INTERNATIONAL ECONOMIC RELATIONS AND GOVERNANCE BY NATIONAL ECONOMY

Bohdan Butko
Taras Shevchenko National University of Kyiv, Ukraine

TNC'S GLOBAL HIGH-TECH MARKET INVESTMENT PERFORMANCE

Multinational corporate investment activity on the high-tech market has been highlighted. The research of high-tech markets of transnational priorities of direct investments and their perspective directions has been carried out. The specifics of the investment activity of TNCs in the process of international economic cooperation in the field of high technologies have been substantiated. The trends, problems, and prospects of R&D investment in leading multinational corporations have been explored. The mechanisms of cooperation of international economic cooperation in the field of high technologies and motivation to use free resources by the recipient countries have been outlined. It has been noted that, unlike other subjects of international high-tech markets, TNCs are constantly expanding their activities and assets, building up intellectual resources, which creates the prerequisites for their leadership in innovation.
Keywords: transnational corporation, high technologies, innovations, international economic cooperation, FDI, high-tech, R&D, strategic alliance.

Relevance of a subject. The ground to fundamental characteristics and properties of detailed study of TNC arises from hypothesis of impossibility of contemporary existence, as well as the development of world high-tech market without the TNC participation in the vast majority of the well-known economy branches.

Analysis of latest publications on a research subject. Investment activity of TNC in the global high-tech market was studied by V. Bainbridge, G. Ehrlich, M. Rocco etc.

Unresolved parts of the research body. Significant amplification of influence of the TNC on global economy during last 30 years stages the priority of studying specific features of TNC that function in global measurement for the purpose of expenses and benefits comparison from direct foreign investment of the TNC and influence of the process over time on the national innovative system formation. The quality of approach of the TNC to formation of added value chains on a global high-tech market, in our opinion, are insufficiently studied as of today.

The purpose of the study is to examine the specifics of the TNC investment activity in the process of international economic cooperation in high tech sphere, highlighting the mechanisms of them cooperation and motivation to use free resources by recipient countries.

Body of research exposition. As is known, the private sector of the economy is not homogeneous. Traditionally distinguish between large, medium and small businesses. All of the entrepreneurial segments, from SMEs to TNC are represented in the high-tech market. However, the activities of each on both, domestic and foreign markets slightly vary.

The segment of large-scale entrepreneurship is mainly represented by TNC. It is TNC that are the main structural element of most countries economy, they are in fact the actual development and efficiency generators. Internationalization trends of product and capital, liberalization of foreign trade and migration increment have placed TNCs at center of world economic development. Transnational corporations are usually referred to as companies that predominantly organized cross-border value chains through foreign direct investment (FDI). A distinguished international organization for FDI and TNC study – UNCTAD refers to such companies of any legal form that own at least 10% of shares in enterprises located in two or more countries[1].

[1] United Nations Conference on Trade and Development (2014). Investment and Enterprise. Definitions 2014. *Official website UNCTAD* <http://unctad.org/en/Pages/DIAE/Transnational-corporations-(TNC).aspx> (2019, July, 03).

According to UNCTAD, there are about 85,000 TNC with 810,000 foreign units in the world today. Over the past 30 years, number of TNCs has increased more than twelve times.

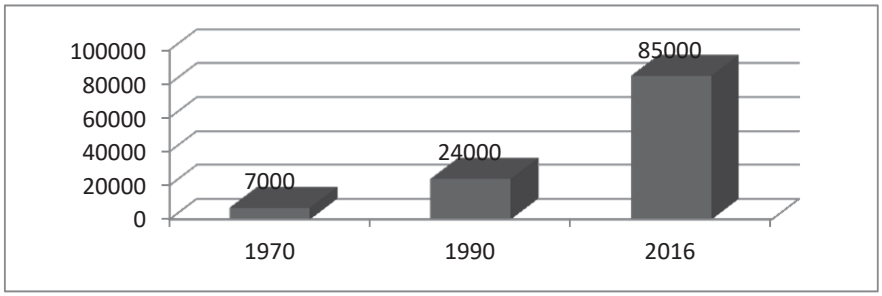

Fig. 1. Dynamics of TNC increment, per units

Source: compiled by the author on basis of [1].

The reason for TNC rapid development is a significant number of their undeniable advantages compared to national companies:

– Optimization of size of corporation and attempts to achieve production costs economy;

– Potential to increase efficiency and competitiveness by accessing the resources of foreign states, such as raw materials, labor, finance, scientific and technical developments;

– Effective struggle for new product markets;

– Cost price reduction and competitiveness growth due to use of international division of labor and rationalization of separate economic operations advantages;

– Possibility of using internal features of the state, including fiscal and monetary policy such as rationalization of taxation and difference in exchange and interest rates;

– Ability to extend the life cycle of technologies and products. The opportunity to obsolete technologies and products in countries basing on branches.

– Ability to avoid customs barriers when entering the market of a particular state through FDI;

– Striving for technological leadership, aspiration to make the most effective use of "invisible" assets, managerial and marketing experience advantages;

– Proximity to consumers of products, the possibility of obtaining reliable information about the prospects of markets, the competitive potential of firms, establishing cooperation with political elites.

Since FDI is the main vehicle for expanding TNCs' operations, FDI figures are commonly used as an indicator of the size and growth of transnational corporations. In the Monitor of Global Investment Trends, No. 15 of January 28, 2014, UNCTAD cites the dynamics of total world foreign direct investment inflow.

When analyzing TNCs' activities, UNCTAD identifies 100 of world's largest non-financial TNCs. 70% of the total list belongs to 5 developed countries. The USA is represented by 23 transnational corporations, UK – 16, France – 11, Germany – 10, Japan – 10.

In addition, Switzerland is represented by 5 TNCs, as well as China (together with one company from both Hong Kong and Taiwan). 3 TNCs represent Italy and Spain, 2 TNCs represent Sweden. Belgium, Luxembourg, Norway, Australia, Denmark, the Netherlands, Israel, Canada, South Korea, Brazil and Malaysia are represented by 1 TNC, respectively.

[1] United Nations Conference on Trade and Development (UNCTAD (2018). *Official website UNCTAD* <http://unctad.org/en/Pages/Home.aspx> (2019, July, 01).

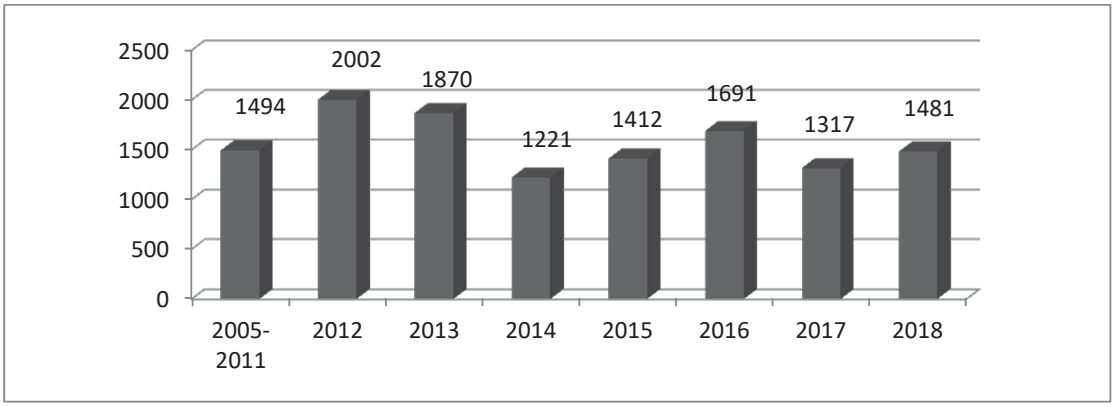

Fig. 2. Global foreign direct investment (billions US dollars)

Source: compiled by the author on the basis of [1]

It should be noted that 59% of all assets of the abovementioned companies, drow up to a total of almost 75 trillion. US dollars, belong to affiliated foreign divisions and only 41% for home states. Only in 2017, one hundred of the largest non-financial TNCs significantly improved their performance.

The role of TNCs on the international investment market is growing. They cover an overwhelming number of transactions. FDI is usually carried out through creation of new enterprises or the acquisition of existing local firms, which ensures the growth of production volumes. Here are the top 20 of the largest non-financial TNCs in the world, which wield nearly 40% of total assets of all top 100 abovelisted companies (Table 1).

For most TNCs the trend towards internationalization innovation activities is common, but the specific strategies that apply to Japanese, American and European firms vary considerably. This is more often explained not only by economic considerations, but also by priorities of the economic policy of TNC's home state.

For most TNCs the trend toward internationalization of their innovation activities is common, but the specific strategies that apply to Japanese, American and European firms vary considerably. This is most often explained not only by economic considerations, but also by the priorities of economic policy of TNC's home state. Thus, European TNCs use EU benefits and often place their R&D labs in EU states where highly skilled personnel are concentrated.

Japanese corporations are usually more closed and conservative, which corresponds to the country's foreign economic strategy. They prefer to concentrate almost all research activity in centers located in Japan and use foreign R&D labs only at final stages of commercialization of innovations: to adapt an already ready-for-use product or technology to local standards, to introduce it to the local market, etc. The approach used by American corporations in placing their research units is the most pragmatic. The research center is located in the place where it is most economically beneficial to the parent company.

It should be emphasized that transnationalization of innovations as a process is characterized by all the characteristics of systems:

– branched vertical and horizontal flexible connections between elements of the system: production and commercial enterprises, financial institutions; hierarchy and network interaction interrelate all transnational elements of the system;

– emergence of new integrative properties of the system (synergetic effects from joint functioning)

– Constant transformation of the internal structure under the influence of external environment. That is, the transnationalization of innovation activity correlates to open economic systems type. Interaction with the external environment in terms of disequilibrium conditions the processes of self-organization. For transnational innovative activity as a self-organizing system, there are stable mechanisms of adaptation to changing external conditions.

[1] Global FDI rose by 11% Developed economies are trapped in a historically low share (2018). *Global investment trends monitor*, 15, 28 January <http://unctad.org/en/PublicationsLibrary/webdiaeia2014d1_en.pdf>. (2019, July, 03).

Table 1

Top-20 world's largest TNCs by foreign assets, 2017

No	TNC	State of origin	Industry	Assets (bln. $ US.)	
				Foreign	Total
1	*2*	*3*	*4*	*5*	*6*
1	General Electric Co	USA	Electronics, electric equipment	331 160	656 560
2	Royal Dutch Shell plc	UK	Oil production and refining	301 898	357 512
3	Toyota Motor Corporation	Japan	Motor vehicles	274 380	403 088
4	Exxon Mobil Corporation	USA	Oil production and refining	231 033	346 808
5	Total SA	France	Oil production and refining	226 717	238 870
6	BP plc	UK	Oil production and refining	202 899	305 690
7	Vodafone Group Plc	UK	Telecommunications	182 837	202 763
8	Volkswagen Group	Germany	Motor vehicles	176 656	446 555
9	Chevron Corporation	USA	Oil production and refining	175 736	253 753
10	Eni SpA	Italy	Oil production and refining	141 021	190 125
11	Enel SpA	Italy	Utilities (power, gas, water))	140 396	226 006
12	Glencore Xstrata PLC	Switzerland	Mining and quarrying	135 080	154 932
13	Anheuser-Busch InBev NV	Belgium	Food, drinks & tobacco	134 549	141 666
14	EDF SA	France	Utilities (power, gas, water))	130 161	353 574
15	Nestlé SA	Switzerland	Food, drinks & tobacco	331 160	656 560
16	E.ON AG	Germany	Utilities (power, gas, water)	301 898	357 512
17	GDF Suez	France	Utilities (power, gas, water)	274 380	403 088
18	Deutsche Telekom AG	Germany	Telecommunications	231 033	346 808
19	Apple Computer Inc	USA	Electronics, electric equipment	226 717	238 870
20	Honda Motor Co	Japan	Motor vehicles	202 899	305 690

Source: compiled by the author on the basis of[1].

For the first time since 2004, the European company was named the world's leading investor according to the European Commission's "EU Industrial R&D Investment Scoreboard", which assesses companies' investments in R&D. Investments of the German Volkswagen in R&D amounted to more than 9.9 billion euros in 2015.

527 European companies that participated in the study showed an increase in investment in science by 6.3%, which is higher than the average + 6.2%, but lower than the US companies (+ 8.2%). In 2013-2017, the growth of investments by European companies in research and development is expected to be 2.6% per year[2]. "Faced with a tough global competition, Europe should focus on environmentally friendly technologies and competitive products. R&D in this area is the foundation and prerequisite for success, and

[1] Global FDI rose by 11% Developed economies are trapped in a historically low share (2018). *Global investment trends monitor*, 15, 28 January <http://unctad.org/en/PublicationsLibrary/webdiaeia2014d1_en.pdf>. (2019, July, 03).
[2] The 2018 EU Industrial R&D Scoreboard. (2018). *European Commission*. <http://iri.jrc.ec.europa.eu/scoreboard.html> (2019, July, 01).

that is why Volkswagen will continue to invest in its innovative power," – Martin Winterkorn, CEO of Volkswagen AG, commented on the data[1].

Top 30 companies – world leaders in R & D investment listed as follows:

Table 2

Top 30 companies – world leaders in R&D investment, 2017

No	TNC	Homestate	Industry	R&D expenses (mln euro)
1	*2*	*3*	*4*	*5*
1	VOLKSWAGEN	Germany	Motor vehicles and parts	9515.0
2	SAMSUNG ELECTRONICS	South Korea	Electronics	8344,7
3	MICROSOFT	USA	Software and computer services	7890,7
4	INTEL	USA	Technological technology	7691,4
5	TOYOTA MOTOR	Japan	Motor vehicles and parts	7070,9
6	ROCHE	Switzerland	Pharmaceuticals and biotechnology	7007,8
7	NOVARTIS	Switzerland	Pharmaceuticals and biotechnology	6922,8
8	MERCK US	USA	Pharmaceuticals and biotechnology	5995,9
9	JOHNSON & JOHNSON	USA	Pharmaceuticals and biotechnology	5809,5
10	PFIZER	USA	Pharmaceuticals and biotechnology	5740,5
11	DAIMLER	Germany	Motor vehicles and parts	5639,0
12	GENERAL MOTORS	USA	Motor vehicles and parts	5584,4
13	GOOGLE	USA	Software and computer services	4997,0
14	ROBERT BOSCH	Germany	Motor vehicles and parts	4924,0
15	SANOFI-AVENTIS	France	Pharmaceuticals and biotechnology	4909,0
16	HONDA MOTOR	Japan	Motor vehicles and parts	4906,3
17	SIEMENS	Germany	Electronics	4572,0
18	CISCO SYSTEMS	USA	Technological technology	4503,6
19	PANASONIC	Japan	Recreational goods	4398,0
20	GLAXOSMITHKLINE	UK	Pharmaceuticals and biotechnology	4229,0
21	IBM	USA	Software and computer services	4194,3
22	NOKIA	Finland	Technological technology	4169,0
23	FORD MOTOR	USA	Motor vehicles and parts	4168,6
24	SONY	Japan	Recreation goods	4147,4
25	NISSAN MOTOR	Japan	Motor vehicles and parts	4115,0
26	ELI LILLY	USA	Pharmaceuticals and biotechnology	4000,4
27	BMW	Germany	Motor vehicles and parts	3952,0
28	ERICSSON	Sweden	Technological technology	3862,7
29	ORACLE	USA	Software and computer services	3675,9
30	EADS	Netherlands	Space and defence industries	3630,0

Source: compiled by the author on the basis of [2]

[1] Volkswagen topped the world rating of investment in research and development (2017). *Atlant-M – Global*. <http://atlant-m.by/holding/press/releases/releases_1919.html> (2019, July, 01).

[2] Volkswagen topped the world rating of investment in research and development (2017). *Atlant-M – Global*. <http://atlant-m.by/holding/press/releases/releases_1919.html> (2019, July, 01).

It should be emphasized that rate of TNC investment in R&D is constantly growing, except for a short period after the 2008 crisis. This is clearly evidenced by data on spending on R & D companies, which in different years occupied the first line in the world ranking of investors in R&D.

Another area of innovative activity of TNCs with the aim of gaining experience, minimizing huge research costs and accelerating the receipt of the ultimate high-tech product is the creation of strategic alliances. Usually they are formed at the stage preceding the commercialization of innovations, in order to more effectively use the knowledge available to all participants in the alliance. For strategic alliances as forms of scientific and technical cooperation between transnational corporations of different countries, the following characteristics are typical:

– acquiring new scientific and technological knowledge within the framework of the chosen field of cooperation or the exchange of technologies available for partners;

– distribution of the benefits of cooperation among participants and the use of the right to control its implementation;

– unconditional preservation of independence, creation of an alliance with a partner only in the sphere where support is needed.

According to UNCTAD, there are 30 thousand strategic alliances in various spheres[1]. More than a quarter of them are related to implementation of projects in the field of microelectronics, computer technology, industrial production automation, technology and telecommunications. They are actively used in the field of biotechnology and creation of new materials[2]. For example, the goal of creating a strategic alliance between Hitachi (Japan) and Texas Instruments (USA) was the mutual expansion of experience in memory development. The benefits of both companies are to acquire the knowledge needed to develop new products. Another example is the alliance between Hitachi (Japan) and Motorola (USA), created to reduce R&D costs and reduce risks. When developing a fast processor in the field of electronics, several alliances were created: Toshiba (Japan) – IBM (USA), Fujitsu (Japan) – AMD (USA), Sharp (Japan) – Intel (USA), the purpose of which was to obtain technical knowledge to consolidate core competencies and to review the direction of innovation policy in the future.

In a geographical context, alliances between US and Western European companies prevail. An example of such an alliance is the one created in 2011. Union between the corporations Nokia (Finland) and Microsoft (USA). Its goal is to build a new strategy for the production of smartphones, where each side has certain achievements.

Constant scaling up of activities and assets, the availability of intellectual resources, other advantages that TNCs receive as subjects of global economy form the prerequisites for their leadership in creating innovations.

References:

1. United Nations Conference on Trade and Development (UNCTAD) (2014). Investment and Enterprise. Definitions 2014. <http://unctad.org/en/Pages/DIAE/Transnational-corporations-(TNC).aspx> (03 July 2016). [in English].
2. Global FDI rose by 11% Developed economies are trapped in a historically low share (2018). *Global investment trends monitor*, 15, 28 January <http://unctad.org/en/PublicationsLibrary/webdiaeia2014d1_en.pdf>. (2019, July, 03). [in English].
3. The 2018 EU Industrial R&D Scoreboard. (2018). European Commission. <http://iri.jrc.ec.europa.eu/scoreboard.html> (2019, July, 01). [in English].
4. United Nations Conference on Trade and Development (2014). Investment and Enterprise. Definitions 2014. *Official website UNCTAD* <http://unctad.org/en/Pages/DIAE/Transnational-corporations-(TNC).aspx> (2019, July, 03). [in English].
5. United Nations Conference on Trade and Development (2009). Division on Investment and Enterprise (2009). Training Manual on Statistics for FDI and the Operations of TNCs. Vol. II Statistics on the Operations of Transnational Corporations. *UNCTAD.* <http://unctad.org/fr/Docs/diaeia20092_en.pdf> (2019, July, 01). [in English].
6. Volkswagen topped the world rating of investment in research and development (2017). *Atlant-M – Global*. <http://atlant-m.by/holding/press/releases/releases_1919.html> (2019, July, 01). [in English].

[1] United Nations Conference on Trade and Development Division on Investment and Enterprise (2009). Training Manual on Statistics for FDI and the Operations of TNCs. Vol. II Statistics on the Operations of Transnational Corporations. *UNCTAD.* <http://unctad.org/fr/Docs/diaeia20092_en.pdf> (2019, July, 01).

[2] Volkswagen topped the world rating of investment in research and development (2017). *Atlant-M – Global*. <http://atlant-m.by/holding/press/releases/releases_1919.html> (2019, July, 01).