.2	39.2	45.9	48.4	51.9	57.2	57.2
RCEP-14	44.4	43.7	43.9	46.6	47.2	46.9	47.9	46.7	47.9	46.3

Source: Authors' own study based on (UN Comtrade, 2022).

In terms of volume, there is visible domination of Japan and the Republic of Korea in automotive trade with China in the years 2012–2021; however, with a downward trend in the case of Japan, accompanied by an upward trend in the case of Vietnam at a comparable rate (Figure 1). A slight upward trend in respect of the volume of automotive trade with China was observed in most of the cases since 2012, including the pandemic years 2020–2021.

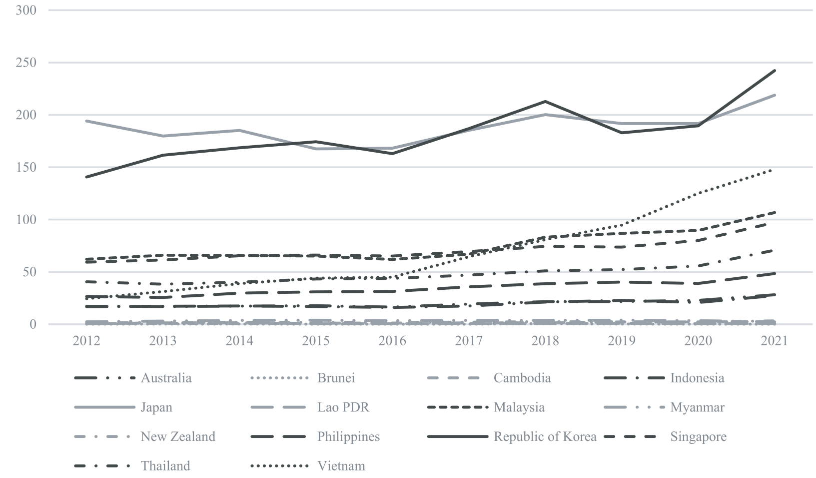

Figure 1. RCEP automotive trade with China, 2012–2021 (billions of USD)

Source: Authors' own study based on (UN Comtrade, 2022).

China recorded a deficit in automotive trade with RCEP countries throughout the whole studied period, with a peak reached in 2018 (USD 180 billion) and an upward trend since 2020 (Figure 2). Among six trade partners generating a deficit on China's side for the last ten years, there was the Republic of Korea (USD 92.7 billion), Japan (USD 54.2 billion), Singapore (USD 32 billion), Malaysia (USD 30 billion), Philippines (USD 7 billion) and Thailand (USD 5.5 billion). China recorded surpluses exceeding USD 20 billion in 2021 (with an upward trend through the years) in automotive trade

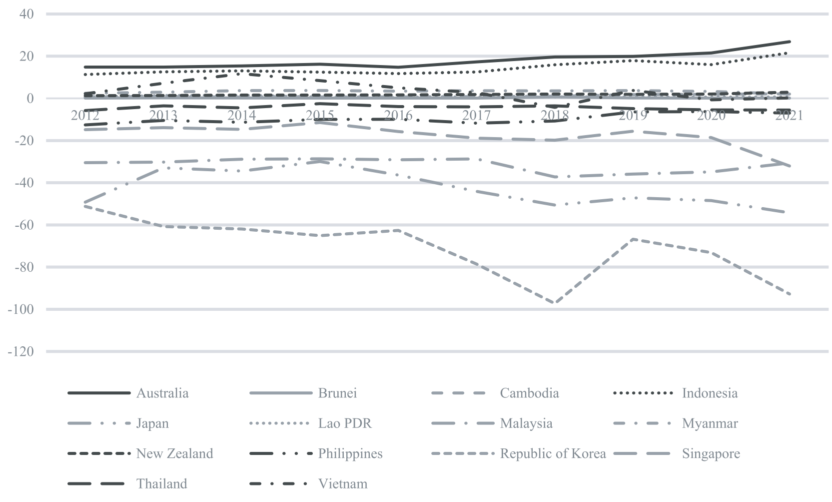

Figure 2. RCEP automotive trade balance with China, 2012–2021 (billion USD)

Source: Authors' own study based on (UN Comtrade, 2022).

with Indonesia and Australia. The positive trade balance with the other RCEP countries varied between USD 0.2 and USD 2.9 billion in 2021, remaining relatively stable since 2012. The only exception was Vietnam, which reduced the deficit in the automotive trade with China through the years, even reaching a small surplus in 2018 and 2020.

Surprisingly, in 2012–2021, the shares of individual countries in total intra-RCEP automotive trade with China fluctuated by less than ±0.5%, except for Japan and Vietnam, with a drop of 11.1 and a rise of 10.6%, respectively (Table 8). While a decade ago, Japan alone accounted for more than 33% of RCEP's automotive trade with China, followed by the Republic of Korea (23.9%), in 2021, the latter was already the leader with nearly the same share as ten years before, followed by Japan (21.9%) and Vietnam (14.8%). Additionally, Japan recorded the highest drop in the share in the regional automotive trade with China during the pandemic crisis – by 2.8%, whereas Vietnam increased it by 2.6%. In the case of the remaining RCEP partners of China, there was a stabilization of the studied indicator or even slight growth after 2019.

Table 8. RCEP automotive trade with China (shares in total, %)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Australia	2.9	2.8	2.7	2.8	2.7	2.8	2.7	2.8	2.8	2.8
Brunei Darussalam	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Cambodia	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Indonesia	2.9	2.9	2.8	2.7	2.6	2.5	2.7	2.9	2.5	2.7
Japan	33.0	29.7	29.1	26.5	27.2	26.5	25.3	24.7	23.3	21.9
Lao PDR	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Malaysia	10.6	10.9	10.3	10.3	10.0	9.6	10.5	11.2	10.9	10.7
Myanmar	0.4	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.2
New Zealand	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Philippines	4.5	4.2	4.7	4.9	5.1	5.1	4.9	5.2	4.7	4.9
Republic of Korea	23.9	26.7	26.5	27.5	26.4	26.7	26.8	23.6	23.0	24.3
Singapore	10.1	10.2	10.3	10.4	10.5	9.9	9.4	9.5	9.7	9.8
Thailand	6.9	6.3	6.3	6.8	7.1	6.7	6.4	6.7	6.8	7.1
Vietnam	4.2	5.2	6.1	6.9	7.3	9.2	10.2	12.2	15.2	14.8
RCEP-14	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' own study based on (UN Comtrade, 2022).

When considering year-to-year dynamics, there was a drop of 0.5–2.5% in RCEP automotive trade with China in the years 2015–2016, followed by more than 13% of the annual increase in two subsequent years (Table 9). In the first year of the pandemic crisis, there was an increase of more than 6%, followed by a peak in 2021 of more than 21%. Excluding fluctuations in the case of RCEP countries trading at a relatively low scale with China, i.e. Brunei Darussalam, Cambodia, Lao PDR, and Myanmar, Vietnam recorded the highest dynamics in automotive trade with China, with year-to-year growth rates of more than 20%. There was a year-to-year drop in trade flows with China in 2020 in the case of Indonesia, New Zealand, and the Philippines. However, next year 13 of 14 RCEP countries recorded an annual increase on average of more than 20%.

Table 9. RCEP automotive trade with China, year-to-year change (2012 = 100)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Australia	100	-1.5	1.8	2.3	-7.2	17.4	12.3	0.2	5.4	23.3
Brunei	100	66.7	-8.0	-34.8	0.0	6.7	343.8	-74.7	-27.8	23.1
Cambodia	100	15.8	-19.3	38.0	13.3	13.5	17.5	50	3.6	15.2
Indonesia	100	2.6	1.4	-3.5	-4.9	8.5	21.7	7.9	-9.1	31.5
Japan	100	-7.3	2.9	-9.6	0.4	10.2	8.1	-4.3	0.1	14.1
Lao PDR	100	151.9	9.6	-57.7	-7.9	43.1	-8.4	13.2	-23.3	13.6
Malaysia	100	6.4	-0.5	-0.8	-5.0	8.1	24.2	4.4	3.3	18.9
Myanmar	100	25.5	25.0	1.6	-8.7	6.9	-1.9	5.2	-9.9	-33.8
New Zealand	100	2.5	10.4	0.6	1.1	8.7	23.0	-5.3	-2.2	42.1
Philippines	100	-3.8	16.5	3.9	1.1	14.1	8.4	3.9	-3.3	24.3
Republic of Korea	100	14.8	4.4	3.4	-6.5	14.7	13.9	-14.1	3.7	27.8
Singapore	100	3.6	6.4	1.0	-1.4	6.6	7.2	-0.9	8.6	21.5
Thailand	100	-5.6	5.0	7.6	1.3	7.2	8.5	2.5	6.6	27.0
Vietnam	100	27.4	24.4	13.6	2.0	43.4	25.4	17.3	31.9	18.3
RCEP-14	100	3.1	5.2	-0.5	-2.4	13.3	13.2	-2.1	6.0	21.1

Source: Authors' own study based on (UN Comtrade, 2022).

The next step of the empirical analysis was the calculation of the GL index to measure the share of intra-industry trade in total intra-RCEP automotive trade with China, as well as the examination of its dominant pattern, i.e. vertical and horizontal. The selection of countries at this stage of the research relied on the statistical significance of bilateral flows in the studied period and the availability of data, including quantity, to calculate unit exports and imports. As a result, five countries were excluded with shares of less than 0.5% in total RCEP automotive trade with China, i.e. Brunei Darussalam, Cambodia, Lao PDR, Myanmar, and New Zealand. For the remaining RCEP members, data were extracted for the years 2012, 2015, 2019, and 2021.

Table 10. GL, VIIT, and HIIT indexes for RCEP automotive trade with China (2012, 2015, 2019, 2021)

	2012			2015			2019			2021		
	GL	VIIT	HIIT	GL	VIIT	HIIT	GL	VIIT	HIIT	GL	VIIT	HIIT
Australia	0.0	0.0	0.9	0.2	0.2	1.0	0.3	0.3	1.0	0.4	0.4	1.0
Indonesia	0.5	0.5	1.0	0.8	0.6	0.9	0.4	0.4	0.9	0.6	0.6	1.0
Japan	0.6	0.5	1.0	0.6	0.5	1.0	0.6	0.5	1.0	0.7	0.6	1.0
Malaysia	0.3	0.3	1.0	0.6	0.6	1.0	0.6	0.6	1.0	0.5	0.5	1.0
Philippines	0.0	0.0	1.0	0.2	0.2	1.0	0.4	0.3	1.0	0.1	0.1	X
Republic of Korea	0.4	0.3	0.9	0.5	0.5	1.0	0.7	0.6	0.9	0.7	0.6	1.0
Singapore	0.0	0.0	X	0.0	0.0	1.0	0.2	0.2	1.0	0.1	0.1	0.9
Thailand	0.5	0.4	1.0	0.4	0.4	1.0	0.6	0.6	1.0	0.4	0.4	1.0
Vietnam	0.3	0.3	1.0	0.4	0.3	1.0	0.5	0.5	0.9	0.1	0.1	1.0

Source: Authors' own study based on (UN Comtrade, 2022).

In 2021, GL indexes were the highest in the case of Japan, the Republic of Korea, and Indonesia (0.6 and more), with the lowest scores – below 0.2 – in the case of Vietnam, the Philippines, and Singapore (Table 10). In 2012 and 2015, the highest results were recorded by Japan, Thailand and Indonesia, while in 2019 – by the Republic of Korea, Malaysia, Japan and Thailand. Only in the case of Singapore in 2012 and the Philippines in 2021, there was no single six-digit HS code in automotive trade with China with a dominant horizontal pattern of intra-industry trade. The highest VIIT indexes (0.6) were recorded by the Republic of Korea, Thailand and Malaysia in 2019 and the Republic of Korea, Japan and Indonesia in 2021.

Table 11 compares all 54 six-digit HS codes in automotive trade with China for nine RCEP countries. White color with "VIIT" – that dominates actually – represents a dominant low-quality vertical pattern of intra-industry trade (LQ VIIT) in case of a given tariff code, light grey color – dominant high-quality vertical pattern (HQ VIIT), dark grey color – dominant horizontal pattern (HIIT), while white color with "X" means lack of data – in most cases, due to lack of bidirectional flows or incomplete quantity information.

In the four studied years,[6] HQ VIIT was recorded more than 40 times in the case of Japan and more than 50 times in the case of the Republic of Korea, with the highest share in total cases of close to 25% for the Republic of Korea and Indonesia (Table 11). There were only slight fluctuations in respect of the number of cases with dominant HQ VIIT in intra-RCEP automotive trade with China – it varied between 63 and 69 every single studied year. In the case of the Republic of Korea and Thailand, there were four six-digit tariff codes, with the HQ VIIT pattern being dominant through all studied years; in the case of Indonesia – three, Japan, Malaysia, Singapore, Vietnam, and the Philippines – two, Australia – none.

HIIT proved to be dominant by more than 20 times, also in the case of Japan and the Republic of Korea, with a share in total cases of approximately 12%. On the other hand, for Australia and Singapore, there were only five–six such cases, which translated into less than 4% of the share in total. Contrary to HQ VIIT cases, the number of dominant HIIT patterns has changed significantly through the years – between 2012 and 2015, it almost doubled to 46, then dropped by half in 2019 (to 23) and rose again by more than a half two years later (to 36).

[6] Selection of years for analysis was not accidental – data from the other years proved to be pretty scarce for some RCEP countries.

Table 11. The dominant patterns of intra-industry trade in the automotive industry at the level of six-digit HS codes, China – RCEP-9 (2012, 2015, 2019, 2021)

JAPAN

	2012	2015	2019	2021		2012	2015	2019	2021		2012	2015	2019	2021
840731	X	VIIT	VIIT	VIIT	848390	VIIT	VIIT	VIIT	VIIT	870324	VIIT	VIIT	VIIT	VIIT
840732	VIIT	VIIT	VIIT	VIIT	850710	VIIT	VIIT	VIIT	VIIT	870332	X	VIIT	VIIT	VIIT
840733	VIIT	VIIT	VIIT	HIIT	850720	VIIT	VIIT	VIIT	VIIT	870333	HIIT	HIIT	VIIT	HIIT
840734	HIIT	VIIT	VIIT	VIIT	850730	VIIT	VIIT	VIIT	VIIT	870390	VIIT	VIIT	VIIT	VIIT
840790	VIIT	VIIT	VIIT	VIIT	850780	VIIT	VIIT	VIIT	VIIT	870600	VIIT	VIIT	VIIT	VIIT
840820	HIIT	HIIT	VIIT	VIIT	851220	VIIT	VIIT	VIIT	HIIT	870710	VIIT	HIIT	VIIT	HIIT
840991	VIIT	VIIT	VIIT	VIIT	851230	VIIT	VIIT	VIIT	HIIT	870840	VIIT	HIIT	VIIT	VIIT
840999	VIIT	VIIT	VIIT	VIIT	851240	VIIT	VIIT	VIIT	VIIT	870850	VIIT	VIIT	VIIT	VIIT
841330	VIIT	VIIT	HIIT	VIIT	851290	VIIT	VIIT	VIIT	VIIT	870870	VIIT	VIIT	HIIT	VIIT
842123	VIIT	VIIT	VIIT	VIIT	851829	HIIT	VIIT	HIIT	HIIT	870880	VIIT	VIIT	VIIT	VIIT
842131	VIIT	VIIT	VIIT	VIIT	852721	VIIT	VIIT	VIIT	VIIT	870891	VIIT	VIIT	VIIT	VIIT
842542	VIIT	VIIT	VIIT	VIIT	852729	VIIT	VIIT	VIIT	VIIT	870892	VIIT	VIIT	VIIT	VIIT
848310	HIIT	VIIT	VIIT	HIIT	853921	VIIT	VIIT	VIIT	VIIT	870893	VIIT	VIIT	VIIT	VIIT
848320	VIIT	VIIT	VIIT	VIIT	853929	VIIT	VIIT	VIIT	HIIT	870894	VIIT	VIIT	VIIT	HIIT
848330	VIIT	VIIT	VIIT	VIIT	854430	VIIT	VIIT	VIIT	VIIT	870899	VIIT	VIIT	VIIT	VIIT
848340	VIIT	VIIT	VIIT	VIIT	870321	VIIT	VIIT	VIIT	HIIT	870810	VIIT	VIIT	VIIT	VIIT
848350	VIIT	HIIT	VIIT	VIIT	870322	HIIT	VIIT	VIIT	VIIT	870821	VIIT	VIIT	VIIT	VIIT
848360	VIIT	VIIT	VIIT	VIIT	870323	VIIT	VIIT	VIIT	VIIT	870829	HIIT	HIIT	VIIT	VIIT

MALAYSIA

	2012	2015	2019	2021		2012	2015	2019	2021		2012	2015	2019	2021
840731	X	X	X	X	848390	VIIT	VIIT	VIIT	VIIT	870324	X	X	X	X
840732	VIIT	VIIT	X	VIIT	850710	VIIT	VIIT	VIIT	VIIT	870332	X	X	X	X
840733	X	X	X	X	850720	VIIT	VIIT	VIIT	VIIT	870333	X	X	X	X
840734	VIIT	HIIT	X	HIIT	850730	VIIT	VIIT	VIIT	HIIT	870390	X	X	X	X
840790	VIIT	X	X	VIIT	850780	VIIT	VIIT	VIIT	X	870600	X	VIIT	VIIT	VIIT
840820	X	X	X	X	851220	VIIT	VIIT	VIIT	VIIT	870710	X	VIIT	VIIT	X
840991	HIIT	VIIT	HIIT	VIIT	851230	VIIT	VIIT	VIIT	VIIT	870840	HIIT	HIIT	VIIT	VIIT
840999	VIIT	VIIT	VIIT	VIIT	851240	VIIT	VIIT	VIIT	VIIT	870850	VIIT	VIIT	VIIT	VIIT
841330	VIIT	VIIT	VIIT	VIIT	851290	HIIT	VIIT	X	HIIT	870870	VIIT	VIIT	VIIT	VIIT
842123	VIIT	VIIT	VIIT	HIIT	851829	VIIT	VIIT	VIIT	HIIT	870880	VIIT	VIIT	VIIT	VIIT
842131	X	VIIT	VIIT	VIIT	852721	VIIT	VIIT	VIIT	VIIT	870891	VIIT	HIIT	VIIT	HIIT
842542	VIIT	VIIT	VIIT	VIIT	852729	VIIT	VIIT	VIIT	VIIT	870892	VIIT	VIIT	VIIT	VIIT
848310	VIIT	VIIT	VIIT	HIIT	853921	VIIT	VIIT	VIIT	VIIT	870893	VIIT	VIIT	VIIT	X
848320	VIIT	VIIT	VIIT	VIIT	853929	VIIT	VIIT	VIIT	VIIT	870894	VIIT	HIIT	VIIT	HIIT
848330	VIIT	VIIT	VIIT	VIIT	854430	VIIT	VIIT	VIIT	VIIT	870899	VIIT	VIIT	VIIT	VIIT
848340	VIIT	VIIT	VIIT	VIIT	870321	X	X	X	X	870810	VIIT	VIIT	VIIT	VIIT
848350	VIIT	VIIT	VIIT	VIIT	870322	VIIT	VIIT	VIIT	VIIT	870821	VIIT	VIIT	VIIT	X
848360	VIIT	VIIT	VIIT	VIIT	870323	VIIT	VIIT	X	VIIT	870829	VIIT	VIIT	VIIT	VIIT

REPUBLIC OF KOREA

	2012	2015	2019	2021		2012	2015	2019	2021		2012	2015	2019	2021
840731	VIIT	X	X	X	848390	VIIT	VIIT	VIIT	VIIT	870324	VIIT	VIIT	X	VIIT
840732	VIIT	HIIT	VIIT	VIIT	850710	VIIT	VIIT	VIIT	VIIT	870332	X	X	VIIT	X
840733	VIIT	HIIT	VIIT	X	850720	VIIT	VIIT	VIIT	VIIT	870333	X	X	X	X
840734	VIIT	VIIT	VIIT	HIIT	850730	VIIT	VIIT	X	VIIT	870390	VIIT	VIIT	X	X
840790	VIIT	VIIT	VIIT	VIIT	850780	VIIT	VIIT	VIIT	X	870600	VIIT	X	X	X
840820	VIIT	VIIT	VIIT	VIIT	851220	VIIT	VIIT	HIIT	VIIT	870710	VIIT	VIIT	VIIT	VIIT
840991	VIIT	VIIT	VIIT	VIIT	851230	VIIT	VIIT	VIIT	VIIT	870840	VIIT	HIIT	VIIT	HIIT
840999	VIIT	VIIT	VIIT	VIIT	851240	VIIT	VIIT	VIIT	VIIT	870850	VIIT	HIIT	VIIT	VIIT
841330	VIIT	VIIT	VIIT	VIIT	851290	VIIT	HIIT	X	VIIT	870870	VIIT	VIIT	VIIT	VIIT
842123	VIIT	VIIT	VIIT	VIIT	851829	VIIT	VIIT	VIIT	VIIT	870880	VIIT	HIIT	HIIT	VIIT
842131	VIIT	VIIT	VIIT	VIIT	852721	VIIT	HIIT	VIIT	VIIT	870891	VIIT	HIIT	HIIT	HIIT
842542	VIIT	VIIT	VIIT	VIIT	852729	HIIT	VIIT	VIIT	VIIT	870892	VIIT	VIIT	VIIT	VIIT
848310	VIIT	VIIT	VIIT	HIIT	853921	VIIT	VIIT	VIIT	VIIT	870893	HIIT	VIIT	HIIT	HIIT
848320	VIIT	VIIT	VIIT	VIIT	853929	VIIT	VIIT	VIIT	VIIT	870894	VIIT	VIIT	VIIT	VIIT
848330	VIIT	VIIT	VIIT	VIIT	854430	VIIT	VIIT	VIIT	VIIT	870899	VIIT	VIIT	VIIT	VIIT
848340	VIIT	VIIT	VIIT	VIIT	870321	VIIT	VIIT	X	X	870810	VIIT	VIIT	VIIT	HIIT
848350	HIIT	VIIT	VIIT	VIIT	870322	VIIT	VIIT	HIIT	VIIT	870821	VIIT	VIIT	HIIT	VIIT
848360	VIIT	VIIT	VIIT	VIIT	870323	HIIT	VIIT	VIIT	VIIT	870829	VIIT	VIIT	VIIT	VIIT

SINGAPORE

	2012	2015	2019	2021		2012	2015	2019	2021		2012	2015	2019	2021
840731	X	X	X	X	848390	VIIT	VIIT	VIIT	VIIT	870324	X	X	X	VIIT
840732	X	X	X	X	850710	X	X	HIIT	X	870332	X	X	X	VIIT
840733	X	X	X	X	850720	VIIT	VIIT	VIIT	VIIT	870333	X	X	X	VIIT
840734	X	X	X	X	850730	VIIT	X	VIIT	VIIT	870390	X	X	X	VIIT
840790	X	X	VIIT	X	850780	X	X	VIIT	VIIT	870600	X	X	X	VIIT
840820	X	X	X	X	851220	VIIT	VIIT	VIIT	VIIT	870710	X	X	X	VIIT
840991	VIIT	VIIT	VIIT	VIIT	851230	VIIT	VIIT	VIIT	VIIT	870840	VIIT	HIIT	VIIT	VIIT
840999	VIIT	VIIT	VIIT	VIIT	851240	VIIT	X	X	X	870850	VIIT	VIIT	VIIT	VIIT
841330	VIIT	VIIT	VIIT	VIIT	851290	VIIT	VIIT	X	VIIT	870870	VIIT	VIIT	VIIT	VIIT
842123	VIIT	VIIT	VIIT	VIIT	851829	VIIT	VIIT	VIIT	VIIT	870880	VIIT	VIIT	VIIT	VIIT
842131	VIIT	VIIT	VIIT	VIIT	852721	VIIT	VIIT	VIIT	X	870891	VIIT	HIIT	VIIT	VIIT
842542	VIIT	VIIT	VIIT	VIIT	852729	VIIT	VIIT	VIIT	X	870892	VIIT	VIIT	VIIT	X
848310	VIIT	VIIT	VIIT	HIIT	853921	VIIT	VIIT	VIIT	VIIT	870893	VIIT	VIIT	VIIT	VIIT
848320	VIIT	VIIT	VIIT	VIIT	853929	VIIT	VIIT	VIIT	VIIT	870894	VIIT	VIIT	HIIT	VIIT
848330	VIIT	VIIT	VIIT	VIIT	854430	VIIT	VIIT	VIIT	VIIT	870899	VIIT	VIIT	VIIT	VIIT
848340	VIIT	VIIT	VIIT	VIIT	870321	X	X	VIIT	VIIT	870810	VIIT	VIIT	VIIT	X
848350	VIIT	VIIT	VIIT	VIIT	870322	X	X	VIIT	VIIT	870821	X	X	X	X
848360	VIIT	VIIT	VIIT	VIIT	870323	X	X	VIIT	VIIT	870829	VIIT	VIIT	VIIT	VIIT

VIETNAM

	2012	2015	2019	2021		2012	2015	2019	2021		2012	2015	2019	2021
840731	X	X	X	X	848390	VIIT	VIIT	VIIT	VIIT	870324	X	X	X	X
840732	X	X	VIIT	VIIT	850710	VIIT	VIIT	VIIT	HIIT	870332	X	X	X	X
840733	X	X	X	VIIT	850720	VIIT	VIIT	VIIT	VIIT	870333	X	X	X	X
840734	X	X	X	X	850730	VIIT	X	X	X	870390	X	X	X	X
840790	VIIT	X	VIIT	VIIT	850780	X	VIIT	X	X	870600	X	X	X	X
840820	X	X	X	X	851220	VIIT	VIIT	VIIT	VIIT	870710	X	X	VIIT	VIIT
840991	VIIT	VIIT	VIIT	VIIT	851230	VIIT	VIIT	VIIT	VIIT	870840	VIIT	HIIT	VIIT	VIIT

AUSTRALIA

	2012	2015	2019	2021		2012	2015	2019	2021		2012	2015	2019	2021
840731	X	X	X	X	848390	VIIT	VIIT	VIIT	VIIT	870324	X	X	X	X
840732	X	X	X	X	850710	VIIT	VIIT	VIIT	X	870332	X	X	X	X
840733	X	X	X	X	850720	VIIT	VIIT	VIIT	VIIT	870333	X	X	X	X
840734	VIIT	VIIT	VIIT	VIIT	850730	VIIT	VIIT	VIIT	VIIT	870390	X	X	X	X
840790	HIIT	VIIT	VIIT	X	850780	X	VIIT	X	VIIT	870600	VIIT	X	X	X
840820	X	X	VIIT	VIIT	851220	VIIT	VIIT	VIIT	VIIT	870710	X	X	VIIT	VIIT
840991	VIIT	VIIT	VIIT	VIIT	851230	VIIT	VIIT	VIIT	VIIT	870840	VIIT	HIIT	VIIT	VIIT

840999	VIIT	HIIT	VIIT	VIIT	851240	X	X	VIIT	X	870850	X	VIIT	VIIT	VIIT
841330	X	VIIT	VIIT	HIIT	851290	VIIT	VIIT	X	VIIT	870870	X	VIIT	VIIT	VIIT
842123	VIIT	VIIT	VIIT	VIIT	851829	HIIT	HIIT	VIIT	VIIT	870880	VIIT	VIIT	VIIT	VIIT
842131	VIIT	HIIT	VIIT	HIIT	852721	X	VIIT	VIIT	VIIT	870891	X	HIIT	VIIT	VIIT
842542	X	X	VIIT	VIIT	852729	X	X	X	X	870892	X	HIIT	VIIT	VIIT
848310	VIIT	VIIT	VIIT	VIIT	853921	X	VIIT	VIIT	VIIT	870893	VIIT	VIIT	VIIT	VIIT
848320	VIIT	VIIT	VIIT	VIIT	853929	VIIT	VIIT	VIIT	VIIT	870894	VIIT	VIIT	VIIT	VIIT
848330	VIIT	VIIT	VIIT	VIIT	854430	VIIT	VIIT	HIIT	VIIT	870899	HIIT	VIIT	VIIT	VIIT
848340	VIIT	VIIT	VIIT	VIIT	870321	X	X	X	X	870810	X	VIIT	HIIT	VIIT
848350	VIIT	VIIT	VIIT	VIIT	870322	X	X	X	X	870821	X	X	X	X
848360	VIIT	HIIT	VIIT	VIIT	870323	X	X	VIIT	X	870829	VIIT	VIIT	VIIT	VIIT

840999	VIIT	VIIT	VIIT	VIIT	851240	VIIT	VIIT	VIIT	X	870850	VIIT	VIIT	VIIT	VIIT
841330	VIIT	VIIT	VIIT	VIIT	851290	VIIT	VIIT	X	VIIT	870870	VIIT	VIIT	VIIT	VIIT
842123	VIIT	VIIT	VIIT	VIIT	851829	VIIT	VIIT	HIIT	VIIT	870880	VIIT	VIIT	VIIT	VIIT
842131	VIIT	VIIT	VIIT	VIIT	852721	X	X	X	X	870891	VIIT	HIIT	VIIT	VIIT
842542	VIIT	HIIT	VIIT	VIIT	852729	X	X	X	X	870892	VIIT	VIIT	VIIT	VIIT
848310	VIIT	VIIT	VIIT	VIIT	853921	VIIT	VIIT	VIIT	VIIT	870893	VIIT	VIIT	VIIT	VIIT
848320	VIIT	VIIT	VIIT	VIIT	853929	VIIT	X	VIIT	VIIT	870894	VIIT	VIIT	VIIT	VIIT
848330	VIIT	VIIT	VIIT	VIIT	854430	VIIT	VIIT	VIIT	VIIT	870899	VIIT	VIIT	VIIT	VIIT
848340	VIIT	VIIT	VIIT	VIIT	870321	X	X	X	X	870810	VIIT	VIIT	VIIT	VIIT
848350	VIIT	VIIT	VIIT	VIIT	870322	X	X	X	X	870821	VIIT	VIIT	X	X
848360	VIIT	VIIT	VIIT	VIIT	870323	X	X	X	X	870829	VIIT	VIIT	VIIT	HIIT

PHILIPPINES

	2012	2015	2019	2021		2012	2015	2019	2021		2012	2015	2019	2021
840731	X	X	X	X	848390	VIIT	VIIT	VIIT	VIIT	870324	X	X	X	X
840732	X	X	X	X	850710	VIIT	VIIT	X	X	870332	X	X	X	X
840733	X	X	X	X	850720	VIIT	VIIT	VIIT	VIIT	870333	X	X	X	X
840734	X	X	X	X	850730	X	VIIT	X	X	870390	X	X	X	X
840790	X	VIIT	HIIT	X	850780	X	X	X	X	870600	X	X	X	X
840820	X	X	X	X	851220	VIIT	VIIT	VIIT	VIIT	870710	X	X	X	X
840991	VIIT	VIIT	VIIT	VIIT	851230	HIIT	VIIT	VIIT	VIIT	870840	HIIT	HIIT	VIIT	VIIT
840999	VIIT	HIIT	HIIT	VIIT	851240	X	VIIT	VIIT	VIIT	870850	VIIT	VIIT	VIIT	X
841330	VIIT	HIIT	VIIT	VIIT	851290	VIIT	VIIT	X	VIIT	870870	VIIT	HIIT	VIIT	X
842123	VIIT	VIIT	VIIT	VIIT	851829	VIIT	VIIT	VIIT	VIIT	870880	VIIT	VIIT	VIIT	VIIT
842131	VIIT	VIIT	VIIT	VIIT	852721	VIIT	X	VIIT	X	870891	VIIT	HIIT	VIIT	VIIT
842542	X	X	X	X	852729	X	X	X	X	870892	HIIT	VIIT	VIIT	VIIT
848310	VIIT	VIIT	VIIT	VIIT	853921	VIIT	VIIT	X	VIIT	870893	VIIT	VIIT	VIIT	VIIT
848320	VIIT	VIIT	VIIT	VIIT	853929	VIIT	VIIT	VIIT	VIIT	870894	VIIT	VIIT	VIIT	VIIT
848330	VIIT	VIIT	VIIT	VIIT	854430	VIIT	VIIT	VIIT	VIIT	870899	VIIT	VIIT	VIIT	VIIT
848340	VIIT	VIIT	VIIT	VIIT	870321	X	X	X	X	870810	VIIT	X	VIIT	VIIT
848350	VIIT	VIIT	VIIT	VIIT	870322	X	X	X	X	870821	X	X	VIIT	X
848360	VIIT	VIIT	VIIT	VIIT	870323	VIIT	X	X	X	870829	VIIT	VIIT	VIIT	VIIT

INDONESIA

	2012	2015	2019	2021		2012	2015	2019	2021		2012	2015	2019	2021
840731	X	X	X	X	848390	VIIT	VIIT	VIIT	VIIT	870324	X	X	X	X
840732	X	VIIT	X	VIIT	850710	VIIT	VIIT	VIIT	VIIT	870332	X	X	X	X
840733	X	X	X	VIIT	850720	VIIT	VIIT	VIIT	X	870333	X	X	X	X
840734	X	X	X	X	850730	VIIT	X	VIIT	X	870390	X	X	X	X
840790	X	VIIT	X	X	850780	VIIT	VIIT	VIIT	VIIT	870600	X	X	X	X
840820	X	X	X	X	851220	VIIT	VIIT	VIIT	VIIT	870710	X	X	VIIT	X
840991	VIIT	VIIT	VIIT	VIIT	851230	VIIT	VIIT	VIIT	VIIT	870840	VIIT	HIIT	VIIT	VIIT
840999	HIIT	HIIT	HIIT	HIIT	851240	VIIT	X	VIIT	VIIT	870850	VIIT	VIIT	VIIT	VIIT
841330	VIIT	VIIT	VIIT	VIIT	851290	HIIT	VIIT	X	HIIT	870870	VIIT	VIIT	VIIT	VIIT
842123	VIIT	VIIT	VIIT	VIIT	851829	VIIT	VIIT	VIIT	VIIT	870880	VIIT	VIIT	VIIT	VIIT
842131	VIIT	HIIT	VIIT	VIIT	852721	VIIT	HIIT	VIIT	VIIT	870891	VIIT	HIIT	HIIT	VIIT
842542	VIIT	X	VIIT	VIIT	852729	X	VIIT	VIIT	VIIT	870892	X	X	VIIT	VIIT
848310	VIIT	VIIT	VIIT	VIIT	853921	VIIT	VIIT	VIIT	VIIT	870893	VIIT	VIIT	VIIT	VIIT
848320	HIIT	VIIT	VIIT	VIIT	853929	VIIT	VIIT	VIIT	VIIT	870894	VIIT	VIIT	VIIT	HIIT
848330	VIIT	HIIT	VIIT	VIIT	854430	VIIT	VIIT	VIIT	VIIT	870899	VIIT	VIIT	VIIT	VIIT
848340	VIIT	VIIT	VIIT	VIIT	870321	X	VIIT	X	X	870810	VIIT	X	VIIT	VIIT
848350	VIIT	VIIT	VIIT	VIIT	870322	VIIT	VIIT	X	VIIT	870821	VIIT	X	X	X
848360	VIIT	VIIT	HIIT	VIIT	870323	VIIT	HIIT	VIIT	X	870829	VIIT	VIIT	VIIT	VIIT

THAILAND

	2012	2015	2019	2021		2012	2015	2019	2021		2012	2015	2019	2021
840731	X	X	X	X	848390	VIIT	VIIT	VIIT	VIIT	870324	X	X	X	VIIT
840732	X	X	VIIT	VIIT	850710	VIIT	VIIT	VIIT	VIIT	870332	X	X	X	X
840733	X	VIIT	VIIT	VIIT	850720	VIIT	VIIT	VIIT	VIIT	870333	X	X	X	HIIT
840734	HIIT	VIIT	HIIT	VIIT	850730	X	X	X	VIIT	870390	X	X	X	X
840790	VIIT	VIIT	VIIT	VIIT	850780	X	X	VIIT	X	870600	X	X	X	X
840820	X	VIIT	VIIT	VIIT	851220	HIIT	VIIT	HIIT	VIIT	870710	VIIT	X	VIIT	VIIT
840991	VIIT	VIIT	VIIT	VIIT	851230	VIIT	VIIT	VIIT	VIIT	870840	VIIT	X	VIIT	VIIT
840999	VIIT	VIIT	VIIT	VIIT	851240	VIIT	VIIT	VIIT	VIIT	870850	VIIT	VIIT	VIIT	VIIT
841330	VIIT	VIIT	VIIT	VIIT	851290	VIIT	VIIT	X	VIIT	870870	VIIT	VIIT	VIIT	VIIT
842123	VIIT	HIIT	VIIT	VIIT	851829	HIIT	VIIT	VIIT	HIIT	870880	VIIT	VIIT	VIIT	VIIT
842131	VIIT	VIIT	VIIT	VIIT	852721	VIIT	VIIT	VIIT	VIIT	870891	VIIT	HIIT	VIIT	VIIT
842542	VIIT	VIIT	VIIT	VIIT	852729	HIIT	VIIT	HIIT	VIIT	870892	VIIT	VIIT	VIIT	HIIT
848310	VIIT	VIIT	VIIT	VIIT	853921	VIIT	VIIT	VIIT	VIIT	870893	VIIT	VIIT	VIIT	VIIT
848320		VIIT	VIIT	VIIT	853929	VIIT	VIIT	VIIT	VIIT	870894	VIIT	VIIT	VIIT	VIIT
848330	VIIT	VIIT	VIIT	HIIT	854430	VIIT	VIIT	VIIT	VIIT	870899	VIIT	VIIT	VIIT	VIIT
848340	VIIT	VIIT	VIIT	VIIT	870321	X	X	X	X	870810	VIIT	HIIT	VIIT	VIIT
848350	VIIT	HIIT	VIIT	HIIT	870322	X	VIIT	VIIT	VIIT	870821	VIIT	VIIT	VIIT	VIIT
848360	VIIT	VIIT	VIIT	VIIT	870323	VIIT	X	VIIT	VIIT	870829	VIIT	VIIT	VIIT	VIIT

Source: Authors' own study based on (UN Comtrade, 2022).

Table 12. Summary of data from Table 11

	JPN	MAL	ROK	SGP		VNM	AUT	PHI	IND	THA
X	2	43	22	65		79	64	81	65	41
LQ VIIT	147	130	119	133		94	134	107	97	126
HQ VIIT	42	27	51	13		29	12	18	38	33
HIIT	25	16	24	5		14	6	10	16	16
HQ VIIT codes[a]	848330 850730	848330 848340	848340 851829 870894 870829	848330 848340		842123 850720	–	848350 851829	848310 850780 851829	848340 848360 851230 853921
HIIT codes[b]	–	–	870891	–		–	–	–	84099	–

JPN – Japan; MAL – Malaysia; ROK – Republic of Korea; SGP – Singapore; VNM – Vietnam; AUT – Australia; PHI – Philippines; IND – Indonesia; THA – Thailand

[a] appearing four times per country in the four-year period; [b] appearing three times per country in the four-year period

840999 – parts suitable for use solely or principally with compression-ignition internal combustion piston engine ‘diesel or semi-diesel engine’; 842123 – oil or petrol-filters for internal combustion engines; 848310 – transmission shafts, incl. cam shafts and crank shafts, and cranks; 848330 – bearing housings for machinery, not incorporating ball or roller bearings; plain shaft bearings for machinery; 848340 – gears and gearing for machinery (excl. toothed wheels, chain sprockets and other transmission elements presented separately); ball or roller screws; gear boxes and other speed changers, incl. torque converter; 848350 – flywheels and pulleys, incl. pulley blocks; 848360 – clutches and shaft couplings, incl. universal joints, for machinery; 850720 – lead acid accumulators (excl. spent and starter batteries); 850730 – lead acid accumulators, excluding spent and starter batteries; 850780 – electric accumulators (excl. spent, and lead-acid, nickel-cadmium, nickel-metal hydride and lithium-ion accumulators); 851230 – electrical sound signalling equipment for cycles or motor vehicles; 851829 – loudspeakers, without enclosure; 853921 – tungsten halogen filament lamps (excl. sealed beam lamp units); 870891 – radiators and parts thereof, for tractors, motor vehicles for the transport of ten or more persons, motor cars and other motor vehicles principally designed for the transport of persons, motor vehicles for the transport of goods and special purpose motor vehicles.

Source: Authors’ own study based on (UN Comtrade, 2022); HS codes specification extracted from the (European Customs Portal, 2022).

The HQ VIIT proved to be dominant mostly for HS codes classified to the “machinery” group (Heading 8483). The tariff codes of “machinery” section appeared most frequently, i.e. 848330 and 848340, followed by 848310, 848350, and 848360 (Table 12). The aforementioned pattern of IIT proved to be dominant also for HS codes classified to the “electric” and “vehicle parts” groups, i.e. 851829 for the Republic of Korea, Australia, and Indonesia, 850730 for Japan, 870829 and 870894 for the Republic of Korea. Interestingly, only in the case of Indonesia, there was a single tariff code – 84099 (“engine parts” group) with a dominant horizontal pattern through all the studied years (it appeared twice – in 2015 and 2019 – in the case of the Philippines, too). The other HS code – 870891 (“vehicles”), was characterized by a dominant HIIT pattern most frequently: three times for the Republic of Korea, two times for Malaysia and Indonesia, once for Singapore, Vietnam, Australia, Thailand, and the Philippines. In the studied years, the authors identified 29 cases in which tariff code with dominant HQ VIIT has changed the pattern to HIIT and *vice versa* (actually, the latter has taken place more frequently) – it mostly relates to China’s automotive trade with the Republic of Korea, Japan and Indonesia (5–8 cases), with no such case for Malaysia.

RCEP's provisions and implications for the regional automotive industry

RCEP's main objective is to facilitate trade by lowering tariffs and cutting red tape. However, it also includes a more uniform framework for investment, intellectual property, and competition, whereas omitting such aspects as environmental and labor regulations or state-owned enterprises.

From the perspective of the automotive industry, important provisions in respect of technical standards, norms, and harmonization of rules of origin are established. In the case of the latter, it is crucial to point out the importance of harmonization and consolidation of rules of origin sanctioned by numerous – mostly bilateral – RTAs. Due to the implementation of RCEP, time-consuming and costly administrative procedures of specifying the local content by exporters have been replaced by the possibility of calculating the proof of origin using added value generated in any of the fifteen member states of the studied M-RTA. According to Art. 3.4 of RCEP, materials are cumulated across RCEP countries as the production process proceeds. This cumulation enables automotive manufacturers to source materials, perform manufacturing processes inside the region, and include them in the final determination of the origin status. Although the cumulation rule is limited to originating goods so far, RCEP signatories do not exclude the possibility of its future extension (full cumulation) in order to include non-originating inputs as originated in the RCEP.

This, in turn, may enhance the further expansion of the value and supply chains inside the RCEP.[7] For instance, automotive manufacturers from Japan and the Republic of Korea may gain a competitive advantage in China's market due to reduced tariffs and non-tariff barriers, whereas imports of both parts, components, and finished products from the world's largest automotive market to the RCEP become cheaper. Specifically, automotive parts imports from Japan account for nearly 30% of China's trade with the largest neighbor every year; however, due to the RCEP, close to 90% of automotive parts and components will benefit from duty-free access. In general, up to 86% of all Japan's products will face no tariffs in trade with China, and 92% – in trade with the Republic of Korea – before M-RTA, it was only 8 and 19%, respectively (Shimizu, 2022).

As China and Japan lack a bilateral FTA, a consensus was reached to eliminate tariffs within 21 years. After RCEP's entry into force in 2022, 25% of China's prod-

[7] As reported by Japan's Ministry of Economy, Trade and Industry (METI), more than 33,000 RCEP certificates of origin were issued by the Japan Chamber of Commerce and Industry (JCCI) only in the first six months of 2022, making the RCEP the most used M-RTA in this country. Popularity of RCEP's provisions on rules of origin have also expanded rapidly in China and Thailand (Shimizu, 2022).

ucts and 57% of Japan's are relieved from duty in bilateral trade; within the next 11 years, those indicators are expected to increase to 72 and 75%, respectively, ten years later – to 86 and 88% (Hua, 2021). There are also time limits for the release of goods stipulated in Art. 4.11 and 4.15 of RCEP, distinguishing goods to be released within 48 hours (goods, excluding perishables), within six hours (express consignments) and less than six hours (perishable goods).

As a consequence of gradual tariff elimination, automotive manufacturers operating in the RCEP may benefit from more efficient and resilient supply chains, as well as trade diversion effects at the expense of their European and American counterparts.

Importantly, not only automotive manufacturers from Northeast Asian countries may gain from the RCEP, but also emerging markets in Southeast Asia. Cost advantages of selected ASEAN economies, with special regard to Thailand, Indonesia, Philippines, and Vietnam, might become an attractive location for labor-intensive manufacturing and assembly activities for automotive manufacturers from China, Japan, and the Republic of Korea. This also applies to enterprises from the EU, and USMCA, willing to gain from cost savings, synergy and closed loop effects, as well as large size of regional market. In respect of the latter, ASEAN – with the highest tariffs on imported used cars to date – due to RCEP may become one of the largest export markets. On the other hand, Japan's luxury brands, such as Lexus, would become cheaper in China's market, as the U.S. Tesla manufactured in Shanghai for clients living in Japan or the Republic of Korea.[8]

Conclusions

The main objective of the paper was to characterize the intra-RCEP trade in automotive parts, components, and finished goods with reference to sectoral provisions and implications of the studied M-RTA.

The importance of RCEP region in the global automotive industry was indicated, including the position of regional manufacturers and parts suppliers, originating mostly in Japan, the Republic of Korea, and China. The potential of emerging markets of ASEAN was identified, starting with Thailand, Indonesia, Malaysia, and the Philippines (ASEAN-4), as well as the rising importance of Vietnam as a location for both automotive parts manufacturers and assemblers. In respect of ASEAN-4, there is also an important context of R&D activities performed there, mostly by automotive manufacturers from Japan and the Republic of Korea. There is also a possibility of involving less developed countries of RCEP, i.e. Cambodia, Lao PDR, and Myanmar,

[8] Worth mentioning, there is no uniform commitment of RCEP members to reduce tariffs. For instance, Australia, Brunei Darussalam, Malaysia, Singapore and Thailand offered a standard timetable for all signatories, while others – including China, Indonesia and Vietnam – customized schedules for ASEAN countries and/or specific markets. The same applies to time limits for the release of some types of goods, with individual schedules for some signatory parties included in the Annex to RCEP agreement.

in labor-intensive manufacturing and assembly activities for the automotive industry, especially for proximate Thai industrial centers seeking cost savings.

The authors have analyzed sectoral trade data disaggregated to the level of six-digit HS codes to confirm an upward trend in intra-RCEP automotive trade between the largest regional manufacturer and consumer of automotive products – China and the remaining fourteen signatory parties in the last decade. Relatively high stability of individual countries' shares in the automotive trade with China through the whole studied period should be stressed – fluctuations of ±0.5% were observed only, except for Japan and Vietnam. It is worth mentioning that the COVID-19 pandemic in the years 2020–2021 proved to have no significant negative impact on the intra-RCEP automotive trade, with a modest upward trend in the first year of the crisis in the case of most RCEP partners of China and significantly high growth rates year to year exceeding 20% in 2021.

Statistical analysis made by the authors confirmed the potential of intra-industry trade in the automotive industry of RCEP, reflected by its increasing volume as well as the role of high-quality VIIT. HIIT, on the other hand, played an increasingly marginal role in total IIT in the studied period, which indicates the rising importance of the diversity of factor endowments across the countries involved in the manufacturing of vehicles, their parts, and components. Vertical differentiation of automotive products will be dominant in intra-regional trade, as it results from the diversity of RCEP Member States in respect of resource base, technological development, income, and consumer preferences. Therefore, the fragmentation of value chains and relocation of automotive parts and components manufacturing and assembly to lower-cost ASEAN countries, including Vietnam, along with the concept of the product-quality cycle, serves as a trigger of VIIT. This is in line with studies by Aturupane et al. (1999), who pointed out the relevance of industry-specific determinants, such as foreign direct investment, for VIIT.

In the authors' opinion, the hypothesis formulated in the introduction of the paper was verified positively – considering statistical data from the last decade, as well as sectoral trends within the RCEP addressed in this paper, the studied M-RTA has the potential to boost intra-regional automotive trade, as well as fragmentation of value and supply chains. The authors' findings comply with the results of empirical analysis by Flach et al.(2021); however, they provide an added value in the form of a sectoral perspective.

It is expected that the RCEP would provide incentives for automotive manufacturers worldwide to retreat from globally-oriented location strategies with specialized manufacturing and export centers toward local production in proximity to target markets. The OEMs of automotive parts and components may be encouraged to decentralize their R&D activities by entering regional innovation ecosystems and gaining from publicly subsidized strategies and programs, including hydrogen technology in Japan and electromobility in China. Apart from access to technology, automotive producers will have to consider such critical aspects in their location strategies like sustainable development, investment security, as well as challenges related to geopolitical trends in respect of newly established tariff and non-tariff barriers. In this regard, the RCEP is expected to play an important role in the future market choices of automotive manufacturers worldwide.

The authors are fully aware of the limitations of the study, starting with the impact of the degree of disaggregation of statistics and the choice of trade nomenclature on the results of empirical analysis. Furthermore, adopting the perspective of China for in-depth studies on sectoral trade flows inside the RCEP did not make this research comprehensive and exhaustive with respect to findings. Moreover, the research and methodological approach adopted by the authors did not cover issues related to the threats resulting from the increasing trade dependence within the RCEP, in particular with regard to the largest economies of the region in Northeast Asia. Lastly, even though the RCEP has already entered into force, there are diversified product- and country-specific time schedules and phases to comply with agreed commitments, whereas some provisions, including rules of origin, might be subject of further negotiations, or, like in case of environmental or labor standards, can be absent at all. Further research should extend the disaggregated analysis of intra-regional automotive trade to include the perspective and specificity of the other RCEP countries besides China, including ASEAN emerging markets. There is also a necessity to analyze the impact of RCEP's entry into force on intra-regional automotive trade in the forthcoming years.

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