



## ANALYSIS OF STOCK MARKET DEVELOPMENT INDICATORS IN THE REGIONS OF THE WORLD DURING THE COVID-19 CORONAVIRUS PANDEMIC

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### **JEL Classification: M1,M3**

**Abstract.** This article provides an analysis of the development of the stock market in the regions of the world during the Covid-19 coronavirus pandemic. In particular, it analyzed the total stock market capitalization of the member states of the World Federation of Stock Exchanges, the volume of stock trading in them, the amount of stock trading, bonds and derivatives trading indicators. This article describes the opinions of foreign scientists in their published articles and scientific studies on the development of the stock market during the pandemic.

It contains opinions on how the development of the stock market in different countries has changed under the influence of the Covid-19 pandemic, and how these changes have been reflected in the market. The influence of various factors on the

change of indicators in the stock market was analyzed econometrically.

The indicators of the TOP-10 stock exchanges with the highest market capitalization in the world were analyzed, and as a result, the importance of these exchanges in the global stock market was evaluated. The article analyzes the volume of stock trading in the regions of the World Federation of Stock Exchanges. Also, the study examines Investment Flow - data on companies that have gone through a new listing through an IPO.

In the study, the volume of derivatives trade carried out in the regions of the world was analyzed in terms of futures and options. Based on the above, it can be said that in the conditions of the Covid-19 coronavirus pandemic, the analysis of the development indicators of the world stock



market was carried out. As a result of these analyses, problems related to the development of the world securities market were identified and appropriate conclusions were formed.

Official data and annual reports on the website of the World Federation of Exchanges (WFE), an organization to which the world's largest stock exchanges are members, were used to analyze the development trend of stock market indicators in the world.

**Keywords.** Stock market capitalization, stock trading, bond trading, derivatives, futures, options.

**Introduction.** The international stock market, as an interconnected global market, reflects the development trends of the world economy. International capital movements will be ensured in the world's major stock markets, portfolio investments will be made in certain sectors and industries of the economy, and various funds will become investments. Indices of major stock exchanges reflect the mood of countries around the world, institutional investors and the general market.

Major stock exchanges and over-the-counter electronic trading systems are the main trading areas of the global stock market. Most of the major stock exchanges and over-the-counter e-trading systems are members of the World Federation of Exchanges (WFE). Currently, the World Federation of Exchanges has 88 exchanges.

According to the methodology of the World Federation of Stock Exchanges, the member exchanges of this organization are studied in 3 major regions. These are the Americas (16 members), Asia-Pacific (22 members), Europe-Middle East-Africa (50 members). In our analysis below, we present the indicators on the example of the World Federation of Exchanges, its regions and

stock exchanges that are members of the organization.

**Materials and Methods.** Official data and annual reports of World Federation of Stock Exchanges (WFE), an organization to which the world's largest stock exchanges are members, were used to analyze the development trend of global stock market indicators in the context of the pandemic.

International financial organizations use different methodologies in their research and analysis. Because the research methodology serves to make the research systematic in the analysis of different periods, regions and indicators. The World Federation of Exchanges (WFE) is a member of stock exchanges located in different regions of the world. Depending on the region where stock exchanges are located, which is a member of the World Federation of Stock Exchanges, this organization has conditionally divided them into several regions. According to the methodology of the World Federation of Exchanges, the regions of the world are divided into the following 3 regions:

- Americas;
- Asia - Pacific;
- Europe-Middle East-Africa.

Empirical analysis, grouping, analysis and synthesis, comparison, prospective forecasting methods were used in the preparation of the article. As a result of the analysis of practical data, the development trends of global stock markets were identified, relevant conclusions and recommendations were developed.

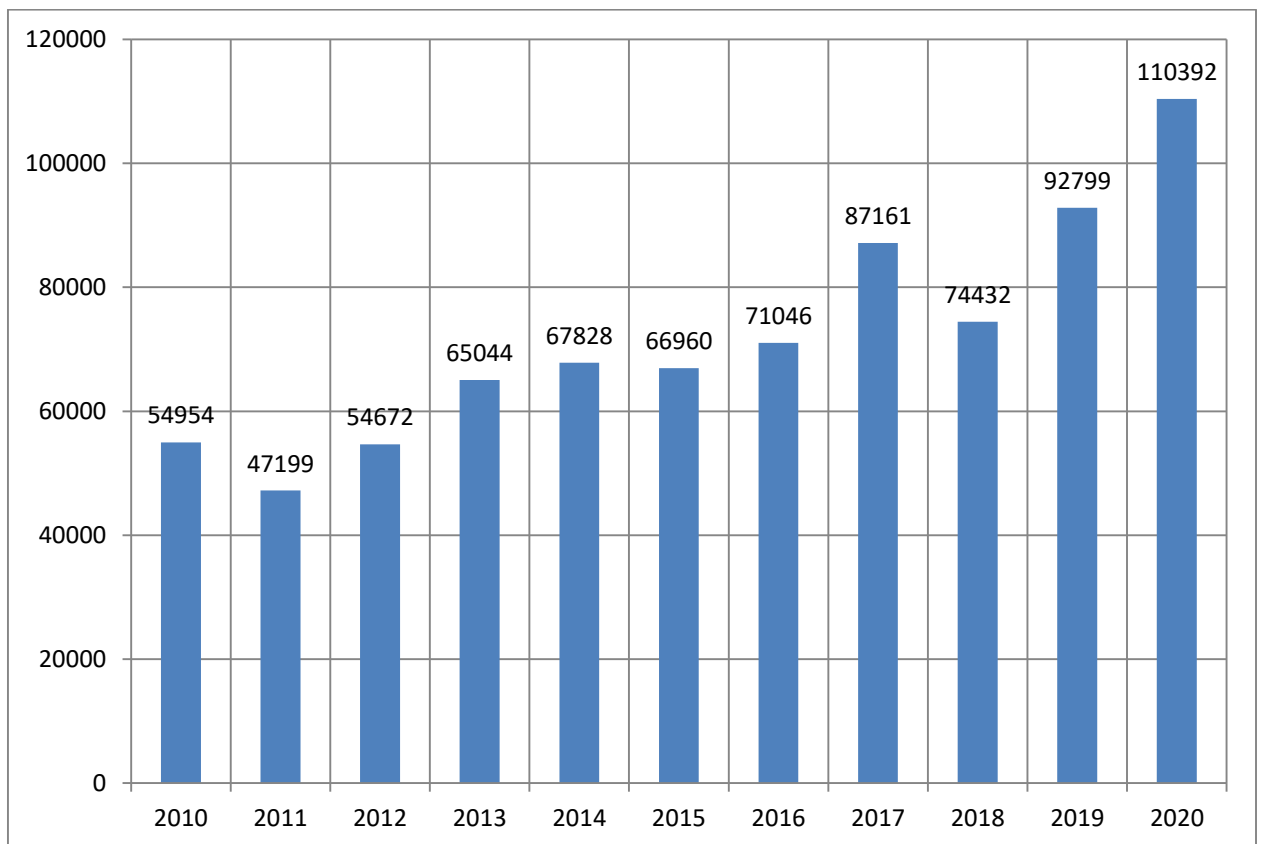
Issues such as the situation and development trends of the world stock market in the context of the pandemic, the economic policies implemented by countries during the pandemic, debt obligations, the assessment of the impact of various factors on the development of world stock market indicators, and their econometric modeling

have been studied by a number of foreign scientists.

We can note that in the studies of foreign scientists, the impact of the coronavirus pandemic on the development of the stock market has been studied by various research methods and relevant results have been obtained. In particular, the impact of various factors on the development of the stock market was studied and researched by these scientists through econometric models. These include the following scientists: Benjamin Clapham, Peter Gomber, Jens Lausen, Sven Panz [1], Bin Wei [2], Tahir Mumtaz Awan, Jamal Maqsood [3], David Y.Aharon, Ahmed S.Baig, R. Jared DeLisle [4], Ebenezer Boateng, Anokye M.Adam, Peterson Owusu Junior [5], David Iheke Okorie, Boqiang Lin [6], Min Liu's, Wei-Chong Choo & Chien-Chiang Lee [7], HERWANY, Aldrin,

FEBRIAN, Erie, ANWAR, Mokhamad, GUNARDI [8], In Xiaolin Huo & Zhigang Qiu [9], Moshfique Uddin, Anup Chowdhury, Keith Anderson, and Kausik Chaudhuri [10], Chun-Ping Chang, Gen-Fu Feng & Mingbo Zheng [11], Maximilian Ambros, Michael Frenkel, Toan Luu Duc Huynh & Mustafa Kilinc [12], Insaadoo, M., Arthur, L., Amoako, S., Andoh, F.K. [13], IDEbnath, P., Srivastava, H.M. [14], Burdekin, R.C.K., Harrison, S. [15], Elhachemi Abdelkader Hacine Gherbi & Ibrahim Tawfeeq Alsedrah [16].

**Results.** To analyze the development trends of the global stock market, we use official data and annual reports on the website of the World Stock Exchange Federation (WFE), an organization of which the world's largest stock exchanges are members. Let us consider market capitalization as the first key indicator.

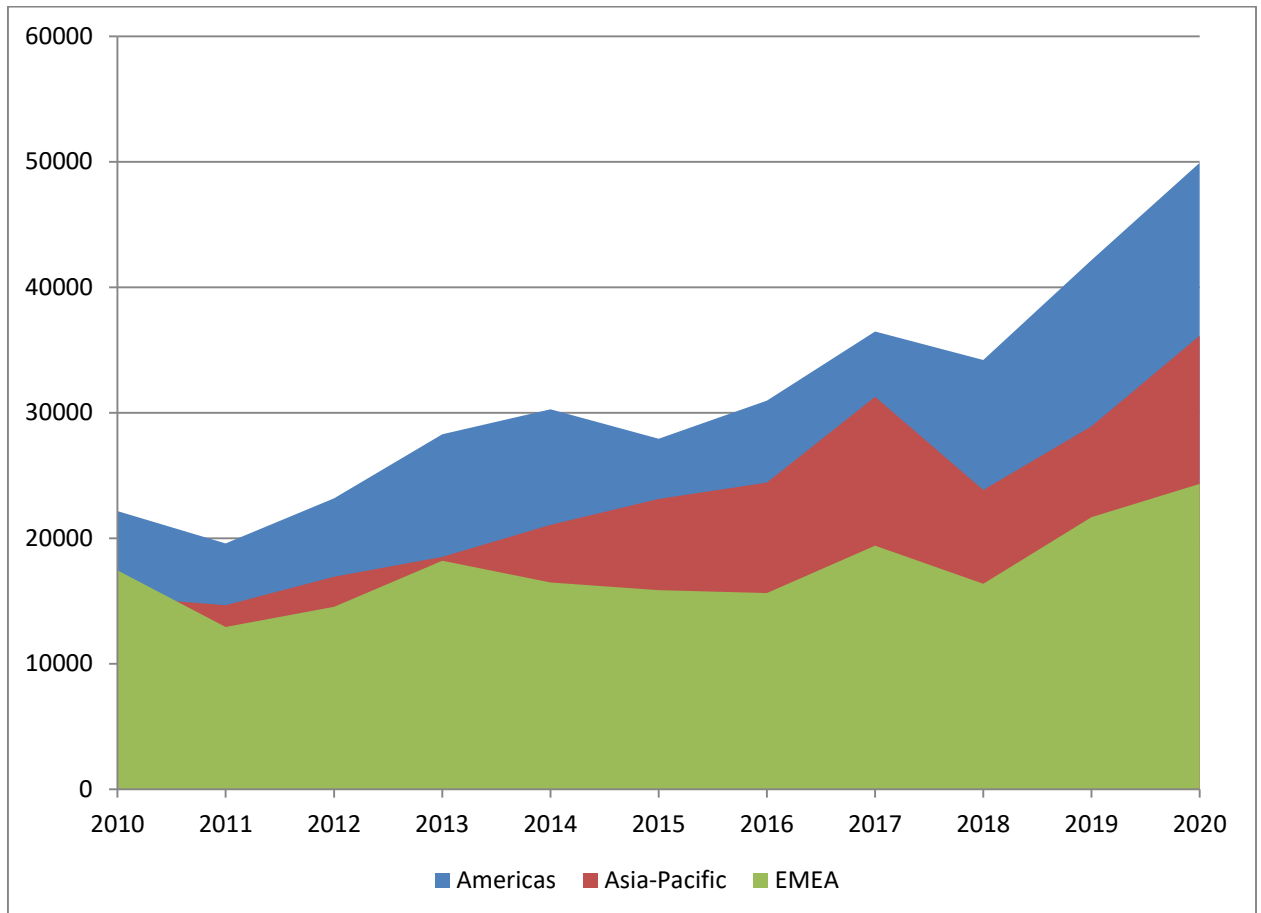


**Figure 1. The total market capitalization of the members of the World Federation of Exchanges (WFE), bln. USD dollars [17]**

As can be seen from Figure 1, the total market capitalization of the members of the World Federation of Exchanges had an upward trend in 2010-2020. Market capitalization represents the market value of existing securities, not trades in securities. Therefore, even during the Covid-19 pandemic, the total market

capitalization of member exchanges showed an upward trend. In 2010, the market capitalization was 54954 billion USD dollars. By 2020, this figure will reach 110,392 billion USD dollars.

We consider this market capitalization on the example of the regions of the World Federation of Stock Exchanges

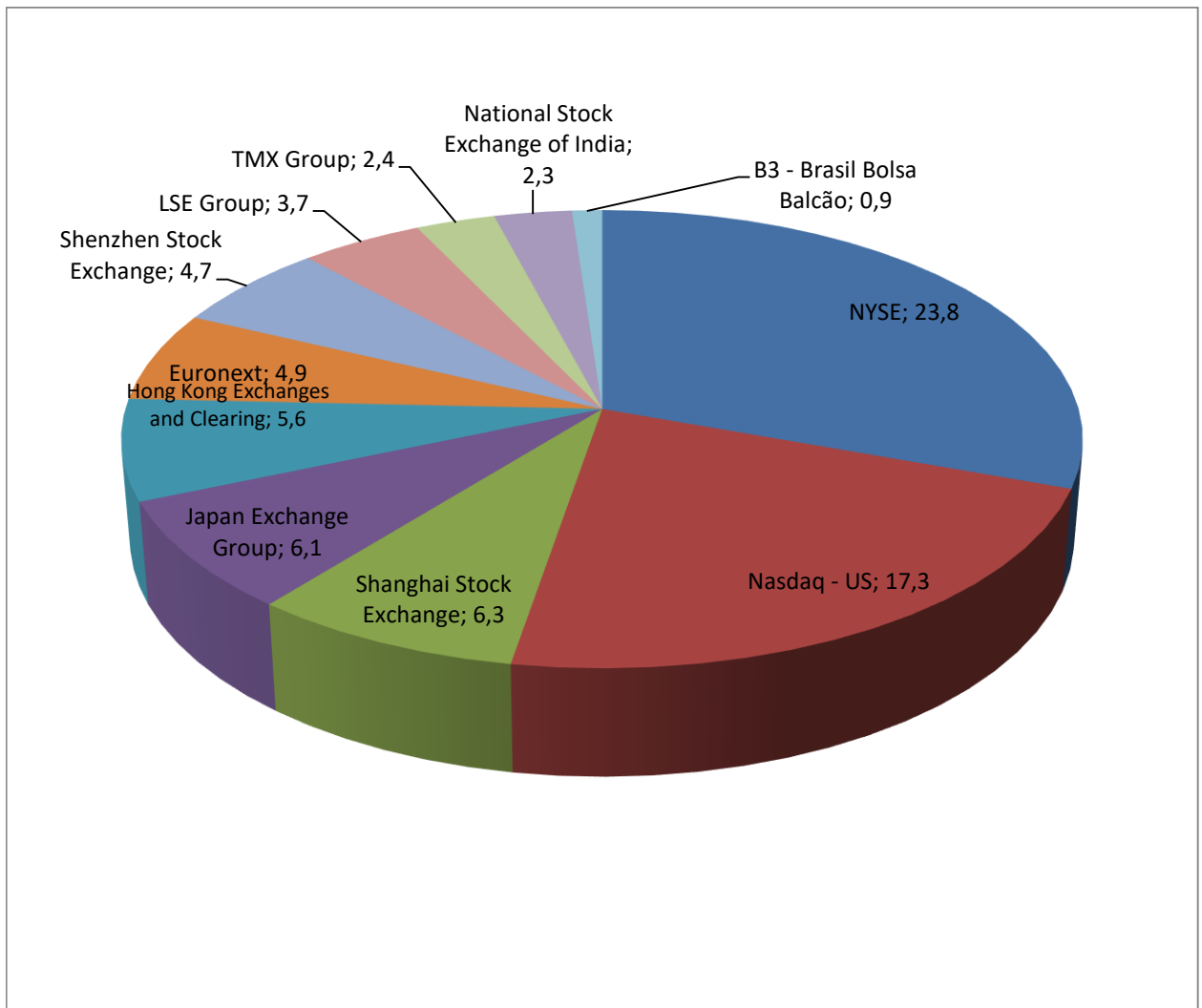


**Figure 2. Market capitalization of the regions of the World Federation of Exchanges, bln. USD dollars [17]**

As can be seen from Figure 2 above, market capitalization in the Americas, Asia-Pacific, and Europe-Middle East-Africa was also on an upward trend in line with the World Federation of Stock Exchanges. At the same time, the capitalization of the American territory in 2020 will reach 49916 billion USD dollars. The capitalization of

the Asia-Pacific region is 36,153 billion USD dollars, the capitalization of the Europe-Middle East-Africa region is 24323 billion USD dollars.

Let's take a look at the TOP-10 list of the world's largest stock exchanges by market capitalization.



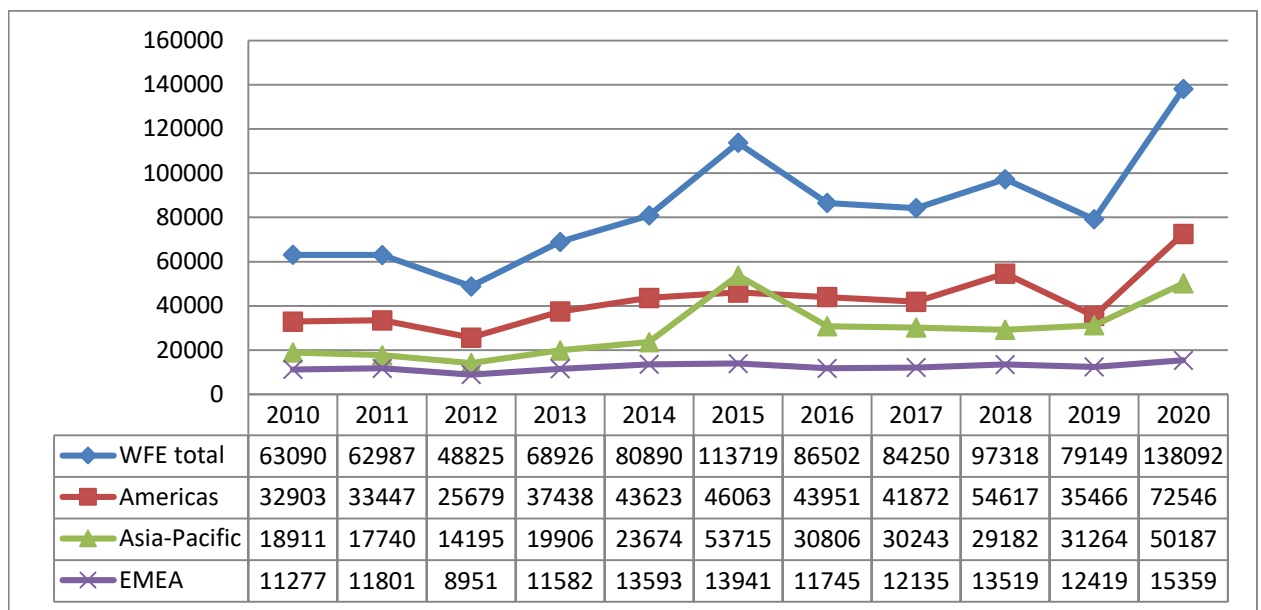
**Figure 3. TOP-10 stock exchanges with the highest market capitalization in the world, % [17]**

Figure 3 above shows that the New York Stock Exchange (NYSE) is the clear leader in the total market capitalization of the World Exchange Federation in 2020 with a total of 23.8%, while the Nasdaq-US over-the-counter electronic trading system ranked second with 17.3 percent of the total. If we consider the New York Stock Exchange and the Nasdaq-US e-commerce system as a common U.S. stock market, then the U.S. accounted for 41.1% of the global stock market capitalization. In third place is the Shanghai Stock Exchange with 6.3% of the total.

The Japanese Stock Exchange Group (JPX-Tokyo Stock Exchange, Osaka Stock

Exchange and Tokyo Stock Exchange) - 6.1%, Hong Kong Stock Exchange and Clearing - 5.6%, Euronext (Euronext - includes the Netherlands, France, England, Belgium, Portugal and Ireland) - 4.9%, Shenzhen stock exchange - 4.7%, LSE Group (LSE group - London Stock Exchange and Borsa Italiana) - 3.7%, TMX Group (TMX Group is a Canadian financial services company that manages stock exchanges, derivatives and energy markets) - 2.4%, National Stock Exchange of India - 2.3 %, B3-Brasil Bolsa Balcão - 0.9 %.

One of the important indicators in the global stock market is the volume of stock sales. We analyze this information below.



**Figure 4. The volume of share trading in the territories of the World Federation of Exchanges, bln. USD dollars [17]**

Figure 4 above shows that the decline in stock sales in the Americas region by 2019 will be offset by NYSE and Cboe Global Markets (Cboe Global Markets, an American company that owns the Chicago Board Options Exchange and BATS Global Markets. BATS - Better Alternative Trading System) is explained by a sharp decline in trading volumes under the influence of the Covid-19 pandemic in large participants such as. [18]

Further measures taken by major financial institutions, in particular the World Bank, the International Monetary Fund and countries to reduce the negative impact of the Covid-19 pandemic on the economy, the recovery of the world economy from the state budget and external debt to support sectors of the national economy by the end, the volume of stock trading had changed for the better and had a growing trend in all regions of the World Federation of Stock Exchanges.

In particular, the growth of stock trading in the Americas in 2020 is due to the growth of major stock exchanges in the region. By the end of 2020, stock sales in

Bolsa Mexicana de Valores will reach 104 billion. dollars, Cboe Global Markets 18944 billion. dollars, 24,924 billion dollars in Nasdaq-US, 26,176 billion dollars in the NYSE.

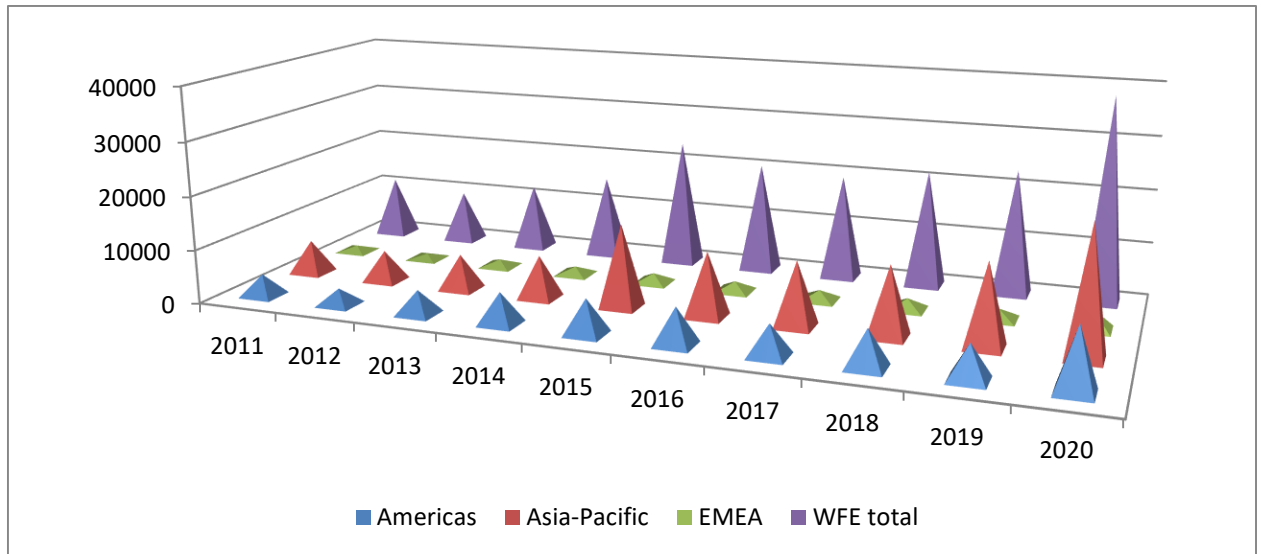
Also, the reason for the sharp increase in stock trading in the Asia-Pacific region in 2020 compared to 2019 is the increase in stock exchanges, which are the largest participants in the region (in billions of dollars). Increase in share trading on ASX Australian Securities Exchange 871 - 1174, Hochiminh Stock Exchange 31 - 56, Hong Kong Exchanges and Clearing 1866 - 3144, Japan Exchange Group 5085 - 6153, Korea Exchange 1925 - 4815, Shanghai Stock Exchange 7882 - 12154, Shenzhen Stock Exchange 10251 - 17762, Taiwan Stock Exchange 844 - 1540 billion. dollars.

In the Europe-Middle East-Africa region, the increase in stock sales in 2020 compared to 2019 will be 15 - 19 on the Abu Dhabi Securities Exchange, 363 - 913 on the Borsa Istanbul, 4 - 16 on the Boursa Kuwait, 8 - 10 on the Budapest Stock Exchange, Deutsche Boerse AG at 1502 - 2076, Dubai Financial Market at 13 - 17, Euronext at



1915 - 2513, Iran Fara Bourse Securities Exchange at 32 - 210, LSE Group at 193 - 2104, Moscow Exchange at 32 - 311, Nasdaq Nordic and Baltics 47 - 1031, SIX

Swiss Exchange 14 - 1253, Vienna Stock Exchange 2 - 39, Warsaw Stock Exchange 0.6 - 80 billion USD dollars.



**Figure 5. Securities trading in the territories of the World Federation of Exchanges, million units [17]**

From the data in Figure 5 above, we can see that the Asia-Pacific region was the leader in stock trading in the territories of the World Exchange Federation in 2011-2020. The next places in terms of stock sales were occupied by the Americas and Europe - the Middle East - Africa, respectively. In the years analyzed, the highest figure in

2020 was recorded in the Asia-Pacific region, and the number of shares traded was 23,492 million.

Below we will consider another important indicator of the inflow of investments in the world stock exchanges - the number of newly listed listing companies.

**Table 1.**

**Investment flows – Number of new companies listed [17]**

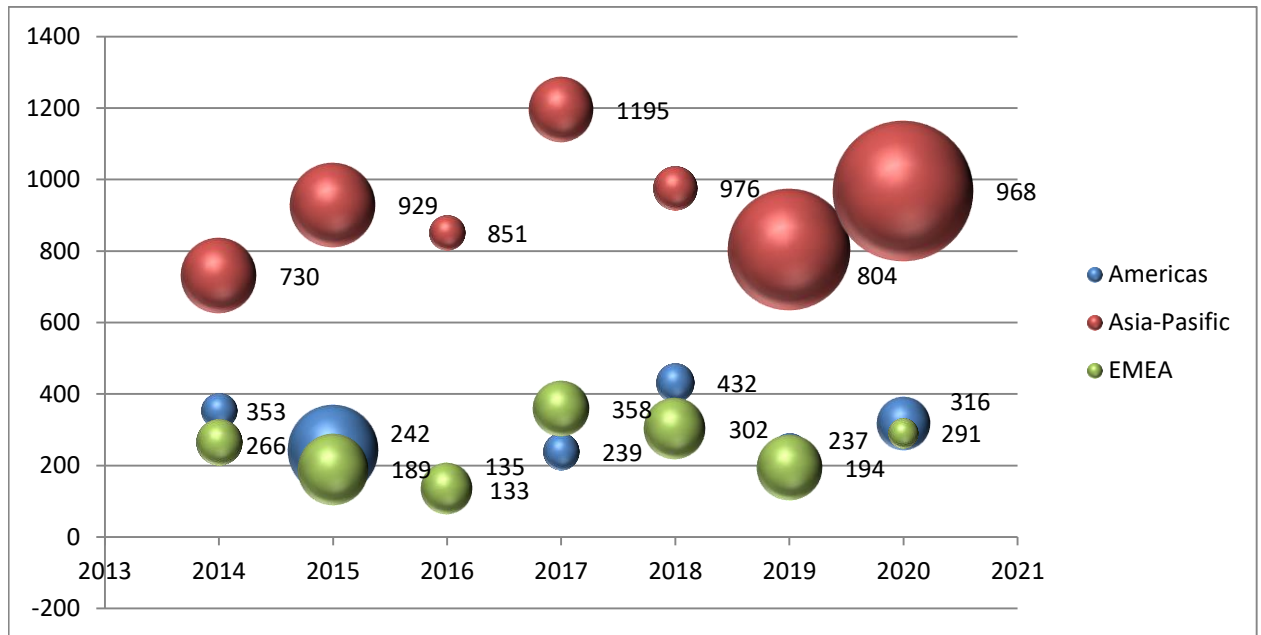
Regions	IPO or other new companies	2014	2015	2016	2017	2018	2019	2020
Americas	IPO	353	242	133	239	432	237	316
	Other	87	569	107	91	101	97	195
Asia-Pacific	IPO	730	929	851	1195	976	804	968
	Other	395	499	86	289	131	1037	1368
EMEA	IPO	266	189	135	358	302	194	291
	Other	144	351	182	216	261	296	61

From the data in Table 1 above, it can be seen that in the analyzed 2014-2020, the inflow of investments was made through new listing companies registered in the territories of the World Federation of

Exchanges. Companies that have undergone an IPO or other new listings have been actively involved.

Below we will look at the number of newly listed companies and the flow of

investment in them through IPOs in the regions.

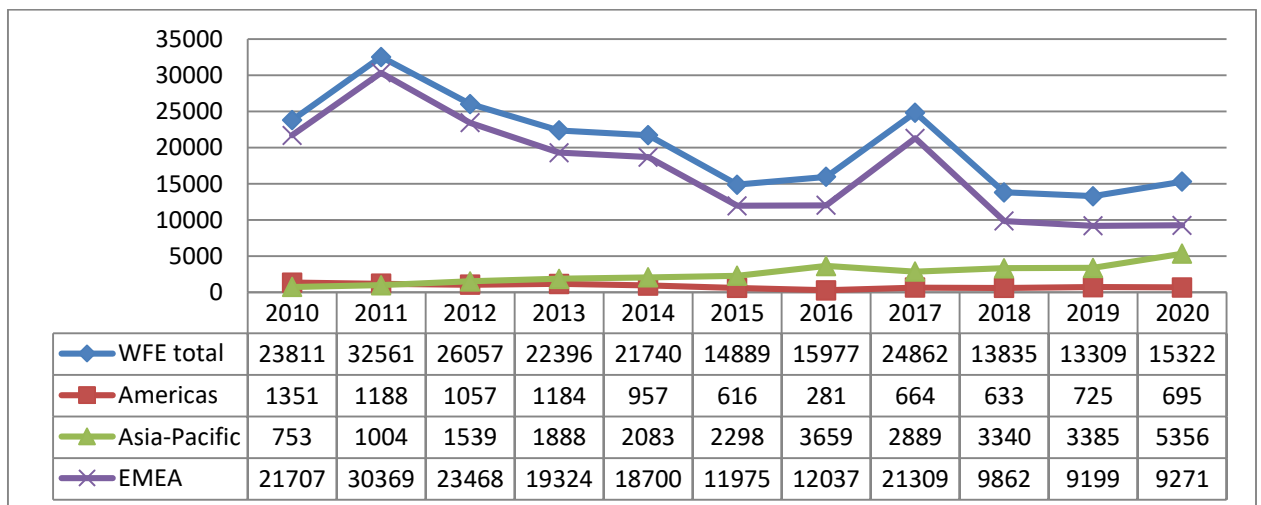


**Figure 6. Investment flows are companies that have been newly listed through an IPO [17]**

As can be seen from Figure 6 above, the Asia-Pacific region is a clear leader in terms of the number of newly listed companies through IPOs. By the end of 2020, the number of newly listed companies through IPOs in the region amounted to 968, and the inflow of investments through them amounted to 136.9 billion dollars. The second place in this indicator was taken by the American territory, where the number of

newly listed companies through IPOs - 361, with an inflow of investments - 87.5 billion dollars. The number of newly listed companies through the IPO of the Euro-Middle East-Africa region - 291, and the inflow of investments through them - 37.4 billion dollars, ranking third.

Another important indicator below is the volume of bond sales in the regions of the world.



**Figure 7. The volume of bond sales in the regions of the world, bln. USD dollars [17]**

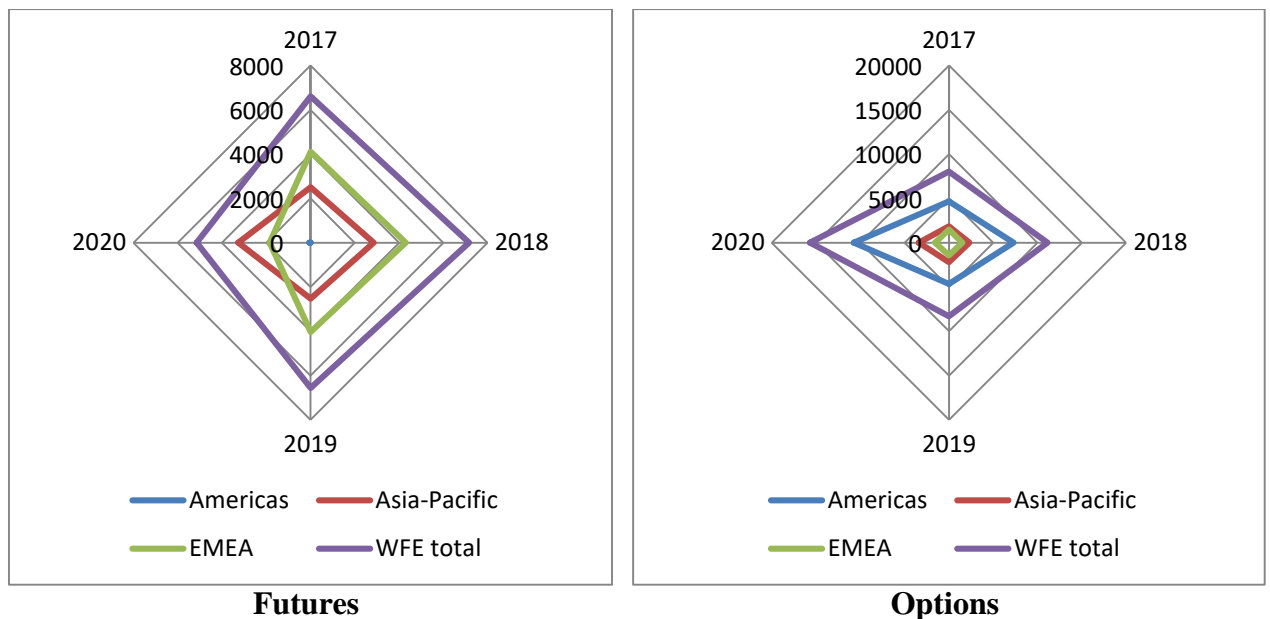


As can be seen from Figure 7 above, bond sales in the regions of the world developed unevenly in 2010-2020 and by 2020 will reach 15,322 billion USD dollars. This indicator was \$ 23,811 billion USD dollars in 2010. The leader in bond trading is the Europe-Middle East-Africa region, which in 2020 amounted to 9271 billion. USD dollars and accounted for 60.5 percent of the total.

The downward trend over the last decade can be attributed to the fact that

bonds and their interest rates are not sufficiently satisfactory to investors. Only when bond issuers can take into account the annual inflation rate in the country and offer banks a higher interest rate than the deposit interest rates can the attractiveness of the loan instrument offered by them increase and there is an opportunity to attract investors.

Below we analyze derivatives, i.e. futures and options, which are important indicators in the stock market.



**Figure 8. The volume of sales of derivatives in the regions of the world, bln. USD dollars [17]**

Figure 8 above shows the volume of trade in derivatives, futures and options, in different parts of the world. In practice, there are several types of futures and options, Figure 8, presented by us, shows stock futures and stock options. By the end of 2020, the volume of stock futures trading in the world will reach 5145 billion USD dollars. The leading region is the Asia-Pacific region, where stock futures trading amounted to 3254 billion USD dollars, or 63.2 percent of the total.

The second part of Figure 8 above shows the stock options trading and the global trading volume is 15,685 billion USD

dollars. The American region is the leader in this indicator, with a trade volume of 10,746 billion USD dollars and we can see that 68.5% of the total trades were made in this region.

**Discussion.** From the above analysis, we can see that the total market capitalization of the members of the world stock exchange federation had a growing trend in 2010-2020, and this process continued even during the Covid-19 pandemic. In the Americas, Asia-Pacific and Europe-Middle East-Africa regions, the market capitalization also had an upward trend, according to the World Federation of

Stock Exchanges. The New York Stock Exchange (NYSE - 23.8%) took the first place, Nasdaq (Nasdaq-US - 17.3%) took the second place in the total share of the market capitalization of this organization. If we consider these trading systems as the general US stock market, the US accounted for 41.1% of the capitalization of the world stock market. By 2019, the decline in stock trading in the American territory is explained by the negative impact of the Covid-19 pandemic on major players in the United States.

Later, as a result of measures taken by the World Bank, the International Monetary Fund and countries to reduce the negative impact of the Covid-19 pandemic on the economy, the world economy recovered and by the end of 2020, an increase in the volume of stock trading was observed. The Asia-Pacific region has led the way in equity trading over the last 10 years under review.

In the analyzed years 2014-2020, investments were attracted through newly listed companies registered in the territories of the Federation of World Stock Exchanges. In this process, companies that have undergone an IPO or another new listing have also demonstrated their activity. Investment flow - Asia-Pacific led the way in terms of the number of companies that went through an IPO.

In the analyzed years, bond trading developed unstable, and the Europe-Middle East-Africa region took the lead in this. The decline in bond sales in recent years is explained by low bond yields and their interest rates. When increasing the attractiveness of bonds, issuers should take into account the annual inflation rate in this country, bank deposit interest rates and profitability of other alternative instruments.

The article presents trades on derivatives carried out in the world regions.

The Asia-Pacific region took the lead in futures trading, and the American region took the lead in options trading.

**Conclusion.** Based on the analysis presented in the article, the following conclusions can be drawn.

**First,** the international stock market as an interconnected global market reflects the development trends of the world economy. International capital movements will be ensured in the international stock markets, portfolio investments will be made in certain sectors and industries of the economy, and various funds will become investments. Indices of major stock exchanges reflect the mood of countries around the world, institutional investors and the general market.

**Second,** the New York Stock Exchange accounted for 23.8 percent of the total market capitalization of the World Federation of Exchanges, and the Nasdaq-US over-the-counter electronic trading system accounted for 17.3 percent. If we consider the New York Stock Exchange and the Nasdaq e-commerce system as a common U.S. stock market, then the U.S. accounted for 41.1% of the global stock market capitalization. This has allowed the United States to exert wider influence on global financial markets through financial instruments.

**Third,** in previous decades, the stock exchanges of mainly European countries have occupied the highest positions in the world stock market in terms of capitalization, after the stock exchanges of the United States and Japan. In recent years, European stock exchanges have been overtaken by stock exchanges such as the Shanghai Stock Exchange and the Hong Kong Exchanges and Clearing in terms of market capitalization. This shows that the financial balance in the world is changing.



**Fourth**, the above analysis shows that by 2019, the volume of stock sales in the world has fallen sharply due to the Covid-19 pandemic. In 2020, the world economy has recovered significantly as a result of measures taken by major financial institutions, in particular the World Bank, the International Monetary Fund and countries to reduce the negative impact of the Covid-19 pandemic on the economy. As a result of this practical work, by the end of

2020, the volume of stock trading had changed for the better and had a growing trend in all regions of the World Exchange Federation.

**Fifth**, bond sales are unevenly developed in regions of the world, and the 2020 figures did not reach the 2010 figures. This indicates that bond sales volumes are still in the process of recovering to return to previous volumes.

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