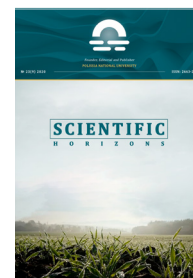


SCIENTIFIC HORIZONS

Journal homepage: <https://sciencehorizon.com.ua>

Scientific Horizons, 24(10), 97-108



UDC 336

DOI: 10.48077/scihor.24(10).2021.97-108

The Genesis of Financial Market Institutionalisation in Ukraine: An International Perspective

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Article's History:

Received: 13.10.2021

Revised: 12.11.2021

Accepted: 15.12.2021

Suggested Citation:

Sirenko, N., Baryshevska, I., & Melnyk, O. (2021). The genesis of financial market institutionalisation in Ukraine: An international perspective. *Scientific Horizons*, 24(10), 97-108.

Abstract. The relevance of the article is due to the need for a comprehensive analysis of the latest processes in the global financial system, as well as a complex development of a methodological approach to its study. With the transition to digital technologies in the global financial market, in particular, when processing and storing data in electronic format, there is a change in the form of financial circulation, which can lead to a number of problems and risks. In this context, special attention should be paid to the international credit market and the international bond market, which are, in fact, circulating in cyberspace and are evolving through info-communication technologies. The purpose of this research is an in-depth analysis of the main globalisation processes of the world economy and their impact on the development of competition between exchange and over-the-counter trade. The study used general scientific methods of analysis, theoretical generalisation, and synthesis, as well as methods of mathematical, statistical, and economic analysis. According to the study of the dynamics of capitalisation of the global stock market, the authors of this article identified a trend towards dynamic growth in the use of alternative trading systems, which is a factor in the development of exchange and over-the-counter securities trading. The article provides a comprehensive analysis of the directions of impacts of digitalisation on the global monetary and financial system, among which the positive and negative effects are considered in detail and substantiated. The negative effects of virtualisation of the global monetary and financial system are identified, as well as perspective directions of modification of the economic system and finance with the introduction of digital technologies are formulated. The information presented in this paper can be used to further consider the dynamics of stock market capitalisation in the world, as well as to develop methods to improve the efficiency of digitalisation of operating processes for individual enterprises and the global economy as a whole

Keywords: stock market, development, structure, institution, provision



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INTRODUCTION

In the context of virtualisation, the theoretical and methodological foundations of the global monetary and financial system need to be reconsidered. To comprehensively analyse the latest processes in the global financial system and develop a methodological approach to its study, let us first clarify the specifics of the current understanding of the term “financial system” [1]. The term finance comes from the Latin word “finantia”, which means the obligatory payment of money. Finances originated with the emergence of the first state entities, but the term “finance” in its modern sense first began to be used in Italy in the 18th century, when it began to mean the accumulation of monetary funds by the state to ensure the performance of state functions. To date, academic economists have developed a number of definitions for the term “finance” [2]. Given the characteristics of information and telecommunications development and its impact on the financial sector, a new definition of finance should be added. Finance in the context of virtualisation takes the form of the alienated intrinsic value of goods embodied in electronic units of payment circulating in the information economy to mediate exchange. With regard to the financial system as a whole, the paper first explores the classical definitions and then augments them, taking into account the information aspect of development and the virtualisation of the global financial market.

A financial system is a set of markets and other institutions necessary for financial transactions to exchange assets and risks. The system includes securities markets, financial intermediaries (banks, insurance companies, etc.), and the institutions that regulate all these institutions [3]. A virtualised global financial system is an interconnected and interdependent integrated set of financial markets, institutions developed based on server virtualisation (information and communication networks) that serve as its infrastructure support. In the modern stage, finance is taking the form of electronic money. Electronic money (e-money) – monetary assets presented electronically, placed on an electronic medium, held by the user. This medium could be a micro-SD, a computer, a settlement system server where users' electronic money is stored centrally [4]. E-money makes it possible to quickly build up payment reserves by issuing money on smart cards, e-wallets, etc. and receive funds from businesses or individuals for services or goods sold.

Economic theory distinguishes five functions of money, namely: measure of value, means of circulation, means of capital accumulation, means of payment, world money when it is used for its intended purpose of covering costs and generating income (losses). Redistribution is a secondary distribution through centralised funds (budget, extra-budgetary funds and the like), ensuring that resources are channelled to the non-productive sphere. The controlling function consists in exercising control over the real cash flow and the formation of cash

funds. The main functions of money in the virtualisation of the global financial system have two aspects [5]:

1) if we consider fiduciary money in its primary form of virtualisation, i.e., in the context of the use of ICT in finance, in which case all five functions of money remain, and virtualisation has a positive effect on finance by speeding up its circularity;

2) if we view virtual currencies as a secondary form of virtualisation of the global financial market, then cryptocurrencies' performance of the basic functions of money remains in question.

The functions of measure of value, means of circulation, means of payment and world money will only exist as long as they are used and accepted by other entities. Regarding the function of capital accumulation, in today's environment, given the volatility of the cryptocurrency market, virtual money can become a means of capital accumulation rather than a means of capital loss.

World money is a means of payment that serves the movement of value in international economic circulation and ensures social and economic relations between countries. E-money fulfils this function to the full. The use of electronic money issued by one state is also possible outside its borders. However, this use of money on the territory of another state must be based on common technology. For example, the payment systems Web-money, Yandex.Money are based on the joint Pay Cash technology [6].

Based on the above, the function of money is fully performed by electronic fiduciary money [7]. However, with the development of the information economy, not only are the existing functions of money modified, but new ones are emerging, reflecting the general dialectic of the development of monetary relations and the principle of historicism [8]. E-money fully retains all the functions of money. They fall into two large groups: plastic card-based and global network-based, most commonly the Internet [9].

It is well-known that the financial system is based on monetary funds, which are defined as certain amounts of money or other securities with corresponding, clearly defined areas of formation and use. The existence of finance is characterised by certain financial categories, such as public revenues and expenditures [10]. Public revenue is the part of monetary relations that relates to the distribution of the value of gross domestic product (GDP) and national income (NI), which results in the creation of centralised monetary funds. But public expenditure is a monetary relationship that allows the use of centralised monetary funds. These include the expenditure of the state itself, the expenditure of state-owned enterprises [11]. The financial system is defined as the totality of different types of funds of financial resources concentrated at the disposal of the state, the business sector, households and financial institutions

for the purpose of meeting economic and social needs and ensuring the performance of proper functions.

MATERIALS AND METHODS

Financial systems have certain characteristics:

- each part of the financial system possesses its own specific methods of raising funds for the creation of the financial funds and the direction of their implementation;
- all parts of the financial system have their own specific scope and are relatively independent;
- all parts of the financial system are closely interlinked and will function effectively when the system is perfect;
- the legal basis for each component of the financial system helps to achieve the greatest efficiency;
- each part of the financial systems can be divided into smaller units, depending on the factors affecting the formation and use of the funds of financial resources.

There is not yet a single universally accepted classification of this system; four structural elements are distinguished: the debt market, the derivatives market, the foreign exchange market and the title market. However, with the emergence of cryptocurrencies, one must also consider their potential impact if they develop and spread rapidly. The features and key differences between virtual, fiduciary and digital currencies will be discussed below. All the structural elements are interconnected and function in an integrated way. The constant circulation of capital in the financial environment removes clear boundaries between markets [12].

Virtualisation and globalisation are two mutually interdependent, interconnected processes. The global financial market falls under the simultaneous influence of these factors, manifested in synergies [13]. Virtualisation primarily modifies the shape of the global financial market's operational processes, eventually leading to further specifications in its building blocks [14]. The results of the virtualisation of the global financial market are defined as follows: in the stock market – consolidation of exchanges, rapid development of over the counter (OTC) trading, competition between exchanges and information agencies; in the international derivatives market – deepening of the market and use of conditionally virtual derivatives for speculative transactions in the international currency market – emergence and spread of extra-institutional monetary units (cryptocurrencies); in the global banking sector – international interbank digital payment systems, cloud services and non-bank payment systems [15]. The virtualisation of the financial system manifests itself in the digitalisation of operational processes, the development of digital payment systems (both banking and non-banking), the introduction of cloud services in the financial sector, and institutional consolidation based on server virtualisation [16].

The challenge today is to determine the place of the international derivatives market in the global financial market. The global derivatives market has the

characteristics of both a money market and a capital market. In addition, derivatives have the characteristics of long-term debt capital market instruments. Financial institutions accumulate significant amounts of financial resources around the world. Monetary resources are then reallocated between countries through credit and investment vehicles, further ensuring capital concentration and growth. Through the institutional mechanism of the global financial market, international financial flows are competitively channelled to areas and regions with the highest demand, which will subsequently generate higher profits [17]. International currency markets are global network centres where foreign currencies are bought and sold [18]. Foreign exchange markets guarantee timely international settlements, diversify foreign exchange reserves and provide insurance against currency and credit risks. Significant market fluctuations turn the global currency market into a speculative market.

RESULTS AND DISCUSSION

The modern global foreign exchange market has evolved from the interconnectedness and development of national foreign exchange markets. In terms of the way the market space for buying and selling foreign currencies is organised, the global foreign exchange market is a worldwide telecommunication network that connects banks and brokerage firms in different countries. Thanks to telecommunication technologies, information on the demand for foreign currencies, exchange rates, bank conditions and the like is quickly transmitted [19].

It should be emphasised that the integration of virtual currencies into the global financial market occurs precisely through the foreign exchange market, due to the convertibility of virtual currencies into a national currency (if that virtual currency is convertible).

The world foreign exchange market is several times larger than the scale of other components of the world financial market. For example, the daily volume of transactions is around \$1.5 trillion, increasing by 10% annually. Dollar transactions take the main place here. Transactions are carried out both within states and by partners who are located in other countries. London, New York, Tokyo are the world's centres of international monetary transactions. Currency trading is mediated by major banking institutions. In the world's financial centres, where 3/4 of transactions take place, 10-11% of banking institutions trade.

The international debt market is the place where debt instruments are traded, giving the creditor the right to collect the debt. The debt market is made up of two components: the international credit market (the market for bank loans) and the international debt securities market (the international bond market). These markets are developed based on innovative technologies using telecommunication systems, which predetermine their virtualisation, i.e., they actually circulate in cyberspace. International banking is another important

element of global finance. The transnationalisation of the world economy is reflected in the rapid growth of international banking operations, the emergence of networks of foreign branches, and the promotion of an expansion strategy by the world's leading banking institutions. Since the 1950s and 1960s, banks in Western Europe, the United States, Japan and some other countries have shifted their activities abroad by establishing branches or joint branches with local financial institutions in the host country.

The internationalisation of the credit and financial infrastructure has led to the emergence of transnational banks, which are among the main actors in the global financial system. Although the primary motive of their international activities was to serve the export and import operations of their foreign affiliates, multinational companies (MNCs) used their presence in the recipient country to explore new ways of operating and mainly to expand their fields of operations (innovation, the Eurocurrency market and the like). The virtualisation of the global financial space is the most effective and powerful component of globalisation of the world economy. The global economy is highly internationalised and integrated, characterised by qualitatively new interdependencies, the reasons for which are the rapid development of information and communication technologies. The internationalisation of capital flows is the result of an increased interconnection and cohesion of national capital flows with international capital flows, manifested in the emergence of international forms of capital linkages between different states. The current financial and economic environment states a paradoxical financial globalisation that precedes financial integration. The reason for this paradox is precisely the virtualisation of the global financial market based on the development of innovative infrastructures.

International financial relations have evolved and are influenced, as already noted, by changes in finance itself. The share of financial services in global foreign trade has increased significantly due to the rapid development of server virtualisation, database virtualisation. Financial ties between states are growing stronger. Today, the main global financial flows include international direct investment, international bonds, international loans, international equity capital, and the interwoven stock markets of nations. The mobility of capital flows is therefore increasing. The catalyst for accelerating mobility and spinning up speed is ICT. In addition, greater mobility and diversification of capital flows are structuring the global financial environment more clearly. The re-orientation of capital flows leads to a diversification of risks. Increasing returns on assets accelerate economic growth and the integration of financial markets improves overall well-being. The global changes in the world economy caused by the informatisation of socio-economic realities require the latest revision of the theoretical and methodological foundations for defining the

main provisions of the transformation of the monetary and financial system.

The use of precious metals, first as a means of payment (in the form of coins) and later as a store of value, guaranteed the stability of the financial system. The emergence of the gold standard was necessitated by the need to regulate financial relations between countries, establishing a single equivalent in international payments. Gold was legally recognised as the only form of world money from the Paris Conference in 1867. Since the Bretton Woods Agreement in 1945, the US dollar, with a gold content of 35 dollars per troy ounce, has taken on the role of world money along with gold, and all other currencies are pegged to it. The system of fixed exchange rates ensured the stability of the international monetary and financial system as long as the US monetary unit could serve as the world's reserve currency and exchange dollars for gold. But after Charles de Gaulle's demands to honour his commitments, the US unilaterally stopped the exchange. Fixed exchange rates were replaced by a system of floating exchange rates, legally enshrined by the 1976 Jamaica Conference. Credit forms of money, such as banknotes, cheques and the like, began to serve as the universal equivalent. The modern credit money is devoid of intrinsic value, because its presence at this stage of social-historical development began to inhibit production and commodity-exchange relations.

The modern economy uses fiduciary money. The fiduciary money is superficially similar to intrinsic value money, but conceptually significantly different. The main driving forces in changing the forms of money are the dematerialisation of the economy from energy to information resources and intellectual technology. This process can also be observed in the financial sector. When production and commodity-exchange relations begin to be limited to the value of monetary goods or transaction costs, the measure of monetary value is replaced and given a qualitatively new status, which at each stage of development is objectively limited by the information and technological level of society.

The phenomenon of the "virtual economy" manifests itself in the contradictions arising from the introduction into the financial sphere of the latest information technology. On the one hand, independence from place, time and volume of transmitted information increases the freedom of action of market actors and facilitates the emergence of new financial instruments. On the other hand, advanced information technology allows the creation of gigantic financial pyramids, almost instantaneous transactions in securities, particularly derivatives, and the creation of "bubbles" that hinder productive development and lead to global crises. Transactions with shares, bonds and other securities, in particular derivatives, can in certain cases be classified as speculative virtualisation. The focus on generating ad hoc income from price fluctuations in the value of financial assets is usually refers to financial speculation.

Securities trading is used by businesses to raise capital. But when securities become an instrument of “quick money”, when there is a gap between their real value and their stock market value, then one can speak of a speculative virtualisation of the stock market. Exchange speculation gradually leads to an overvaluation of securities and a substantial excess of stock market capitalisation over the real annual income of the company.

We note that the era of informatisation is integrating the components of the global financial market and globalising the world economy as a whole. This direction of development forms both the obvious advantages of the information society, highlighting the virtual component of the financial system, and serves as a basis for financial abuse and a tool for its implementation. The quintessence of the global monetary and financial system is to fulfil its primary function as an exchange equivalent. The intrinsic value of the means of payment is not required, as this is one of the factors leading to the transformation of money into a commodity. The convergence of information and telecommunications systems with the financial sector is a factor in the changing financial paradigm of the world. A transformation is taking place under the influence of virtualisation, which consists, firstly, in a change in the nature of means of payment, highlighting the information content of monetary units with the simultaneous elimination of intrinsic value, secondly, the transformation of monetary relations into network flows of information and financial resources, thirdly, the emergence of private payment systems and the spread of virtual currencies. Revolutionary developments in information and communications technology (ICT) communications systems and tools have made it possible to synchronise exchange markets across continents into a single global market. The development of the Internet as a global medium for the distribution of financial transactions and investments has led to the movement of financial markets online. The development of network technologies has outpaced existing theoretical and methodological concepts of the stock market, leading to its transformation and the revi-

sion of the very foundations of stock trading. The stock market (securities market), as defined by the Securities and Stock Market Commission (NSSMC), is the part of the capital market where securities are issued, bought and sold. The stock market is an abstract notion that is needed to refer to the actions and mechanisms that allow securities to be traded. The stock market differs from a stock exchange in that a stock exchange is an organisation that brings together buyers and sellers of securities. The main functions of the stock market include:

- 1) capital procurement
- 2) ensuring capital spillovers between sectors and areas of the economy;
- 3) distribution and redistribution of capital among corporations and control over their activities;
- 4) ensuring operational activities on individual capital movements.

The latest trend in the world’s stock markets is virtualisation. Stock market participants are the first to take advantage of the latest developments and opportunities in information technology. Advanced electronic technology and modern means of communication and informatisation have created the possibility of virtualisation of transactions on the global stock market. Today, therefore, the global stock market operates in a global virtual information space through virtual transactions, virtual trading and virtual financial flows. The developed virtual infrastructure of stock markets is embodied in the consolidation of exchanges. Exchange alliances are the next step in deepening virtualisation in stock markets. The following stages can be distinguished in the process of stock exchange consolidation (Fig. 1). The first period of exchange consolidation came at the end of the 1990s. It was then that the first unified stock exchange, Euronext, emerged – a union of the Paris, Amsterdam and Brussels exchanges that was characterised by the integration of the trading, clearing and settlement systems of the stock, futures and commodity markets of the three exchanges. Euronext is the first integrated international pan-European exchange.

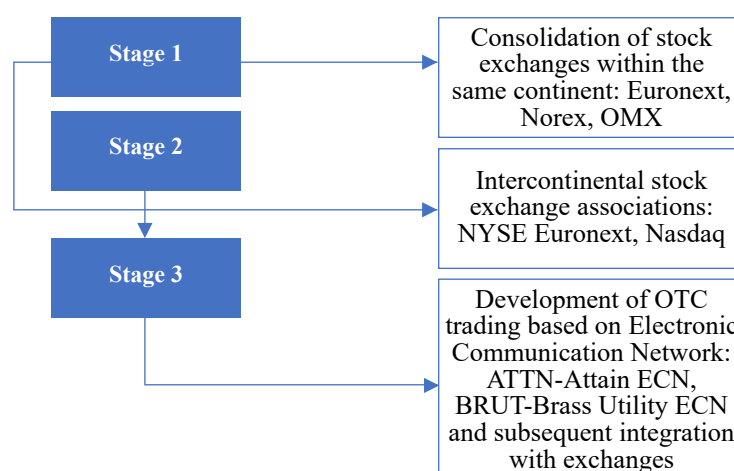


Figure 1. Stages of exchange consolidation

With the formation of Euronext, the integration of stock exchanges in Northern Europe intensified. The next was the alliance of the Copenhagen and Stockholm stock exchanges, NOREX, in 1998. Later, other Nordic and Baltic exchanges also joined the association. The consolidation process in northern Europe was organised through the creation of Aktiebolaget Optionsmdklarna / Helsinki Stock Exchange (OMX).

Intercontinental stock exchange unions began in 2006-2007. The premise was that the New York Stock Exchange (NYSE) and the National Association of Securities Dealers Automated Quotation would compete for entry to the European market. NYSE signed a merger agreement with Euronext in 2006. Consolidation of exchange and OTC trading is the latest unfinished business. Characterised by the use of electronic communication networks in operational activities. The features of the operation will be presented in more detail below. The integration of stock exchanges as a form of spreading the virtualisation of the global stock market has significant effects on the development of financial globalisation. The main motives for stock exchange alliances should be highlighted as the following:

- increasing capitalisation and trading volumes;
- an increase in competition between trading platforms;
- increase of operating time;
- gaining a competitive edge by entering new markets;
- economies of scale;
- increasing market liquidity;
- increasing competition from over-the-counter trading platforms;
- unification of market rules;
- an increase in the turnover of OTC trading;
- the intensification of world globalisation processes.

To assess the stock exchange alliances driven by the virtualisation of the global financial market, let us

analyse the results for one of the most important indicators for the stock market – capitalisation. The stock market capitalisation is a measure of the scale of stock market transactions. It is defined as the total market value of securities.

The virtualisation of the global stock market in the form of continental consolidation (Euronext, OMX) and then intercontinental consolidation (NYSE Euronext → NYSE:ICE, Nasdaq OMX → NasdaqNordic) has driven capitalisation growth on the world's major stock exchanges. In particular, the NYSE Euronext capitalisation dynamic prior to the consolidation agreement (total capitalisation of US \$ 15 trillion) and the year after (US \$ 20 trillion) shows a growth rate of 25% over two years. This trend can be seen both in the NYSE Euronext format (US \$ 24.67 trillion – the highest figure) (Fig. 2) and since the NYSE Euronext became a structural division of the Intercontinental Exchange. As of the end of 2019 NYSE: ICE remains the largest stock exchange in the world with a capitalization of US \$ 25.3 trillion, ahead of the closest competitor, the Nasdaq, by about US \$ 14 trillion.

In contrast to NYSE: ICE, Nasdaq Nordic (formerly Nasdaq OMX), after signing a consolidation agreement, initially showed a negative capitalisation trend of -30% (from US \$ 6 trillion total capitalisation prior to consolidation it fell to US \$ 4 trillion. In the year after the merger, Nasdaq Nordic (formerly Nasdaq OMX) showed a negative trend of -30% (US \$ 6 trillion in total capitalisation before consolidation). However, in the year following the merger, Nasdaq OMX saw its market capitalisation increase by 60% to US \$ 8.78 trillion in the period from the date of the drop to 2013. US \$ 8.78 trillion. The positive trend has continued in the future. As of the end of 2019, Nasdaq Nordic is the world's second largest securities trader with a total capitalisation of \$ 11.23 trillion. US \$ 11.23 trillion (Fig. 2).

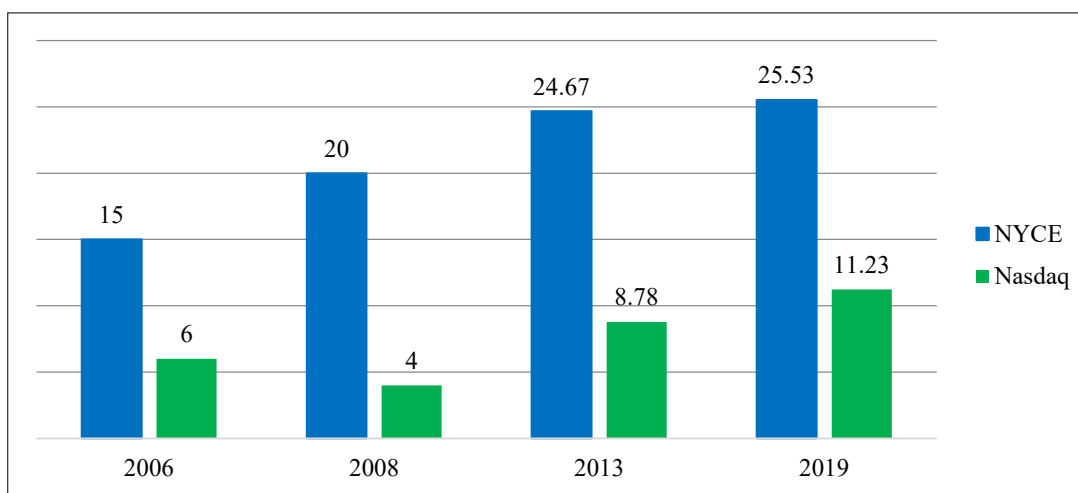


Figure 2. Capitalisation trends 2006-2020 NYSE: ICE and Nasdaq: Nordic (trillion USD)

By analysing the geographical structure of the global stock market's development, it was found that the USA is in first place (53.3% of the global stock market),

Japan is in second place (8.4%), and the UK is in third place (5.5%) (Fig. 3).

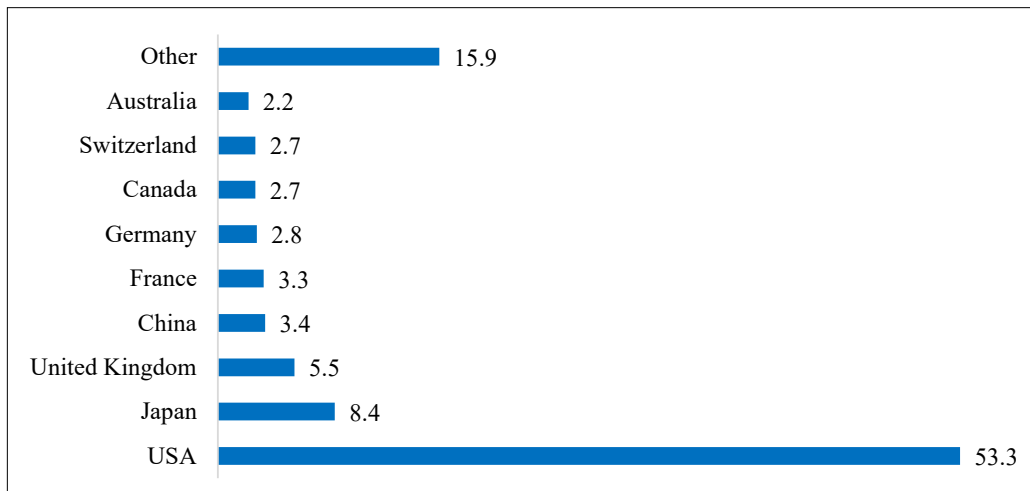


Figure 3. Share of countries in the global stock market, %

The digitalisation of exchange operations offers a number of benefits, namely: fast access to trading venues; accelerated processes for obtaining and distributing exchange price information; rapid settlement, control and accounting, increased stock market liquidity

and capitalisation. Figure 4 below shows the capitalisation levels of the world's largest stock exchanges as of March 2021, with top performers being the NYSE, NASDAQ and Japan Exchange Group.

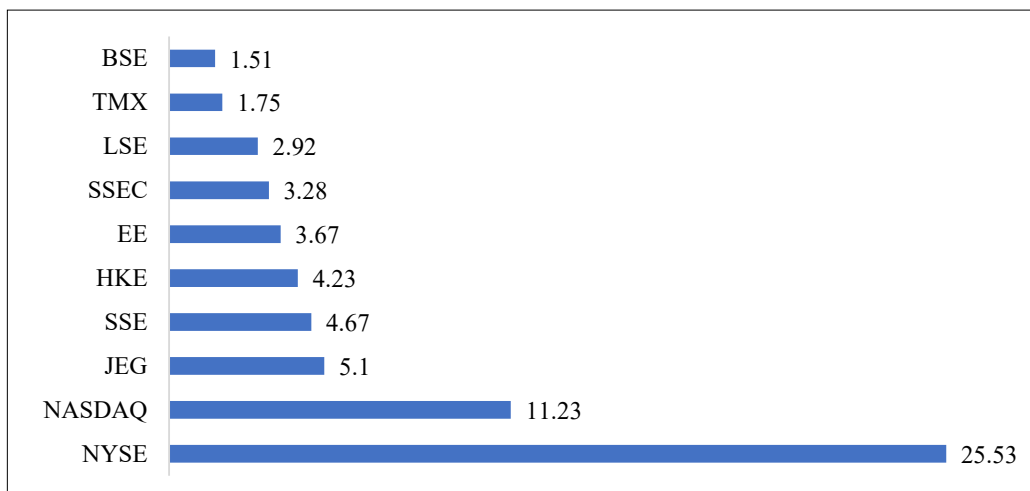


Figure 4. The capitalisation of major traders (trillions of dollars), March 2021

Based on a quantitative analysis of indicators characterising on- and off-exchange trading in securities, it has been established that over the past three years, off-exchange trading in the form of alternative trading systems based on electronic communication systems technology has shown an upward trend. In 2019, the global OTC trading market grew by 22% to 45.3 trillion dollars. In 2019, the volume of the global OTC trading market grew by 22% and reached 45.3 trillion dollars (2018 – 33.863 trillion dollars), while the global stock market saw a decrease in capitalization by 36% from

68.65 trillion dollars in 2018 to 43.27 trillion dollars in 2019 (Fig. 5).

Thus, the virtualisation of the global stock market is the transformation of the market based on the introduction of information and telecommunication technologies in operations, as well as the modernisation (digitalisation) of infrastructure, resulting in the consolidation of exchanges (and, consequently, increased capitalisation of the stock market) and the spread of OTC trading – alternative trading systems (ATS) based on electronic communication systems (ECN) technology.

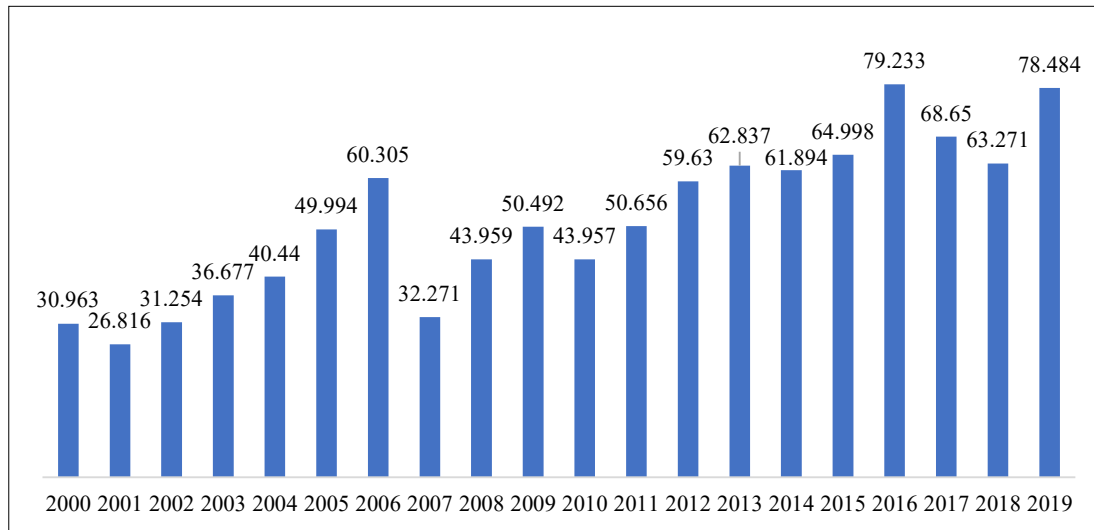


Figure 5. The growth of the securities trading market

A current trend in the virtualisation of the global stock market is the dynamic growth in the use of alternative trading systems as a factor in the development of OTC trading. In describing the current state of global stock market dynamics, it is necessary to note the main

indicators. According to Bloomberg news agency, in November 2015 capitalization amounted to 73 trillion dollars. At the end of 2017, capitalization reached USD 80 trillion dollars (Fig. 6).

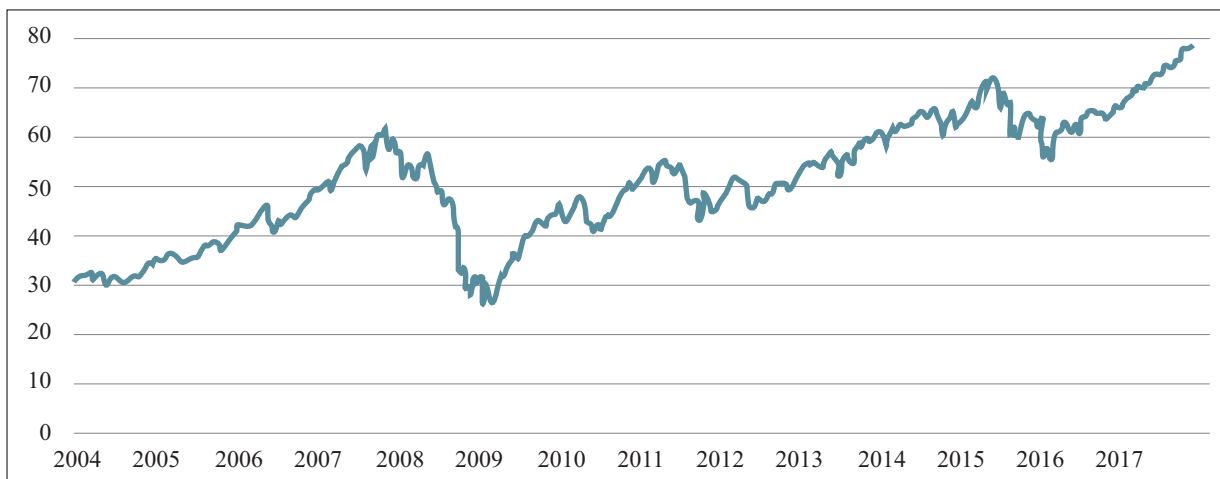


Figure 6. Global stock market capitalisation 2004-2017, trillion USD

The global stock market has been volatile in 2018. The maximum capitalization was in January – 87 trillion dollars, after which a significant recession – the market

fell by USD 7 trillion dollars. The global stock market capitalisation was at 72 trillion dollars at the end of December 2018 (Fig. 7).

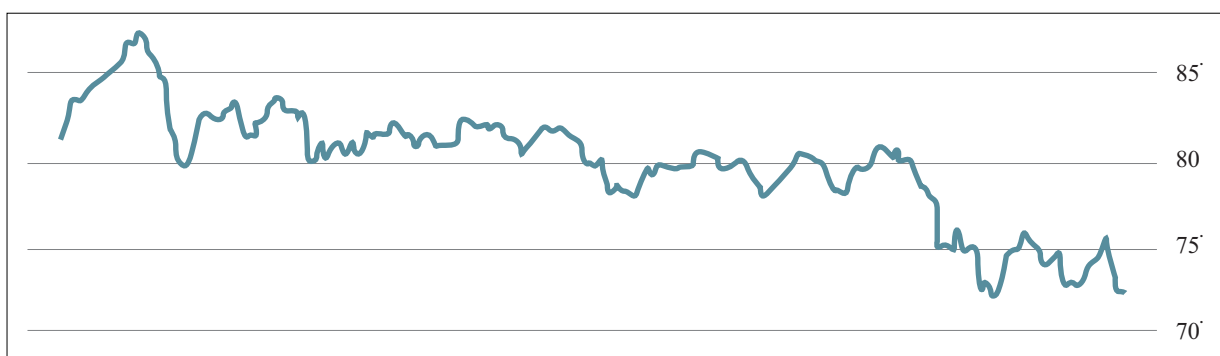


Figure 7. The global stock market capitalisation in 2018, trillion USD

Therefore, given the above indicators, the global trend in the development of stock exchanges is as follows:

- further consolidation and internationalisation of exchange activities based on ITC infrastructure. The need to compete is forcing stock exchanges to go global, using server-based communication networks and virtual environments;

- the universalisation of exchange activities, which is reflected in the organisational unity of financial instruments and clearing, a wide range of information services and the provision of custody and settlement services;

- integration of exchanges with OTC electronic trading systems;

- harmonisation of tendering and information exchange rules.

An analysis of recent trends in the development of the world's stock exchanges identifies the main consequences that could result from a wave of stock exchange consolidations. Here are the main consequences of these:

- the formation of the world's largest trading venues, which are grouped together based on specialisation. These exchanges are expected to have huge trading volumes and become the largest venues in their industry;

- encouraging new alliances. As a consequence, an accelerated process of consolidation and, eventually, the formation of monopolistic entities on the global stock market is possible;

- simplification of procedures, unification of document and listing standards, increased efficiency through the interconnection of systems;

- increasing the supply of securities to investors and reducing the cost of transactions.

Digital virtualisation in the form of the development of Electronic Communication Networks (ECM) is deepening the integration of the global stock market. The Electronic Communication Network (ECN) is an electronic system for executing trades in exchange-traded commodities that attempts to eliminate intermediaries. An ECN links leading brokers and individual traders together so that they can trade directly, bypassing intermediary exchange mechanisms. ECN technology is represented in the order matching system, which allows for the automatic execution of opposite (buy and sell) orders if certain parameters (assets, price, quantity) are matched. ECNs refer to direct-access electronic trading

systems, meaning that an order is submitted directly to the market on behalf of a client using this system. This is the main difference between an ECN and a broker who acts as an intermediary – processing the order in his internal system and placing it in the market on his own behalf. ECN globalises the market because it allows transactions to take place outside of the working hours of a particular locality. The obvious advantages of such electronic systems are:

- the possibility of daily and round-the-clock trading; bidders can be located in different time zones;

- an increase in the number of bidders offering quotes;

- providing participants with all necessary trade information as soon as possible;

- openness to participants who previously had no direct access to trading and could not compete with brokers. Orders even from individuals placed through ECNs appear on the market and can influence market dynamics;

- transparency, i.e., all orders are reflected in the system and information is available to all participants. The best order enters the market (on a particular trading floor) on behalf of the EUN, which has market maker status, meaning the EUN acts as an impersonal broker for its clients, who simply make a huge number of trades between themselves.

ECN technology provides increased security and confidentiality of information about participants and their trades. The ECN pays a lot of attention to this. Different technologies for user verification, separation of powers and access, and data encryption are used.

The proliferation of ECNs demonstrates the benefits of the network. Let's take the Currenex ECN platform model as an example. Currenex is a subsidiary of State Street Corp, a leading provider of financial services to institutional investors. State Street Corp has about 12 trillion dollars in assets + 1.7 trillion dollars in assets. The first independent and open ECN system, Currenex utilises an innovative and patented technology, which aggregates liquidity from the world's 60 largest banks. Currenex was established in 1999 in California. The company now has offices in London, New York, Chicago and Singapore. The system allows for spot, forward and swap transactions. The advantage of the system lies in the near absence of "slippage" – the difference between the real price of the order and the price of the placed order (Fig. 8).

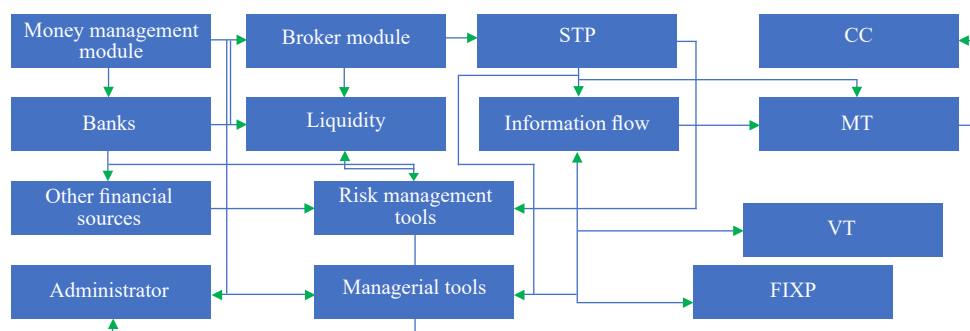


Figure 8. Schematic expression functioning of the electronic communication network Currenex

Figure 8 presents a comprehensive model for the operation of the Currenex electronic communication network, which consolidates liquidity flows, information flows into a single integrated virtual system, using both management tools and risk management. The main task of the communication network is to direct the flow of liquidity. This system is fully automated with no intermediaries. The “broker” module, the money management module, means software robots that help network members carry out the necessary transactions as requested. There are several options for trading platforms:

Currenex Classic is a trading platform aimed at large institutional traders providing fast access to a wide range of trading instruments with all possible order types. As a rule, to trade in the market, it is necessary to deposit a fairly substantial amount of money, which can be done via Currenex Classic. The Viking Trader platform is designed for retail traders with all the necessary features and capabilities, it supports multiple languages, technical analysis tools, online news and allows you to work comfortably on the Currenex network with acceptable requirements according to the size of your deposit. Mobile platforms for phones, smartphones and iPhones, designed to place orders and monitor open positions. FIX protocol – the ability to connect directly to the Currenex network using any application (including proprietary applications) using a special protocol – Financial Information eXchange (FIX) protocol. The biggest advantage of trading on the Currenex ECN platform is the lower trader's finance cost, which is 0.5-1.5 pips for the major currency pairs. Minimum commissions in ECN are achieved by providing quotes from dozens of market makers at the same time, and the system automatically selects the best price for each trade.

Features of risk management include:

- notifications on any margin changes;
- auto-liquidation of positions;
- account control and report on orders and positions;
- sorting accounts for effective risk management;
- providing extended reports, such as the auditors' conclusions.

Bidding through Currenex is restricted to registered persons exclusively. The members of Currenex can be banks, company treasury departments, central banks, international organisations, government agencies and corporate finance managers. Current Currenex members include Intel Corporation, Compaq, Autodesk, Ericsson and some 40 of the world's leading banks as market makers, including ABN Amro, Barclays Capital and Merrill Lynch.

Currenex does not carry out any payments between members, but only generates debit orders from their accounts. Currenex provides its members with foreign exchange market information, research and analytical information and news. The system works through applications. Several standard types of bids are available – limit bid, market bid, “as good as” bid and stop-loss bid.

The virtualisation of the global financial space also leads to another phenomenon – competition between organisations with different activities, competition between exchanges and information agencies in the provision of information services. The Reuters news agency, for example, makes it possible to obtain information on current prices and rates, economic and political news, to be virtually present at stock exchange trading, and to observe the execution of your own orders by stock exchange brokers. However, the information systems of Bloomberg, Reuters, Tenfore, Dow Jones do not allow real transactions of purchase and sale. E-trading brings exchange-traded and over-the-counter commodity and stock markets closer together. Trading in primary and secondary securities is shifting to the over-the-counter sector, as has already occurred with the commodity markets. Derivative futures are traded on commodity futures exchanges. These include commodity price risk markets, forward-looking markets that will allow hedging of real market transactions and particularly risky investments in rights and obligations on assets to preserve funds against inflation and generate additional income.

In the European, US and Asian stock markets, stock exchanges continue to be consolidated to deal in MNC securities, identified by industry rather than country of origin. The virtualisation leads to the exchange and OTC markets becoming part of a single system, as they redistribute financial risk between economic actors. The introduction of modern electronic trading systems stimulates the processes of merging stock exchanges. In the USA, for example, about 30% of transactions are conducted within these systems.

Thus, virtualisation has a powerful effect on the development of the global stock market. With innovative platforms, exchanges are being consolidated and virtualisation is also driving the spread of OTC trading, leading to competition between on-exchange and OTC trading. On the one hand, exchange alliances are formed to confront alternative trading systems; on the other hand, the integration process is a self-perpetuating factor in the virtualisation of the global financial market. Furthermore, there is a future trend towards a merger of the exchange and OTC sectors based on electronic communication networks.

CONCLUSIONS

The virtualisation of the global financial market operates in primary and secondary forms. The process of virtualisation of the global financial market has revealed itself *ex post facto*. The theoretical and methodological principles include: economic cycle theories, money theories, information society theories, and globalisation theories.

A virtualised financial system manifests itself as an interconnected and interdependent integrated set of financial markets, institutions developed based on server virtualisation (information and communication

networks) that serve as its infrastructure support. Given the impact of virtualisation on financial relations, we propose to treat finance as the alienated intrinsic value of goods expressed in the digital form of information and monetary flows circulating in the information economy to mediate exchange and settlement relations. The virtualised global financial system is defined as an interconnected and interdependent integrated set of financial markets, institutions developed based on server virtualisation (information and communication networks) that serve as its infrastructure support. The results of the

virtualisation of the global financial market are defined as follows: on the stock market – consolidation of exchanges, rapid development of over-the-counter trading, competition between exchanges and information agencies; on the international derivatives market – deepening of the market and use of virtual financial derivatives for speculative transactions on the international currency market – emergence and spread of extra-institutional monetary units (cryptocurrencies); in the global banking sector – international interbank digital payment systems, cloud services and non-bank payment systems.

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Генезис інституціонального забезпечення фінансового ринку в Україні: міжнародний аспект

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Анотація. Актуальність статті пов'язана з необхідністю всебічного аналізу новітніх процесів у глобальній фінансовій системі, а також комплексної розробки методологічного підходу до її вивчення. Із переходом на цифрові технології у світовому фінансовому ринку, зокрема при обробці та збереженні даних у електронному форматі, відбувається видозміна форми фінансового обігу, що може спричинити низку проблем і ризиків. У цьому контексті особливу увагу варто приділити міжнародному кредитному ринку та міжнародному ринку облігацій, що фактично циркулюють у кіберпросторі та розвиваються завдяки інформаційно-комунікаційним технологіям. Мета даної наукової роботи полягає у поглибленому аналізі основних глобалізаційних процесів світової економіки та їхній вплив на розвиток конкуренції між біржовою та позабіржовою торгівлями. У дослідженні використані загальнонаукові методи аналізу, теоретичне узагальнення та синтез, а також методи математичного, статистичного та економічного аналізів. За результатами дослідження динаміки капіталізації глобального фондового ринку авторами даної статті було виявлено тенденцію до динамічного зростання послуговування альтернативними торговельними системами, що є фактором розвитку біржової та позабіржової торгівлі цінними паперами. У статті надається всебічний аналіз напрямів впливу діджиталізації на глобальну валютно-фінансову систему, серед яких детально розглядається та обґрунтовується позитивний і негативний вплив. Виявлено негативні ефекти віртуалізації глобальної валютно-фінансової системи, а також сформульовано перспективні напрями модифікації економічної системи та фінансів за введення цифрових технологій. Викладена у цій роботі інформація може бути використана для подальшого розгляду динаміки капіталізації фондового ринку у світі, а також розробки методів з покращення ефективності впровадження цифровізації операційних процесів для окремих підприємств і світової економіки в цілому

Ключові слова: фондовий ринок, розвиток, структура, установа, забезпечення
