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Global Value Chains of Asia-Pacific Area: State and Corporate Sector

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ABSTRACT

The paper presents an analysis of the dynamics results, structure and nature of the participation of the countries of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership in global value chains. The analysis result revealed trends that took shape in international production in the 20th century. It has been determined a higher involvement in the international division of labor characterizes that the developing countries of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership. The study shows that, despite high involvement of the developing countries of the Agreement in global value chains, they act more than suppliers of resources, as well as assembly points, while participation leads to the consolidation of their technological backwardness. Based on the analysis of the countries cost taking part in the partnership for R&D, it was determined that in developed countries, the internal functions of the state are gradually being transferred in terms of supporting and developing science in favor of the corporate sector. The authors concluded this trend contributed to the monopolization of scientific and technological achievements sphere by the corporate sector and the formation of oligopolies from a limited number of technology giant corporations.

Keywords: value chains; APAC; mega-regional trade agreements; Comprehensive and progressive agreement for Trans-Pacific Partnership; corporate sector; MNC; TNC

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INTRODUCTION

With the development and deepening of the international division of labour, the phenomenon of value chains has gained importance in the global economy. Participation in value chains allows countries to integrate into the world economy according to the capabilities of their national economies (and, as a consequence, to avoid peripheral autarchy i.e., self-sufficiency or closed economy) and contributes — to a greater or lesser extent — to their social and economic development.

The issue of studying the development, functioning and transformation of value chains occupies an important place in the reports of international organizations and research institutes, works of foreign researchers and Russian scientists.

The topical area of value-added chains is thoroughly studied and examined in the works by A. V. Kuznetsov [1], V. V. Perskaya [2], N. A. Volgina [3], etc. Foreign researchers include G. Linden, J. Dedrick, K. Kramer [4], D. Somers, R. Belderbos [5], K. Kohn, C. Jiang [6], etc.

However, the study of the nature of interaction between the state and the corporate sector in the development and spread of the phenomenon of global value chains, as well as the place of the corporate sector in global value chains is fragmented and not fully reflected in the scientific literature. This makes the current study relevant.

The purpose of the study is to identify the nature of interaction between the state and the corporate sector in the development and diffusion of the global value chain phenomenon, using the Asia-Pacific region as a case study.

In order to achieve this objective, the following tasks were identified and solved:

1. The dynamics was analyzed, as well as the structure and nature of Asia-Pacific countries' participation in global value chains, using the Comprehensive and Progressive Agreement for Trans-Pacific Partnership as an example.

2. The role and importance of the corporate sector in global value chains was identified.

THE METHODOLOGY OF THE RESEARCH BEING CARRIED OUT

The methodology of the current study is based on the analysis of the following data:

- Country Participation Index in Global Value Chains, World Bank database — World Integrated Trade Solution (WITS).
- Share of value added in country exports, World Bank database — World Integrated Trade Solution (WITS).
- Countries' socio-economic indicators, World Bank, and International Labour Organization statistics.
- Countries' share of total world value added in medium- and high-tech industries, statistics by National Science Foundation (NSF).
- Countries' R&D expenditure, UNESCO Institute for Statistics statistical information.
- Ranking of the world's largest non-financial corporations by overseas assets, UNCTAD's (United Nations confederation on Trade and Development) annual Report — World Investment Report.

COUNTRIES PARTICIPATING IN THE COMPREHENSIVE AND PROGRESSIVE AGREEMENT FOR TRANS-PACIFIC PARTNERSHIP IN GLOBAL VALUE CHAINS: DYNAMICS AND STRUCTURE

Both developed and developing countries of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership are active participants in global value chains (hereinafter referred to as GVCs). However, an analysis of the dynamics and

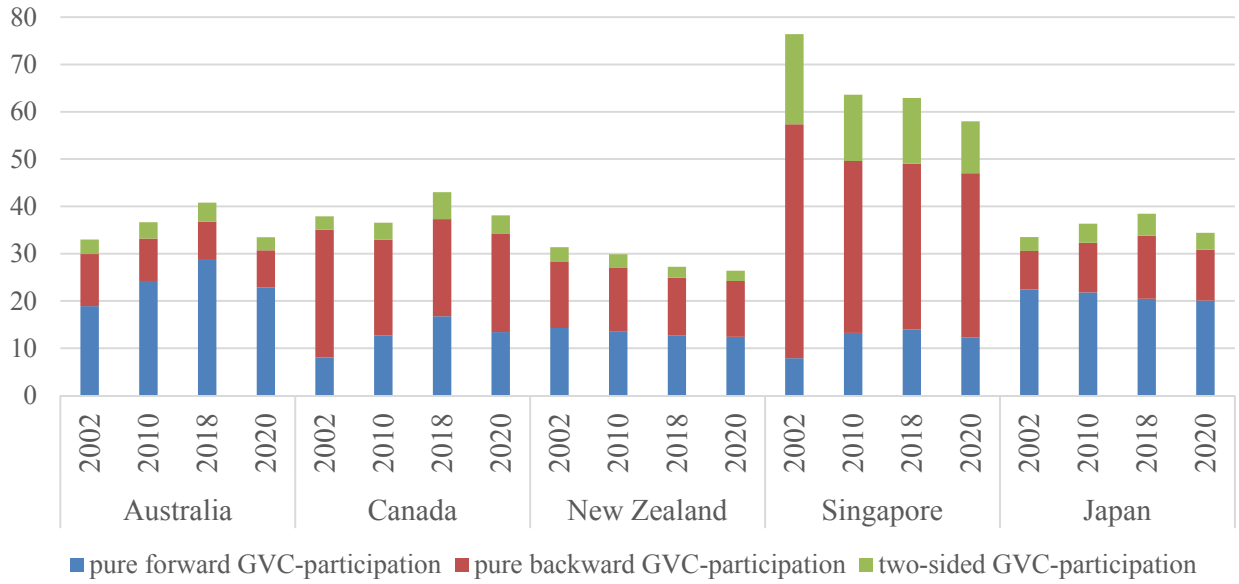

Fig. 1. **Index dynamics of developing countries' participation of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership in global value chains, %, 2002–2020**

Source: compiled by the authors based on World Integrated Trade Solution (WITS) data. URL: https://wits.worldbank.org/gvc/gvc-data-visualization.html

pattern of participation of the countries in the partnership in question identified the following trends:

1. Between 2002 and 2020, the trend towards shifting production capacity from developed to developing markets is clearly evident.

For example, in 2002, the developed country participation index in GVCs averaged 33% (*Fig. 1*) and was comparable to the average developing country participation index in GVCs of 35% (*Fig. 2*).

By 2020 there was a shift in favour of developing countries' partnerships (taking into account the global supply chain crisis of 2021–2022, the first symptoms of which were already evident in 2020). Two decades later, the value of the developed-country partnership index in GVCs has averaged 31% (*Fig. 1*), while the average value of the developing-country partnership index in GVCs has averaged 44% (*Fig. 2*). The global GDP volume over the period under consideration increased from USD $ 34.9 trillion in 2002 to USD $ 84.9 trillion by 2010.[1]

2. Between 2002 and 2020, there is a clear trend towards a changing pattern of developing countries' participation in GVCs.

For example, for the developing countries of the partnership, an increasing share of net inverse participation in GVCs has become a feature by 2020 (*Fig. 2*). In other words, the trend for the developing countries under consideration is towards greater involvement in the production process at the final stages of production, with continued export of output to end-use consumer markets.

This trend can be attributed to the qualitative transformation of value chains due to technological advances and the digital transformation of the global economy [7]. One of the results of the transformation of the production process

[1] The World Bank website. URL: https://databank.worldbank.org/ (accessed on: 15.09.2022).

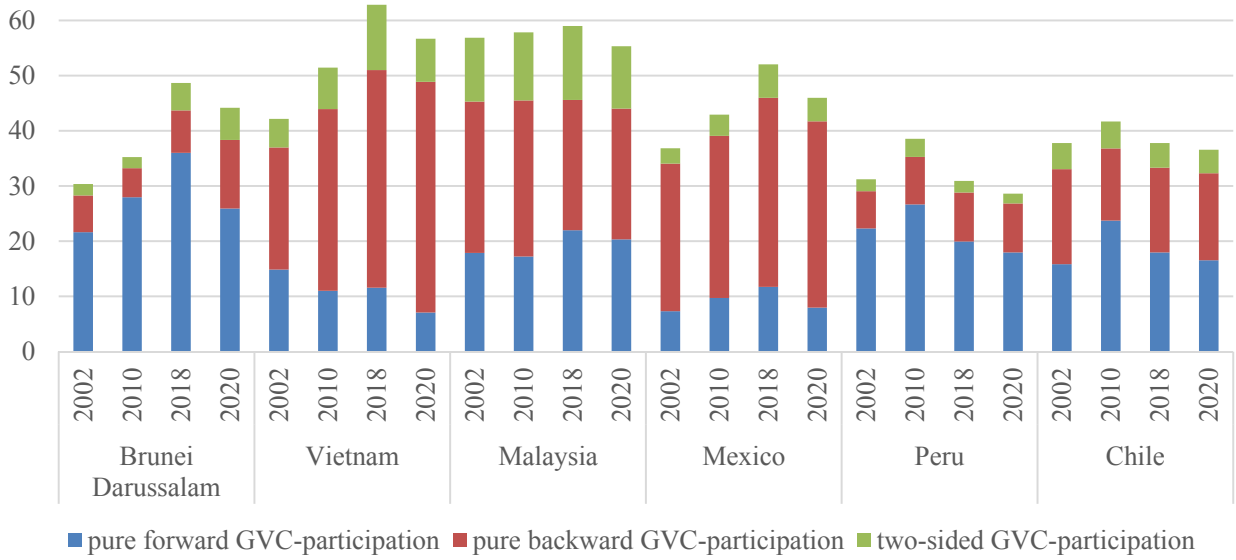

Fig. 2. **Index dynamics of developing countries' participation of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership in global value chains, %, 2002–2020**

Source: compiled by the authors based on World Integrated Trade Solution (WITS) data. URL: https://wits.worldbank.org/gvc/gvc-data-visualization.html

within GVCs in general, as well as the increasing technological complexity of final products in particular, is the corporate sector's desire to adapt technologies, production processes and products according to the requirements of the target consumer, whereby the corporate sector tends to localize the various stages of the production process within the entire chain length (including individual R&D stages [5]) in close proximity to the target customer market.

Thus, the analysis of the dynamics and patterns of participation of the partnership countries in the GVCs identified that the developing countries of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership are characterized by a higher degree of involvement in the international division of labour.

An analysis of the share of value added in the export structure of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership's countries reveals that in the developing countries, value added is mostly generated in the extractive (Brunei Darussalam, Chile, Peru) and manufacturing (Chile, Malaysia, Mexico, Peru, Vietnam) industries (*Table 1*).

In the developed economies, in turn, the value-added is predominantly created in the manufacturing and services sectors (*Table* 2). The exceptions are Australia and Canada, for which the extractive industries are significant contributors to value added, due to the specific nature of their economies.

Thus, it can be assumed that while the developing countries participating in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership have a high degree of involvement in the GVCs, they act more as suppliers of resources, including relatively less skilled and cheaper labour (*Table* 3), and as "assembly points", both for the corporate sector in the developed countries and for China.

This assumption is supported, inter alia, by conclusions drawn from an analysis of the share of value added by the countries in question in total world value added in the

Table 1

Share of value added in the exports structure of developing countries participating in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, %, 2020

The format for participation in the GVCs	Mining and Quarrying	Manufacturing	Services	Agriculture, forestry and fishing	The energy sector
Brunei Darussalam					
Pure forward GVC-participation	86.96	9.43	3.18	0	0.32
Pure backward GVC-participation	75.19	11.49	11.86	0.03	0.47
Two-sided GVC-participation	78.65	9.36	10.6	0	0.82
Vietnam					
Pure forward GVC-participation	0	79.27	12.63	7.6	0.02
Pure backward GVC-participation	0	90.02	5.23	4.12	0
Two-sided GVC-participation	0	90.65	4.76	4.25	0
Malaysia					
Pure forward GVC-participation	12.01	74.31	12.23	1.15	0.18
Pure backward GVC-participation	1.48	91.81	5.65	0.66	0.16
Two-sided GVC-participation	1.7	93.28	4.52	0.32	0.1
Mexico					
Pure forward GVC-participation	22.54	66.27	8.44	2.6	0
Pure backward GVC-participation	1.12	95.85	0.86	2.16	0
Two-sided GVC-participation	4.12	93.44	1.63	0.77	0
Peru					
Pure forward GVC-participation	37.92	40.44	12.65	8.87	0.01
Pure backward GVC-participation	15.81	65.08	14.08	4.03	0
Two-sided GVC-participation	29.49	56.69	9.4	3.82	0
Chile					
Pure forward GVC-participation	23.4	47.2	20.51	8.69	0.08
Pure backward GVC-participation	6.56	64.75	19.2	9.13	0.09
Two-sided GVC-participation	22.55	58.41	13.92	4.99	0.06

Source: compiled by the authors based on World Integrated Trade Solution (WITS) data. URL: https://wits.worldbank.org/gvc/gvc-data-visualization.html

Table 2

Share of value added in the exports structure of developed countries participating in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, %, 2020

The format for participation in the GVCs	Mining and Quarrying	Manufacturing	Services	Agriculture, forestry and fishing	The energy sector
Australia					
Pure forward GVC-participation	62.39	17.9	14.13	5.4	0.13
Pure backward GVC-participation	39.75	42.45	10.97	6.63	0.04
Two-sided GVC-participation	44.98	41.12	8.74	5.02	0.08
Canada					
Pure forward GVC-participation	34.22	39.46	17.92	7.82	0.45
Pure backward GVC-participation	9.28	78.33	7.31	4.63	0.22
Two-sided GVC-participation	18.49	67.92	7.16	6.19	0.12
New Zealand					
Pure forward GVC-participation	1.07	63.84	24.47	9.95	0.3
Pure backward GVC-participation	0.27	59.7	20.32	6.54	0.11
Two-sided GVC-participation	0.4	67.69	15.4	6.43	0.08
Singapore					
Pure forward GVC-participation	0	52.69	47.11	0.02	0.01
Pure backward GVC-participation	0	56.35	43.38	0.01	0.01
Two-sided GVC-participation	0	58.22	41.67	0.01	0.01
Japan					
Pure forward GVC-participation	0.1	77.04	22.46	0.22	0
Pure backward GVC-participation	0.12	90.4	8.78	0.25	0.05
Two-sided GVC-participation	0.24	91.12	8.31	0.16	0

Source: compiled by the authors based on World Integrated Trade Solution (WITS) data. URL: https://wits.worldbank.org/gvc/gvc-data-visualization.html

Table 3

Socio-economic indicators of countries participating in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, 2020

Country	Country ranking in the Human Development Index	The Human Development Index indicator	Minimum monthly wage, US dollars	Average monthly wage, US dollars
Developed countries				
Australia	16	0.77	2246.2	3874.3
Canada	5	0.80	1550.9	3504.4
New Zealand	13	0.78	1716.7	3373.1
Singapore	1	0.88	N/A	3286.1
Japan	3	0.80	1349.8	2881.8
Developing countries				
Brunei Darussalam*	56	0.63	N/A	1651.3
Vietnam	38	0.69	190.4	296.6
Malaysia	62	0.61	265.5	697.8
Mexico	61	0.63	N/A	328.3
Peru	65	0.61	278.7	720.8
Chile	47	0.65	N/A	1151.5

* *Note:* For Brunei the most actual publicly available data is in 2014.

Source: compiled by the authors according to the World Bank. URL: https://openknowledge.worldbank.org/bitstream/handle/10986/34432/9781464815522.pdf?sequence=4&isAllowed=y; International Labor Organization. URL: https://ilostat.ilo.org/data/

medium-high intensive industries and high-tech sectors of the economy.[2]

Thus, between 2002 and 2018 the developing countries of the partnership accounted on average for no more than 0.5% of the total value added in medium-high intensive industries in the IT services sector (versus 17% for the developed countries), 3% in chemicals and chemical products (versus 11.5% for the developed countries), 1% in machinery and equipment manufacturing (versus 20% for the developed countries), 3.5% in motor vehicles manufacturing (versus 20% for the developed countries), 7% in defense industry (versus 12% for the developed countries) (*Fig. 3*).

In turn, in terms of value added in high-tech industries from 2002 to 2018, the developing countries of the partnership accounted on average for no more than 0.5% of total value added in air and spacecraft machinery (versus 9% for the developed countries), 1% in pharmaceuticals (versus 13% for the developed countries), 4% in computing, electronic and optical devices (versus 20% for the developed

[2] According to the OECD (Organisation for Economic Co-operation and Development) classification, medium-high intensive industries include: motor vehicles; IT services; defense industry; railroad, military vehicles and other transport; machinery and equipment; medical equipment; electrical equipment; and chemicals and chemical products. High-tech industries include: air and spacecraft machinery; research and development; software publishing; manufacturing of computing, electronic and optical products; manufacturing of pharmaceutical products (author's note).

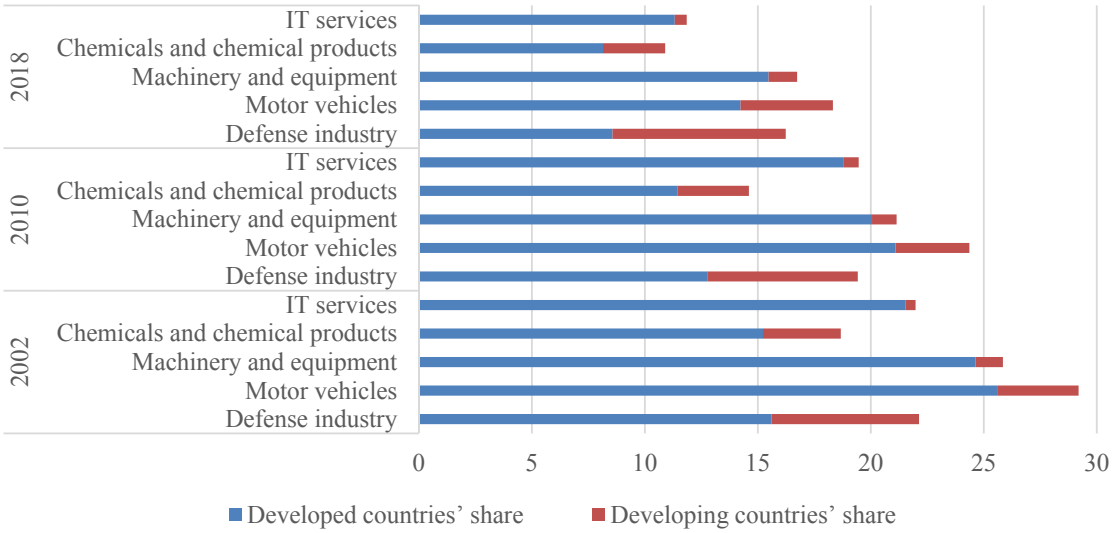

Fig. 3. **Dynamics of the value added share of the countries participating in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership in the total world volume of value in medium-high intensive industries of the economy, %, 2002–2018***

* *Note:* the most actual publicly available data.

Source: compiled by the authors based on data from the National Science Foundation (NSF). URL: https://ncses.nsf.gov/pubs/nsb20205/data#table-block

countries), 2% in R&D (versus 10% for the developed countries), 0.7% for software publishing (versus 9% for the developed countries) (*Fig. 4*).

These data suggest that most of the value added of the developing countries under consideration is generated in the low-tech sectors of the economy. At the same time, the national economies of the developing countries of the partnership are shaped by an extensive model: through the exploitation of natural and human resources. Thus, despite the high degree of participation of the developing countries in the international production under GVCs, the quality of such participation leads to the perpetuation of their technological lag.

THE CORPORATE SECTOR IN GLOBAL VALUE CHAINS: FEATURES AND TRENDS

As of today, according to an UNCTAD report,[3] more than 60% of world trade is value-added. In this context, the participation of countries in value chains (irrespective of the nature of this participation) allows them to avoid peripheral autarky and contributes to socio-economic development — to a greater or lesser extent.

However, as well as the advantages for the states, the deepening and development of the international division of labour has significant disadvantages. In the context of GVC, a significant share of countries' GDP is generated by the revenues of the corporate sector (to a greater extent, — its largest representatives, multinational corporations) and, therefore, is not allocated in favour of the development of state economies [1]. It should be noted, however, that this trend is true for all actors in each link of the value chain: both for developing countries that act as suppliers of cheap natural and human resources, and for developed countries that provide, inter alia, access to highly skilled specialists and established research and technological infrastructure [8].

[3] World Investment Report 2013: Global Value Chains: Investment and Trade for Development. URL: https://unctad.org/system/files/official-document/wir2013_en.pdf (accessed on: 20.02.2022).

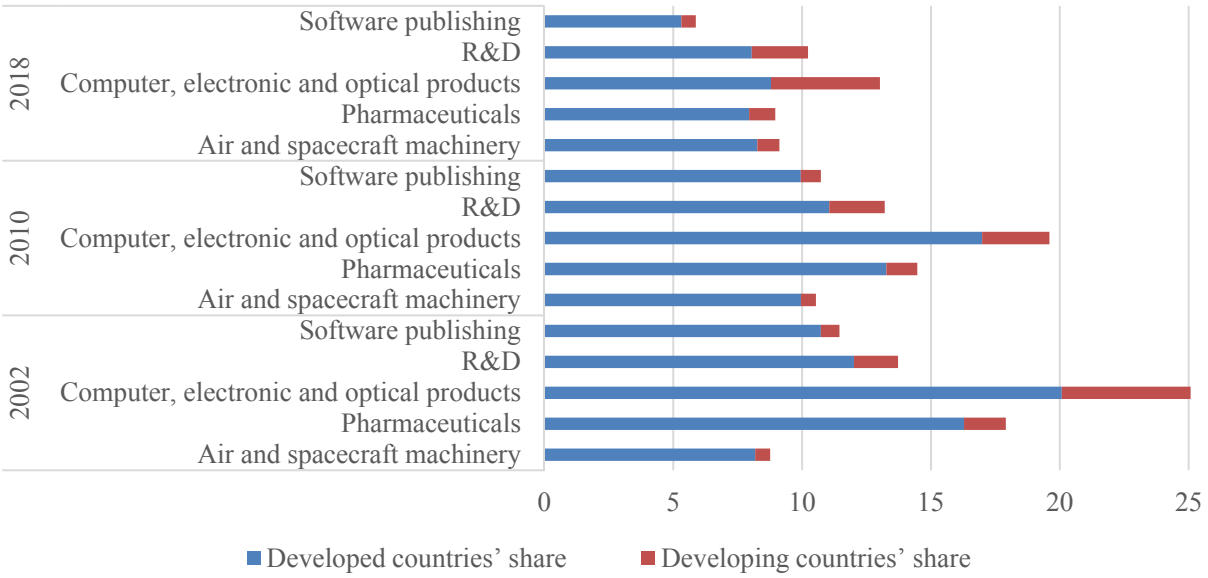

Fig. 4. **Dinamics of value added share of the countries participating in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership in the total world volume of value in high-tech sectors of the economy, %, 2002–2018***

* *Note:* the most actual publicly available data.

Source: compiled by the authors based on data from the National Science Foundation (NSF). URL: https://ncses.nsf.gov/pubs/nsb20205/data#table-block

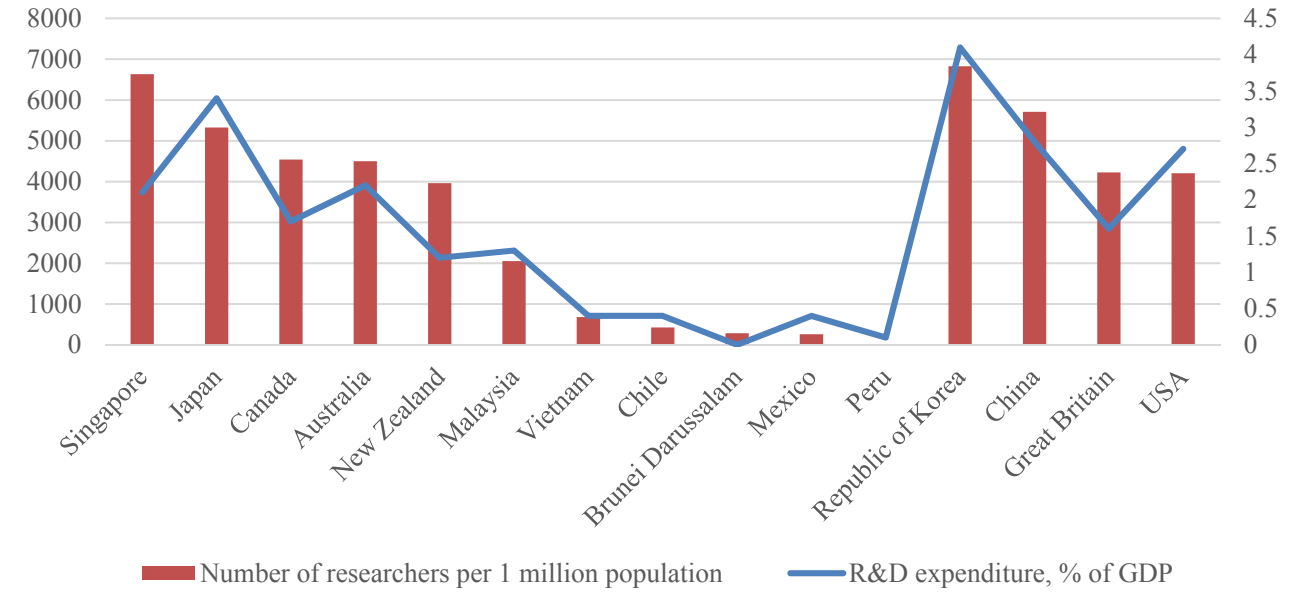

Fig. 5. **R&D spending and number of researchers per 1 mln population of current and potential participants in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, 2019**

Source: compiled by the authors based on data from the UNESCO Institute for Statistics. URL: http://data.uis.unesco.org/

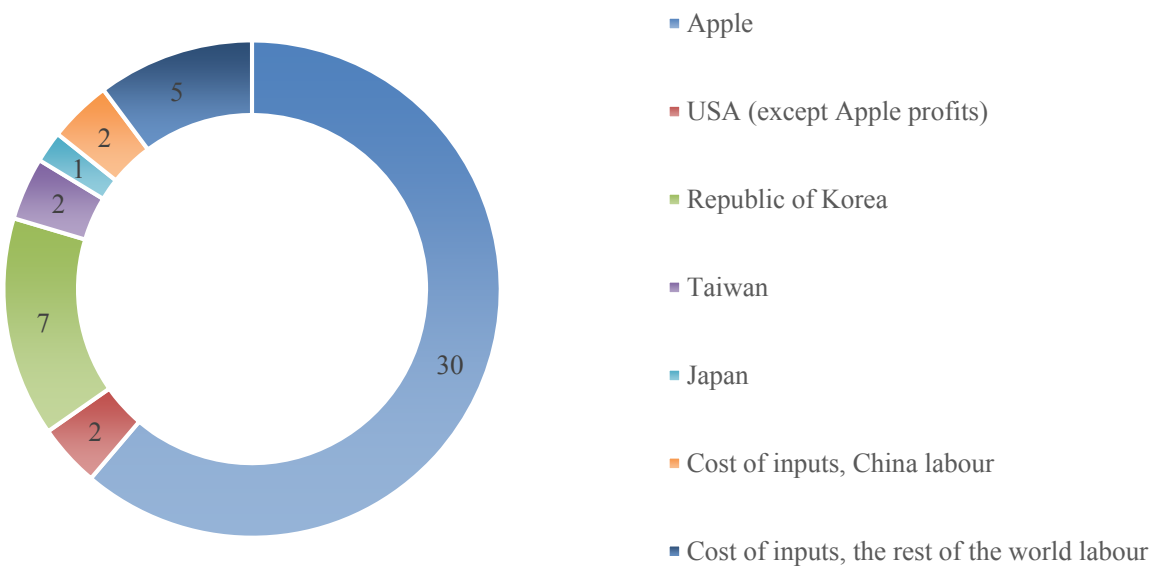

Fig. 6. **Profit spreading received as a result of the sale of the *iPad* between the participants in the production process, %**

Source: compiled by authors based on URL data: https://webzoom.freewebs.com/phsworldhistory/AP%20WH%20Unit%20V/Value_iPad_iPhone.pdf

This trend has been shaped by many factors, one of which is the amount of R&D expenditure by governments (*Fig. 5*) and the participation of the corporate sector in government R&D expenditure.

As of 2019, the corporate sector's share of total public R&D expenditure for the developed countries in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership averaged 59%, while for the developing countries the figures averaged around 23%.[4] Thus, in developed countries, there has been a gradual transfer of domestic government functions to the corporate sector to support and promote science. This trend is conducive to the corporate sector monopolising the field of S&T (science and technology) advances and the formation of oligopolies of a limited number of giant technology corporations. Due to the almost exclusive rights to intellectual property (R&D results), the corporate sector is the key beneficiary of technological rents.

For example, in 2011, a group of scientists from the United States conducted a study to analyse the distribution of profits derived from the sale of products among the participants in the production process [4]. They analysed Apple's products: the iPad, a model with Wi-Fi and 16GB memory, with a minimum retail price of USD 499 at the time of the study; the iPhone 4, a minimum retail price of USD 549 at the time of the study. The products in question were ultimately assembled in China. According to the study, Apple accounted for 30% of total profits from iPad sales (*Fig. 6*) and 59% of total profits from iPhone 4 sales (*Fig. 7*).

Thus, in today's context, ownership of technology and exceptional knowledge determines one's place in the hierarchy of the global economy. Multinational corporations (MNCs) with key technologies, as well as the capacity to continuously update technologies and generate new

[4] UNESCO Institute for Statistics website. URL: http://uis.unesco.org/apps/visualisations/research-and-development-spending/ (accessed on: 03.04.2022).

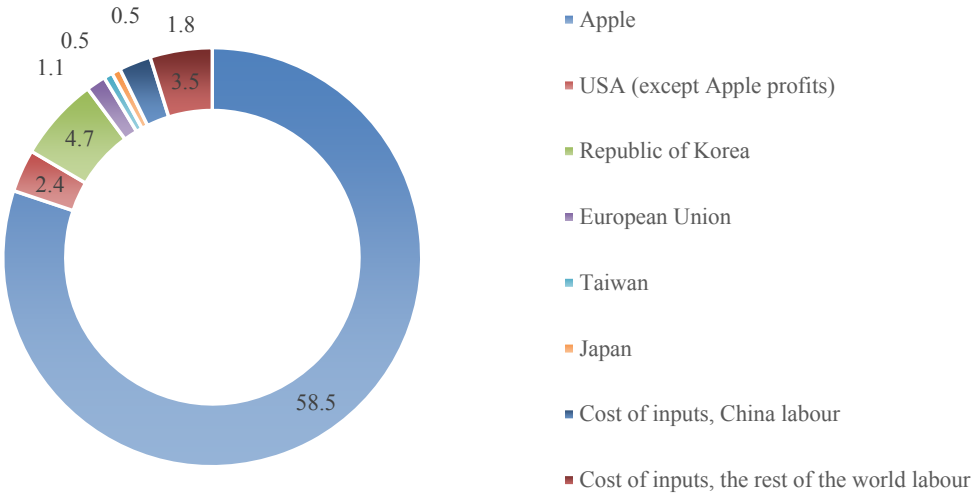

Fig. 7. **Profit spreading received as a result of the sale of the *iPhone 4* between the participants in the production process, %**

Source: compiled by authors based on URL data: https://webzoom.freewebs.com/phsworldhistory/AP%20WH%20Unit%20V/Value_iPad_iPhone.pdf

knowledge, are the key beneficiaries in the context of GVCs (*Fig. 8*).

The potential for participation in international production on a medium- and high-tech basis is increasing competition from a number of developing countries,[5] whose governments are designing strategies and reforming national economies to transform production and develop high-tech industries, as well as the corporate sector in developing countries. In particular, the corporate sector in China has seen an upward trend in R&D expenditure in recent years [6], as reflected in the evolution of China's value added in the medium-high intensive industries and high-tech sectors of the economy (*Fig. 9*).

In addition, China's corporate sector is rapidly strengthening its position on the global stage, competing with the established leaders,— the multinationals of the developed world. According to the

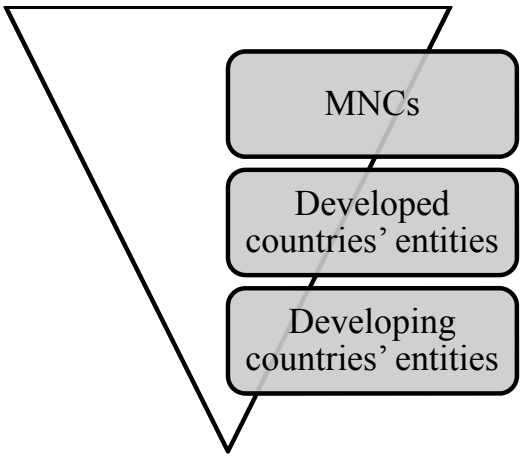

Fig. 8. **Schematic representation of the income spreading between participants in the production process within global value chains**

Source: compiled by the authors.

data published annually by UNCTAD as part of the World Investment Report, in 2016 the list of the world's top 100 non-financial corporations by foreign assets included 4 corporations from China: CK Hutchison Holdings Ltd — ranked 19th, Hon Hai Precision Industries — ranked 40th, China National Offshore Oil Corp —

[5] Predominantly from the Asia-Pacific region, in particular the PRC (China) and India.

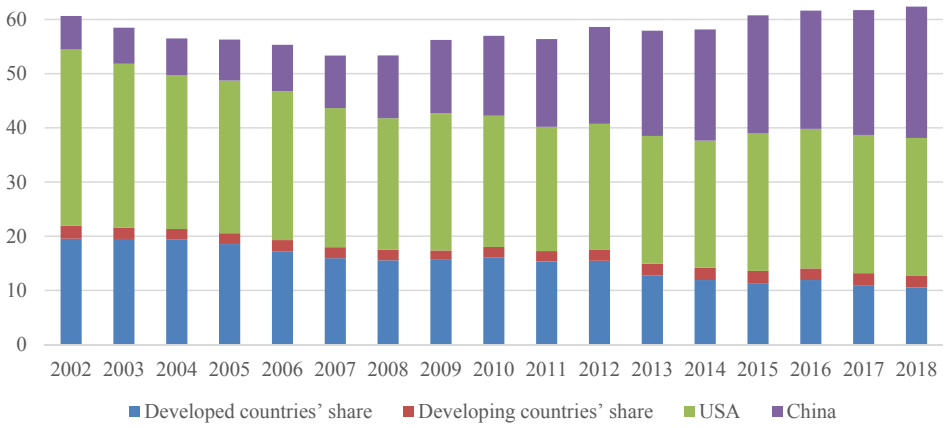

Fig. 9. **The value added share of the countries participating in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, the USA and China in the total world volume of value added in medium-high and high-tech sectors of the economy, %, 2002–2018***

* *Note:* the most actual publicly available data.

Source: compiled by the authors based on data from the National Science Foundation (NSF). URL: https://ncses.nsf.gov/pubs/nsb20205/data#table-block

ranked 44th, China COSCO Shipping Corp Ltd — ranked 81st.[6] The prevailing role was occupied by the US (22 multinationals), Great Britain (16 multinationals) and Japan (11 multinationals).

By 2021, China's corporate sector had considerably overtaken the established leaders: there were already 12 Chinese multinationals representing various industries, including the high-tech ones, in the list of top 100 global non-financial corporations by foreign assets (*Table 4*). Multinationals from the US took 20 ranking positions, those from the UK — 11, and those from Japan — 9.

Such activity on the part of the developing countries, particularly the China, has challenged the corporate sector in the developed countries to suppress increasing competition and raise barriers to market entry for the corporate sector in the developing countries. One of the instruments to ensure the competitiveness of the developed countries and their corporate sector has been the implementation in the Asia-Pacific region of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, which has set new standards for global trade and international economic relations.

CONCLUSIONS

Today, with the development and spread of the GVCs, the need for countries to participate in these chains is beyond doubt, as it contributes to the social and economic development of states and avoids existence within a peripheral autarchy.

However, the dominant positions in the global economic hierarchy in the context of this phenomenon are occupied by multinationals of the developed countries and directly by developed countries themselves. This state of affairs has been shaped by a variety of factors, with one of the key ones being the developed scientific and technological infrastructure and the technological diktat of the developed countries' multinationals.

[6] Website Topforeignstocks.com. URL: https://topforeignstocks.com/2017/06/12/the-worlds-top-100-non-financial-mnes-by-foreign-assets-2016/ (accessed on: 27.09.2022).

Table 4

China's corporate sector in the ranking of the 100 largest non-financial MNCs in the world in terms of foreign assets, 2021

Ranking place	Name	Industry	Territorial affiliation
14	CK Hutchison Holdings Ltd	Retail Trade	Hong Kong, China
18	China National Petroleum Corp (CNPC)	Mining, quarrying and petroleum	China
24	Hon Hai Precision Industries	Electronic components	Taiwan Province of China
30	Tencent Holdings Ltd	Computer and Data Processing	China
45	Sinopec — China Petrochemical Corp	Petroleum Refining and Related Industries	China
47	China COSCO Shipping Corp Ltd	Transport and storage	China
54	China National Offshore Oil Corp (CNOOC)	Mining, quarrying and petroleum	China
55	Huawei Investment & Holding Co Ltd	Communications equipment	China
76	Sinochem Group	Mining, quarrying and petroleum	China
83	China National Chemical Corp (ChemChina)	Chemicals and Allied Products	China
88	Legend Holdings Corp	Investment Services	China
100	State Grid Corp of China	Electricity, gas and water	China

Source: compiled by the authors according to UNCTAD. URL: https://worldinvestmentreport.unctad.org/annex-tables/

However, as the experience of China shows, well-constructed interaction between the state and the corporate sector [9], transformation of production (both development of high-tech industries and support of national high-tech companies) can help include the country into higher stages of value chains. At the same time, it should be taken into account that a country's potential for inclusion into value chains will also depend on the degree of its involvement in integration processes.

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