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PROSPECTS AND LIMITATIONS IN THE MODERNIZATION OF SECURITIES SETTLEMENT OPERATIONS IN UKRAINE

The article points to the critically insufficient compliance of Ukraine's stock market infrastructure with the relevant international recommendations, first of all in the segment of securities settlements. The author states that despite the creation of market infrastructure in Ukraine and the possibility to avoid problems related to the evolutionary errors, the market participants face numerous difficulties, such as risks in legal empowerment and in the activities of key infrastructure actors, limited competition, excessive transaction costs, ongoing defragmentation of the system of depository accounting, as well as inconvenience and limitations of the existing risk management systems.

The study on the evolution of securities settlement models in Ukraine revealed that the radical reform of infrastructure in 2013 led to contradictory consequences, in particular, the abuse by the settlement bank and the central counterparty of its monopolistic positions, active participation of this monopolist in high-profile market abuse, stagnation in clearing and settlement technologies, and a slowdown in the development of the derivatives market. It was found that, despite lengthy discussions, the updated legislation in the field of organized capital markets, which is designed to implement a number of EU laws and should enter into force in 2021, does not really rectify the problems in the existing infrastructure, in particular due to a rather dubious proposed procedure of securities settlement and conservation for a few more years of the monopoly in the field of settlement and clearing services. It is substantiated that Ukraine has constructive practical experience and skills that can allow to implement the best international standards for building a system of cash settlements in "central bank money", organically integrated into Ukrainian payment system and able to adapt to European payment systems.

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The quality, speed and reliability of calculations allow significantly increase the efficiency of economic institutions. The role of central depositories, settlement and payment systems, and clearing institutions (central counterparties) in developed stock markets is extremely important and it is difficult to imagine all the risks that need to be minimized for the extensive international post-trading system to function properly, i.e. provide settlement on transactions for billions and on tens of thousands of instruments, in different currencies, between millions of counterparties in different jurisdictions, on hundreds of trading platforms, and through "links" in local and international infrastructure institutions.

Typically, the functions of institutions providing depository, settlement and clearing services receive much less attention from investors than the role of investment firms, exchanges and institutional investors. This is due to the significant specificity of services, limited clientele (which includes only professional financial market participants, while ordinary investors do not interact directly with them), and corporate and technological connection of most such institutions with exchanges (therefore, they can be considered just as an auxiliary part of the exchange). Often these actors in the infrastructure of financial markets are compared with the water and sewage system in a metropolis, whose importance only becomes clear only during accidents, and normally is not even noticed [1].

One of the most important components of the infrastructure is the securities settlement systems[2]. The variety of financial instruments, their nature and accounting systems, and requirements for ensuring their high liquidity determine the fundamental task for settlement systems - to ensure the integrity of the financial market. In the context of globalization, any national settlement system is a factor in the competitiveness of both the local financial market and its tools.

The issues of risks in the activities and efficiency of clearing and settlement systems for securities and derivatives have been thoroughly studied by foreign researchers, in particular, G. Alexander, B. Boyd, E.J. Dolan, S. Kahn, S. Carbo-Valverde, S. Kelvin, J. Cox, G. Lieberman, K. Luft, P. Norman, J. Hull, D. Humphrey, H. Schmidel, P. Stolte, S. Mayorov, I Mirkin and others. These issues in the context of the development of Ukraine's stock market and its infrastructure are also studied in the works of domestic scientists and experts, in particular, G. Tereshchenko, A. Drobiazko, O. Mozgov and others. [1–13] However, the issues of the quality of construction and efficiency of the settlement and clearing infrastructure in conditions of immature stock markets and limited financial instruments still remain insufficiently investigated.

[2] It should be noted that international recommendations on financial market infrastructures, one of whose types is the securities settlement system, also apply to other financial instruments.

Given the above, the purpose of the article is to identify the reasons of the extremely slow implementation of settlement models, and to clarify the limitations and prospects for modernization of the institution of settlements for Ukraine's stock market.

Modernization of financial markets infrastructure: modern global approaches and trends

Consolidation and transformation of local stock markets into international ones, intensification of cross-border settlements, global competition and other current trends naturally increase attention to systemically significant elements of financial markets infrastructure (see Table 1).

Table 1

Types of financial market infrastructures in international recommendations

FMI type	Notion's content	Formalization in Ukraine
Payment system, PS	A set of tools, procedures and rules for the transfer of funds between participants; includes participants and operator organization. As a rule, the PS is based on an agreement between the participants and the operator, and the transfer of funds is carried out using an agreed operating infrastructure. Usually PS is divided into large payment systems and retail ones. Unlike in a retail system, operators in a large payment system are normally central banks that use real-time gross settlements (RTGS) or equivalent mechanisms.	The only system of large payments in Ukraine (and the only systemically important payment system) is the Electronic Payment System (EPS), introduced by the NBU in 1993 and providing settlements for banks and their clients within Ukraine. In accordance with the legislation on payment systems and money transfers in Ukraine, there are also domestic and international payment systems created by banks/non-banking institutions, and residents/non-residents. Actually, in Ukraine, there is no specialized PS for the monetary component of securities settlements. Cash settlements are concentrated in the settlement bank (PJSC "Settlement Center", SC): ordinary bank accounts are used for preliminary deposit of funds; blocking, unblocking and transfer of funds under agreements are formalized at the level of clearing (sub-clearing) accounts of brokers and their clients[3].
Central securities depository, CSD	Opens securities accounts (for issuers, depository institutions, other depositories, etc.), provides centralized services for the safekeeping and maintenance of assets, as well as other services that significantly differ in different jurisdictions.	In Ukraine, the functions of the CSD are performed by the National Depository of Ukraine (NDU), which services non-government issued securities. The functions of the depository of government securities (domestic and foreign government bonds, government derivatives, etc.) and local loan bonds are performed by the central bank (National Bank of Ukraine, NBU).
Securities settlement	Allows transferring securities and making payments for them in paperless form in accordance with	In Ukraine, the stock exchanges structurize information on concluded agreements taking into account the offset (as an integral element of exchange technologies), transmit this information to the SC, which verifies it,

[3] The NBU does not mention the RC in the list of important payment systems in Ukraine. The distribution of payment systems by categories of importance is carried out by the NBU in accordance with international practice to bring the activities of significant payment systems in line with international recommendations. The procedure for supervision (oversight) of payment systems and settlement systems in Ukraine is regulated by the NBU Board Resolution of 28.11.2014 № 755. The corresponding entity is the EPS, within which, under the control of the NBU depository, monetary clearing and settlements are carried out when placing and redeeming government bonds. However, the EPS's relation to the settlements performed within the SC is only indirect and too generalized.

Table 1 (end)

system, SSS	pre-established rules. Such systems provide the ability to transfer rights to securities free of charge (for example, in the case of collateral) or for a fee. If the transfer of rights is for a fee, most systems provide delivery versus payment (DvP), when the delivery of securities occurs only on condition of payment[4]. The SSS can perform additional functions of offsetting as an element of clearing and settlements, including confirmation of agreements and issuance of settlement orders. Initially, the definition of SSS in the recommendations also included the CSD and CCP institutions, but later these FMIs began to be considered separately, given the difference in functions, risks and a reasonable trend towards their corporate separation.	performs cash settlements and transmits it to the CSD, which performs securities settlements and transmits information on such settlements to depository institutions for its reflection in the accounting. The NBU as a depository of government securities naturally plays a much greater role in the SSS for government securities: until 2013, the NBU independently provided settlements for securities and cash settlements, now cash settlements for secondary circulation of government securities on the principle of DvP are carried out in the SC, at the same time, the NBU continues to service cash settlements (and, in some cases, cash clearing) for placements, NBU transactions and other types of OTC transactions without complying with the DvP principle.
Central counterparty, CCP	Is an intermediary between counterparties to contracts traded in one or more financial markets, becomes a buyer for each seller and a seller for each buyer thus ensuring the execution of transactions. CCPs have the opportunity to significantly reduce the risks of participants through multilateral offsets under agreements and using more effective risk control tools for all participants. As a rule, CCRs require participants to provide collateral (initial guarantee deposit and other financial resources) to cover current and potential risks. CCRs may share some risks (for example, through default reserves).	In Ukraine, the only clearing institution and the CCR is the SC, which acts only as a technical intermediary between counterparties, but does not assume any risks and does not provide modern effective means of their distribution, creation of reserves, diversification of collateral, etc.
Trade repository, TR	Maintains a centralized electronic record (database) of transaction data, usually on OTC derivatives. These functions, in addition to the main ones, can be performed by the payment system, CSD or CCR.	Ukraine has recently legislated the possibility of creating a TR starting in July 2021, but information on the subjectivity and requirements for this activity is still lacking, as it must be established by regulations of the NSSMC.

Source: compiled by the author based on [15–17].

Since 1989, numerous international organizations (G10, Group of 30, Committees of the Bank for International Settlements and IOSCO, associations uniting central depositories, central counterparties, etc.) have regularly issued advisory reports and recommendations on the construction and operation of financial market infrastructure, settlement models (including cross-border ones), forms of clearing, terms of servicing specific transactions (e.g., repos, securities loans) and markets (both exchange and over-the-counter based ones), settlement guarantees and risk management, etc. [13]. These recommendations are very important for the EU, where the infrastructure was created in local markets, at different times, and in different forms, and has been based on different legal approaches and different technological stan-

[4] However, there are other types of settlements: payment after delivery (Receive Versus Payment, RvP), delivery against delivery (Delivery Versus Delivery, DvD), delivery without payment (Free-of-Payment Delivery, FPD).

dards, so requires significant efforts to consolidate, remove legal barriers, overcome restrictions and encourage competition between infrastructure entities, and create a trans-European system of real-time securities settlements[5].

It is sometimes supposed that it is easier for countries with newly created or restored markets to build their infrastructure from scratch, without making other people's mistakes or repeating intermediate iterations, by doing everything according to the best examples. But it's not that simple. First, there are many best examples and they can differ significantly more than it may seem, so there is a problem of optimal choice[6]. Second, best practices in infrastructure construction (including servicing very specific operations)

[5] The processes of modernizing the infrastructure of the EU financial markets against the background of their rapid development and growing global competition are complex and contradictory. On the one hand, it is important to regulate the consolidation of infrastructure entities in order to reduce their number and facilitate access to their services for investors and financial intermediaries, reduce total market costs for maintaining inefficient institutions, eliminate infrastructure defragmentation and reduce transaction costs. On the other hand, excessive consolidation leads to restrictions of competition and monopolization of the markets of depository, clearing and settlement services, unreasonable increase of their cost and, accordingly, increase of transaction costs and reduction of liquidity. However, the trend of consolidation of infrastructure or, conversely, encouraging competition and the emergence of excessive numbers of infrastructure institutions have a contradictory effect on the numerous and specific risks of market institutions, as minimizing some risks can lead to parallel accumulation of others. Therefore, as in any other market, it is worth balancing the benefits of consolidation with effective competition. This explains the large number of consistent and regular international recommendations, the wide range of organizations involved, the regular analysis and aggregation of existing issues, and the identification of best practices and their periodic review, as these practices can only be best for the current and specific conditions, not forever.

[6] In the history of the development of Ukrainian infrastructure, there have actually been many examples of unsuccessful choices and further reorientation to other models. First of all, it is worth mentioning the establishment in Ukraine of the institute of registrars of securities ownership to serve the initially non-alternative documentary form of their existence (according to rather outdated models), and then – the liquidation of the institute of registrars and its replacement by a full two-tier depository system, immobilization of documentary issues and the subsequent transition to an exclusively undocumented form of existence of issued securities. At the same time, the expediency of implementing the intermediate stage of the circulation of documentary securities and creating an extensive infrastructure for their accounting is questionable, because in the 1990s, when Ukraine's stock market was launched, global trends of abandonment of documentary securities were obvious. This unsuccessful technological choice immediately posed problems for privatization, slowed down the development of the stock market, infrastructure, and investment attraction.

Later, in 2010-2013, due to the acquisition by Russian stock exchanges of control over two of the three leading Ukrainian trading platforms, the national market and its infrastructure generally moved in line with Russia's vision of consolidating market infrastructure as part of a single exchange holding company, which will be provided with a monopolistic position to maximize revenues. The realization of such a choice was hindered by the events after the Revolution of Dignity. Therefore, the Moscow Stock Exchange withdrew from Ukrainian exchange assets, which at the same time lost the ability to operate trading platforms of Russian development. Besides, the situation complicated with IT integration of brokerage systems (also mostly Russian ones) and the use of other software products.

Currently, after another bad choice, the main model is the legal framework and practices of the EU, although the quality of their implementation in Ukraine is questionable. In particular, in contrast to the European vision of encouraging competition, for several years in a row there is a discussion on corporate consolidation of Ukrainian infrastructure based on, on the one hand, the Central Depository and settlement entity (state-controlled) and, on the other hand, one or more local exchanges (with private owners) or a foreign strategic investor. Unfortunately, so far the only investor who claims control over the Ukrainian infrastructure and has already acquired a significant share in the capital of the PFTS exchange is the Bohai Stock Exchange (China), which raises the question of the adequacy of the next possible choice (at least in technological terms).

are oriented to mature, capacious, and liquid markets, which are a natural consequence of the corresponding socio-economic base and high investment attractiveness. For participants of small and low-liquidity markets, the costs of creating a truly high-quality infrastructure can significantly outpace and outweigh the potential benefits, especially if costs can only be recouped in the long run with the prospects of dynamic market development (and may not pay off at all if such prospects will not come true). This does not mean that it is necessary to preserve the current condition of infrastructure, because its efficiency is a significant, though not the only stimulus for stock market development. Infrastructure modernization should be consistent and appropriate to the condition and dynamics of the serviced market, and in separate cases, it may become advisable to upgrade the current local infrastructure. In any case, for immature markets, the task of balanced analysis of international recommendations, best practices, and their timely and adequate (rather than purely formal) consideration is no less important than for developed markets.

In the Ukraine's stock market, the infrastructure has only recently begun to be created, so it seems that it should be free of the problems of evolutionary attempts and mistakes[7]. However, in practice, market participants are facing significant legal risks in the legislation and activities of key infrastructure entities, limited competition and excessive costs in the most important market segments, defragmentation in the depository system, and inconvenience and limitations of the existing risk management systems, which does not contribute to increasing liquidity and market development. This is at odds with ongoing efforts to implement MiFID II requirements, other EU legal provisions, and "best practices" into Ukrainian legislation. The lack of attention to international recommendations in the field of financial market infrastructure is evidenced by the complete absence of their official translations into the state language (which is a prerequisite for their high-quality legislative and regulatory application in Ukraine), as well as by the fact that there is not even a reference to them in the Concept of the infrastructure reform in Ukraine's capital markets approved by the NSSMC [14].

Given the wide range of difficulties associated with the current state and uncertain prospects of Ukraine's stock market infrastructure and this country's stock market in general, below the focus is primarily on the issue of securities settlements, which together with defragmentation and uncertain legal basis fails to provide significant incentives for reform, modernization or at least extensive development.

Infrastructure of financial markets: compliance of Ukrainian practices with significant international recommendations

For adequate assessment of the condition of Ukraine's market infrastructure, it is necessary to define appropriate terminology, which even in international recommendations is quite diverse and may vary depending on the context of individual advisory documents. According to the most basic principles enshrined in international guidelines [15], financial market infrastructure (FMI) is defined as a multilateral system established by

[7] An example of the implementation of really best practices in Ukraine is the construction of a modern banking model, which, although not financially stable enough, but from the very beginning had a high level of IT component, and a clear and efficient two-tier structure.

participating organizations, including the system operator, and used for clearing, settlement or accounting of payments, securities, and derivatives or other financial transactions[8]. FMIs can significantly differ in organization, functions, structure, organizational and legal form, degree of government control (corporate and/or technological), form of licensing and regulation (in particular, within different jurisdictions), etc.

In the context of international recommendations, the FMI includes, first of all[9], systemically significant payment systems, central depositories, securities settlement systems, central counterparties, and trade repositories. It is worth noting, on the one hand, the separation of requirements for different FMI types, including payment systems and securities settlement systems, and on the other hand, their clear relationship.

Comparison of individual recommendations and principles of building a reliable and effective FMI with the actual condition of cash settlements on securities in Ukraine, specified below (Table 2), gives few grounds to state at least an approximation of Ukraine's infrastructure to a level consistent with the recommendations of international experts.

Table 2

Assessment of compliance of the infrastructure of Ukraine's financial market to significant international recommendations

Principles/recommendations	Condition in Ukraine
Convincing, clearly articulated, transparent legal basis in relevant legal areas [15, r. 1; 16, p I; 17, r. 1]	Lack of proper legalization of cash settlements and clearing until 2013. Due to fragmentary regulation at the level of legislation in 2013, specification of clearing and settlement procedures is available mainly at the level of own requirements of the SC, which monopolizes cash settlement services and (conditionally) central counterparty. From 2021, as a result of a legislation update, it is expected that most procedures will be regulated at the level of NSSMC regulations (hardly taking into account the convenience for consumers of settlement and clearing services).
Encouragement of and elimination of barriers to lending in securities and their borrowing as a way to speed up settlements [14 r. 5; 16, r. 5].	The service of lending in securities is exotic for Ukraine given the unsatisfactory condition of market liquidity and the legal registration of such transactions in the depository system[10]. In any case, the regulations of the NSSMC, local documents of depositories and the SC do not provide for the procedure for performing and processing loans in securities.

[8] The FMI establishes a single set of rules and procedures for all participants, technical infrastructure and a specialized risk management system. By centralizing specific activities, the FMI allows participants to more effectively and efficiently manage risks or even eliminate certain risks. In addition, a FMI can help increase the transparency of certain markets. Some FMIs are essential to assist central banks in conducting monetary policy and maintaining financial stability.

[9] Exchanges or other market institutions (including various types of multilateral trading systems) are not formally in the focus of recommendations, although they may have or operate organizations that centrally carry out clearing and settlement. Therefore, the entities of trade infrastructure may also decide to apply all or some of the principles of the FMI.

[10] Attempts to spread marginal lending by brokers stopped at the same time with the drastic reduction in liquidity and the virtual disappearance of any significant segment of Internet trading.

Table 2

The settlement system should eliminate the principal risk[11], linking the supply of securities with the transfer of funds in a way that is achieved through DvP [17, r. 7]	A certain part of settlements in Ukraine, primarily under OTC agreements, takes place on terms other than DvP[12]. Significant costs of access to the services of the RC, which monopolizes cash settlements on DvP terms, as well as the lack of adequate risk mitigation models that would encourage liquidity (because settlements on exchange transactions only take place on the terms of pre-deposit of 100% of transaction assets), lead to off-exchange transactions and a corresponding increase in principal risk.
Clear and transparent management system to ensure safety and efficiency [15, r. 2; 16, p X; 17, r. 13]	Despite operating in the form of a public joint stock company, corporate and regulatory control by the state, and overall SC activities should be classified as extremely risky. In any case, so far all SC leaders have been fired as a result of scandals, as SC's operational activities have been associated with market abuse.
A stable system of risk management, incentives for participants to manage and reduce risks. Adequate resources to cover the credit risks of each participant. Use of low-risk collateral. Coverage of credit risks using an effective system of guarantee deposits [15, r. 3-6; 16, pp. II – III; 17, r. 9]	The risk management system of a commercial bank in the RC is purely banking. At the same time, the system of settlements on securities has its own specific risks, radically different from banking ones. Thus, in fact, the SC "gets rid" of the above mentioned risks by "offering" (using its monopolistic position), a cumbersome and inconvenient model of settlements with a 100% pre-deposit of securities and funds. Moreover, in Ukraine there are no legal conditions for the introduction of a system of guaranteeing settlements through the creation of collective guarantee funds and special regimes for the operation of cash accounts[13]. RC does not provide brokers with incentives to reduce risks, increase the speed of settlements and liquidity (there are no opportunities to provide securities, create individual and collective guarantee funds, borrowings in securities, etc.). RC does not provide brokers with incentives to reduce risks, increase the speed of settlements and liquidity (there are no opportunities to provide securities, create individual and collective guarantee funds, borrowings in securities, etc.). The only example of encouraging brokers to make payments under exchange transactions was the so-called "group report" mode (virtually no deposit of assets, within pools of pre-planned fictitious transactions), which led to several criminal proceedings on the grounds of money laundering, tax evasion and price manipulation. Settlements for SC derivatives are not serviced.
Transparency of rules, procedures, tariffs [15, r.23, 17, r.17]	Insufficient transparency and unpredictability of the procedure for providing access and cost of SC services. Excessive number of documents regulating services, difficult access to previous tariffs for comparison with existing ones, etc.

[11] Principal risk is the credit risk associated with the possibility of a complete loss of value under the agreement. The term is associated with agreements where there is a lag between the final settlements of the s parts of the agreement.

[12] In particular, the Resolution of the NBU Board № 100 of 18.09.2018 for OTC transactions on government bonds, in addition to DvP, also provides for the possibility of settlements using the principles of "supply of securities without payment" and "payment against the supply of securities". Alternative DvP principles can also be used to perform settlements when placing local bonds.

[13] The issue of the system of guaranteeing settlements in the stock market, in our opinion, should be considered in the context of the clearing system (which is the subject of a separate article), but the special regime of using cash accounts directly affects securities settlement systems and payment systems.

Table 2 (end)

Making cash payments in central bank money[14], and in the absence of such an opportunity – reduction of risks of the sett-lement bank [15, p 9; 16, p VI; 17, r. 10]	Settlements on securities in central bank money in Ukraine are not performed[15]. The SC has the status of a bank, so it must control its own credit and liquidity risks. In 2021, the SC is expected to be deprived of the bank status, so the question arises which bank will become the settlement bank (i.e. which bank (s) will service the non-bank SC), which settlement model will exist, how to reduce its risks, what will be the role of the SC and whether this will cause an imbalance in the banking system[16].
Fair and open access to the services of participants and other infrastructure entities, including trading platforms [15, p 18; 16, p. IX; 17, r.14]	Given its monopolistic position, the SC independently establishes access procedures and the cost of services not only for brokers and their clients, but also for stock exchanges. In particular, nothing, except the own wishes of the SC management, justifies the exchanges' payment for the SC services, expressed as a percentage of the calculated exchange rates when setting tariffs and agreements (on whose terms the SC as a monopolist can easily insist without any restrictions),
Efficiency of meeting the needs of participants and serviced markets, cost minimization [15, pp. 21, 16, p. VIII, 17, r. 15]	The recommendations will directly link the efficiency of the infrastructure with control and minimization of costs, as well as its feasibility for users (i.e. the system should take into account the structure of the local market, its history and rules, and technology development). One of the important mechanisms for improving efficiency is competition. In general, to ensure security and reliability of operation, settlement systems should operate simultaneously and at the lowest cost to meet the users' needs. Conversely, in Ukraine, in the absence of competition and state regulation of the cost of services, the SC has the opportunity to abuse its monopolistic position and increase tariffs uncontrollably. This leads to a multiple increase in transaction costs in the market, a decrease in the number of bidders (SC's customers), a significant decrease in liquidity and trading activities, a negative impact on all trading segments with a small average volume of transactions, which is insufficient to cover infrastructure costs, and a virtual cut-off of the average investor from the market.

Source: compiled by the author in accordance with the principles (p.) of [15] and [16], recommendations (r.) of [17], current and previous versions of laws and regulations, and documents of market infrastructure entities.

Evolution of the models of monetary settlements on securities in Ukraine

For a long time, approaches to improving the efficiency of Ukraine's stock market infrastructure have been focused almost exclusively on disputes over the consolidation of existing depositories and foundation of a Central Depository. All the more so as this issue was associated with the difficult history of Ukraine's depository system, filled with numerous discussions and conflicts.

[14] The term "central bank money" in the applied sense for the Ukrainian banking system is equivalent to the calculations at the level of correspondent accounts of banks in the central bank (NBU)

[15] Although the settlement model, which was introduced in the 1990s by the NBU as the depository of government securities using the so-called "ampersands" (automated payment orders of the NBU to write off/transfer funds for the banks that served the parties of agreements) and worked until 2013, was quite close to the principles of cash settlements in the central bank.

[16] As was the case in 2014-2015, when the SC conducted a risky credit policy, in fact competing with banks using funds of those very banks and of other brokers reserved for trading. In 2015, the elimination of own risks associated with the SC operations in the interbank lending market led to numerous bank failures (see below).

The first key market infrastructure entity in Ukraine was the Interregional Stock Union (ISU) depository, which was established in 1997 as part of a USAID project[17] and long functioned as the only non-government securities depository in the country. At the end of 1998, the stock market regulator (NSSMC) and the central bank (NBU) concluded an agreement on the establishment of the National Depository of Ukraine (NDU). However, according to the 1999 Memorandum between Ukraine, the United States and the World Bank, the NDU only performed the activities of codification of securities issues, standardization, etc., and was not to but perform any operational functions until 2010.

Since 2006, without waiting for the Memorandum to expire, the NDU started operational activities. In 2007-2013, there was fierce competition on the depository market. Some market participants, given the long history of cooperation, considered the ISU (whose operating activities, in 2009, through highly controversial corporate transformations were institutionalized on the basis of JSC "All-Ukrainian Securities Depository", AUSD) as a depository, which was more market oriented (although the share of NBU and state-owned banks in the structure of AUSD shareholders gradually increased), habitual and, accordingly, deserving of the basic role in the depository system. At the same time, the functions of government bond depository from the very beginning (since 1996) were performed by the NBU.

The existence of three depositories in 2007–2013 was a significant problem, because such an excessive number of depositories for a small local market led to defragmentation of the depository system and technological difficulties. Exchanges and depository institutions were forced to implement significantly different approaches of different depositories to information exchange technologies, their formats and standards, the IT applied, and so on.

Uncompromising competition between NDU and ISU-AUSD-SC gave the false impression that the centralization in the depository system is the main (if not the only!) problem of market infrastructure, but in reality there were lots of problems, most of which were not solved during the legal changes.

In particular, the lack of unification in the calculation models was no less significant. First of all, it applied to the monetary component of calculations. Unlike settlements in securities, which are conducted within a two-tier depository system (central depository and depository institutions) and are characterized by quite standard approaches, building a system of cash settlements based on the effects of stock market operations is a non-trivial task[18].

[17] The consequences of USAID projects in general turned out to be quite significant for Ukrainian stock market. Thus, ISU was created simultaneously with the project to introduce in Ukraine in 1996 the first electronic platform for securities trading (PFTS), which during 1997-2009 definitely dominated the market (with the status of exchange platform only acquired in 2008). Subsequently, the PFTS faced competition from new technologically advanced exchanges (Perspektiva and Ukrainian Exchange), but still holds a significant market share and is leading in the number of securities admitted to trading.

[18] At first glance, it seems that in the world these systems function quite similarly, however, despite certain trends towards standardization due to the globalization of markets, there are a significant number of local differences and nuances. Similarly, cash settlement systems (payment systems) are not similar to securities supply systems, as they have historically been much more competitive: competition between depositories or central counterparties in local or international markets is a trend of recent decades

Before 2007, there were no special settlement models for stock market in Ukraine. This was largely due to the targeting of exchange transactions, the lack of the exchanges' control over their execution and the brokers' traditions of non-obligatory fulfillment of exchange transactions[19]. Cash settlements did not undergo any standardization and were performed by exchange traders in the same way as over-the-counter settlements, that is, using own or client accounts in any bank, with independent settlement of counter-obligations, etc. Neither exchanges nor depositories had unambiguously confirmed information on the execution of monetary settlements. Certainly, under such conditions, it was impossible to introduce advanced trading technologies (in particular, Order-Driven Market) and to service any significant intraday trading activity.

However, in 2007-2009, attention to the issues of standardization and settlement guarantees considerably increased: due to increased liquidity, greater technological competition between PFTS, Perspektiva and Ukrainian Exchange, the introduction of Internet trading and many software products for business automation for market participants. In 2007-2013, at the initiative of exchanges and/or depositories, numerous cash settlement options were executed following the results of exchange trading, which often had significant legal or fiscal shortcomings (due to inconsistent legal framework in terms of payment systems and money transfers, on the one hand, and in the depository sphere, on the other hand, as well as due to the scares and fragmentary nature of the legislation on clearing and settlement of securities.

Among the calculation models existing until 2013 (Fig. 1) it is worth noting the following ones.

1. *Settlements within the current account of depository opened in the settlement bank.*[20].

caused by integration, and competition in payment systems has always existed and has only recently intensified due to the emergence of alternative, non-bank payment institutions. It is these contradictory factors (attempts to eliminate inefficient institutions and consolidate infrastructure for the use of economies of scale, on the one hand, and to encourage competition to combat abuse and organically integrate securities settlement systems into the existing payment systems, on the other) that explain frequent upgrades of the international recommendations.

[19] At the stage between exchange conclusion and its actual execution, the agreement could be changed or annulled in any way – actually without any consequences, so, according to the IFU, in 2006 only 5% of exchange transactions were settled in accordance with initial conditions. This situation lasted on the main trading platform (PFTS) for at least 10 years and became a tradition. Instead of reserving assets, brokers used compliance elements to guarantee settlements, which excluded unaddressed and anonymous transactions, and thus called into question the competitiveness of pricing, as the agreement could be concluded at one price and actually executed at another (or not executed at all). With prior approval of the terms of transactions by brokers, the absence of guarantees of settlements and legal consequences of non-performance of exchange transactions, this led to the profanation of exchange pricing.

[20] Sequence: a) transfer of the broker's funds to the bank account of the depository institution; b) transfer of funds by the depository institution to its current account in the settlement bank (NBU), c) separation and "blocking" of funds on the securities trader' depo accounts in the depository; d) the depository provides the exchange with information on "blocked" funds by individual brokers and depository institutions (Fig. 1).

The depository is not an agent of payment infrastructure[21] when transferring funds, and depot accounts in the depository, of course, are not intended for monetary settlements by the legislation on payment systems and money transfer, while in the operational context this settlement model made it impossible to issue primary documents and led to related problems of market participants with fiscal authorities. The model was also inconvenient for securities traders (brokers) who did not have a depository license; hence, bank accounts of third-party companies (depository institutions) were used to block/unlock funds, which increased the model's operational and communication risks.

2. *Settlements using securities trader's cash accounts opened in the depository*[22].

In 2010, an attempt was made to upgrade the previous model for one of the depositories. The NBU decided to grant the AUSD the status of participant in the Electronic Payment System (EPS) [23] and the right to open cash accounts, which made it possible to use a model in which the depository actually played the role of a bank. This model was largely intended to legitimize the transfer of funds.

However, the role of the NBU as a central bank in this model did not increase, and the NBU and banks were not directly involved in the transfer of funds following the result of stock trading. The model removed banks from their natural function of participation in the transfer of funds and, moreover, the depository actually "competed" with banks, taking liquidity away from the banking system. Besides, such a conglomeration of various functions automatically and unpleasantly increased the concentration of clearing and settlement risks[24].

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[21] According to the Law of Ukraine "On Payment Systems and Funds Transfer in Ukraine" of 05.04.2001 № 2346-III, funds transfers in Ukraine may be carried out by banks and through payment systems (domestic and international), funds transfer activities may be carried out by banks, as well as payment organizations of the payment systems, participants of payment systems and operators of payment infrastructure services after their registration by the NBU (Article 9); accounts used for the transfer of funds may be opened by banks and participants in payment systems in accordance with their rules (Article 7).

[22] Sequence: a) transfer of the broker's funds to the depository institution's bank account; b) transfer of funds to the depositary institution's cash account opened with the depositary; c) the depository provides information to the exchange on blocked funds by individual brokers and depository institutions (Fig. 1).

[23] Resolution of the NBU Board of 16.02.2010 № 68 "On granting PJSC "AUSD" the status of a participant in the NBU electronic payment system" (URL: https://zakon.rada.gov.ua/laws/show/v0068500-10#Text), Procedure for opening, using and closing accounts in the national currency by PJSC "AUSD", approved by the NBU Board on June 10, 2010 (URL: https://settlement.com.ua/periodical-publications/news/2010-08-10-20-42 -24.html). In this model, depository institutions (not all brokers) have the opportunity to open their own cash accounts in the depository (with a specialized mode of use: only for settlements on securities) and manage their own and client funds within their limits. The movement of funds on the cash accounts of depository institutions opened with the AUSD and blocking of funds as a result of exchange trading were reflected in the system of depository accounting of the depository and depository institutions. Funds for participation in the bidding were transferred to the current cash account of the AUSD in the NBU and via the depository's automation facilities were reflected in the cash accounts of depository institutions. However, neither the existence of a current depository account with the central bank, nor the possibility for the depository to open cash accounts for customers (depository institutions) indicate adequate integration of the model with the payment system.

[24] Building models of cash settlements or clearing based of the depository is not considered by international recommendations as an acceptable option. The use of central bank money for settlements is considered optimal and least risky. In the absence of such a possibility, the use of funds of a commercial

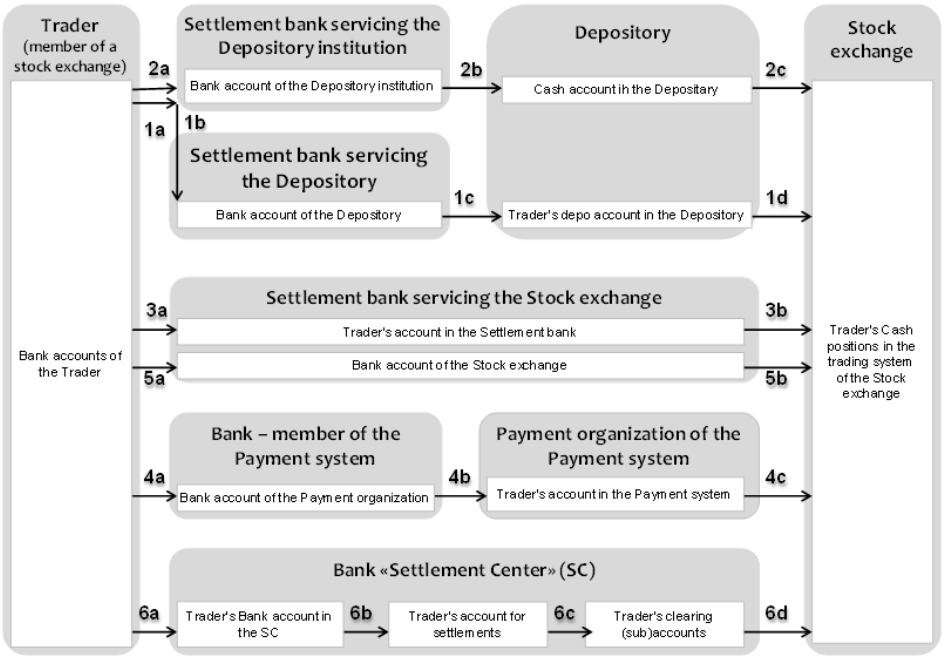

Fig. 1. Evolution of approaches to preliminary blocking of securities trader's funds for participation in stock trading within the settlement models in Ukraine in 2007-2013

Source: compiled by the author in accordance with current and previous versions of legislative and regulatory acts, depository documents, SC and stock exchanges.

3. Settlements using accounts opened for each participant of exchange trading in the settlement bank servicing the stock exchange[25].

This settlement model was introduced during 2007–2008 by Perspektiva and UkrSibbank (BNP Paribas) as a settlement bank. Opening accounts for each bidder turned such a model into a completely legitimate one, but did not solve the problem of integration into a single system of securities settlements. In the case of using the model with a single settlement bank, a conflict of interest arises between banks, because all banks and their client securities traders have to deposit funds to participate in exchange trading only in the settlement bank. Indeed, almost every large bank claims a settlement function, as it does not consider it advisable to "share" the finan-

bank is allowed, where the accounts of the FMI and its participants should be opened, but this may expose them to additional credit and liquidity risks, which should be tightly controlled and limited [15]. In the presence of a single commercial settlement bank, the impact of its bankruptcy on the participants in the settlements will be particularly strong, as the risks of potential losses for such a bank will be large, involuntary and difficult to control by the participants. [17] At the same time, calculations using the FMI's own capabilities lead to a dramatic accumulation of these risks added to those inherent in the main FMI activities. In the case of a depositary, the risks of the "minority" (clearing and settlement participants) extend to the "majority" (all members of the depository system).

[25] Sequence: a) transfer of funds to the broker's account, opened in the settlement bank for participation in trading on the stock exchange; b) provision, by the settlement bank, of the exchange's information on blocked funds by individual brokers (Fig. 1).

cial resources of its customers with another bank. In addition, in this case, the functions of the single settlement bank were performed by a universal bank, which led to the concentration of risks from routine banking activities and those of a settlement bank. Unfortunately, the need to differentiate such risks was not fully taken into account in the legislative changes in 2012 and the practice of the SC [18].

4. *Settlements using accounts opened for each participant in exchange trading in the payment organization of a specialized payment system*[26].

In 2009, based on the experience gained in ensuring organizational and technological interaction between Perspektiva and the settlement bank, the intra-country non-bank payment system "Settlement Fund System" (SFS) was created, whose payment organization (PJSC "FK Modern credit technologies", MCT) received permission from the NBU to perform settlements under securities agreements. In 2009-2013 it successfully competed with depository models in the area of cash settlements, in 1212 it began to service cash settlements on derivative (first on Perspektiva, later also in the commodity market).

Unlike other models, SFS gives almost every bank the advantages of a settlement bank: the bank's membership in the payment system not only gives it the maximum convenience for its own participation in bidding by blocking funds on the account of the payment organization that opened the bank account (i.e. on its own correspondent account bank), but also allows it to continue to operate with the financial resources of the brokers (securities traders who have accounts in such a bank). Of course, the broker too is more comfortable to continue to be served in the bank, whose terms of service (including lending) he is familiar with, than to resolve issues of the interaction with any other bank selected by the exchange/depository as the settlement bank. Each broker receives primary documents on blocking/unlocking/movement of funds in the SFS following the results of bidding and settlements, he controls the account balance in the SFS through a software product (analog of Internet banking) and, following the trading, independently initiates withdrawal of funds from the SFS to any chosen bank or leaves funds in the SFS for subsequent bidding. The accounts of the payment organization in the SFS member banks have a specialized regime and are used exclusively for settlements on financial instruments. Since the payment system is specialized, that is, there is an exclusive activity (transfer of funds under agreements on securities and derivatives); the risks of universality of the institution are eliminated. The payment system quite logically integrates into the existing, well-developed interbank payment system, with no need to concentrate funds in one bank due to the distribution of funds blocked on the accounts of the payment organization itself[27]. Thus,

[26] Sequence: a) transfer of funds to the current account of the payment organization, opened in a bank-member of the payment system, to replenish the broker's accounts in the payment organization; b) transfer and blocking of funds on the brokers' accounts in the payment organization for participation in exchange trading; c) provision, by the payment organization to the exchange, of the information about blocked funds by individual brokers (Fig. 1).

[27] To some extent, this model is similar to the settlement systems that the NBU has implemented as a depository for government bonds. Models of monetary settlements on government bonds have also been

the SFS is the only settlement model in Ukraine, which ensures interbank competition within the payment system.

In addition, the SFS solves the biggest problem of models 2 and 3, related to the need to block funds for settlements, because Ukrainian Civil Code and legislation on payment systems and money transfer does not provide for the possibility of blocking funds on current account in the bank. Therefore, there is a risk of writing off funds at the broker's initiative of and insufficient assets for settlements. Instead, in the SFS, funds from bank accounts are credited to accounts that provide a special mode of operation and allow blocking and unblocking funds on the exchange's order.

5. Settlements within the exchange's current account opened in the settlement bank[28]

Models similar to the calculations within the depository's current account have been used by individual stock exchanges. Moreover, until now, cash settlements on derivatives are executed on separate exchanges (Ukrainian Exchange, UICE) using a regular bank account opened by the exchange in a bank, and conditionally clearing (that is, not provided by law) accounts in the accounting system of the stock exchange, as settlement center services settlements exclusively on securities. It is clear that this model is characterized by the problems of a single settlement institution with a concentration of profile and settlement risks similar to models 1-3.

Reform of the infrastructure of Ukraine's stock market

Despite proposals from international organizations (including the World Bank and USAID), the consolidation of depositories did not take place, and in 2013, the NDU began performing the functions of central depository. Instead, ISU-AUSD, following the radical legislative changes in the construction of market infrastructure, which came into force in 2013[29], changed its name (to PJSC "Settlement Center for servicing contracts in financial markets", *SC*), ceased depositary activities, received the status of a bank, began to provide monopolistic services for cash settlements on securities, and formally became the sole Central counterparty on securities agreements, and in the context of the corporate structure became, like the NDU, closely controlled by the state (in particular, the NBU's share in SC's capital increased from 25 to 77.57%[30]).

repeatedly adjusted, but the natural role of banks as participants in monetary settlements was always taken into account. Since 2013, government bond settlements have been similar to other securities (through the SC), although the settlement scheme for government bond auctions continues to be controlled by the NBU (as the agent of their placement) and contains elements of much more efficient and understandable monetary clearing than that, which takes place in the SC (offsetting mutual liabilities and claims as to the transfer of funds at the coincidence of the issuance and repayment of government bonds).

[28] Sequence: a) transfer of funds to the exchange's account, opened in the settlement bank for participation in trading on the exchange; b) provision, by the settlement bank to the exchange, of the information on blocked funds by individual brokers (Fig. 1).

[29] The Law of Ukraine "On the Depository System of Ukraine" of 06.07.2012 № 5178-VI updated the legislation in the depository area and amended a number of other laws on the stock market. These changes in terms of updating the functions of market infrastructure entities came into force on 11.10.2013.

[30] In 2017, according to the results of the additional issue, the share of the NBU increased to 83.55%, and the authorized capital of the SC increased from UAH 153.1 to UAH 206.7 million.

Thus, instead of two competing depositories of non-government securities, in 2013 a central depository (NDU) and a specialized bank (a monopolist in the market of cash settlements for securities and clearing services (SC)) were created in Ukraine.

Besides, since 1996 until now, the NBU has been performing the activity of accounting and servicing settlements in government bonds as a depository and their placement agent. Clearing and settlement on derivatives (exchange and over-the-counter ones) take place outside the SC (centralized[31] clearing of derivatives is carried out by exchanges, although the latter cannot perform the functions of the Central Counterparty). There is also absolutely no centralized and effective infrastructure for clearing and cash settlements in the commodity market. That is, Ukraine there are opportunities for further development and consolidation of market infrastructure.

The only possible model of cash settlements on securities on the principle of DvP in Ukraine is *the use of accounts opened for each bidder in a specialized bank (SC)* [32]. This model of settlements (it was implemented following the changes in national legislation, started on 12.10.2013 and remains relevant) can be only considered as a development of the model that uses cash accounts of the securities traders in the depository.

Given the previous experience of the SC as a depository, little has actually changed in the settlement system. The SC was and remains the technological and ideological successor of the depository, in particular in terms of ensuring the priority of convenience primarily for the FMI itself, and not for market participants serviced by this FMI (stock exchanges, brokers, investors).

The activities of the settlement bank were hardly new for the RC, as ISU-AUSD-SC has faced problems of monetary settlements following stock trading earlier (it even tried to implement its own, not very successful, model - see model 2), and also declared clearing (actually it meant checking the results of the accounting of counter-liabilities and adequacy of assets, that is offsetting performed by stock exchanges). It should be noted that clearing and settlement procedures are often quite difficult to separate, and the modern understanding of clearing goes far beyond simply defining mutual liabilities under the transactions on financial instruments, in the same way as a modern central counterparty is far from being solely a technical buyer and seller on agreements. Thus, we can assume that in fact the only function of the SC is cash settlements.

Quite similar to the previous model of settlements that uses brokers' cash accounts opened in the depository, and using a rather blanket approach to the legislation, the SC built its own model of cash settlements in the stock market.

Despite the availability of an institutional framework (logical and consistent legislation on payment systems and money transfer in Ukraine, which directly offers an adequate payment model for the securities settlement system, the relevant detailed

[31] Other types of clearing for exchange-traded derivatives are inappropriate.

[32] Sequence: a) transfer of funds to the broker's current account opened in the SC; b) reflection of assets on accounts for settlements in the SC; c) blocking assets for participation in exchange trading on clearing accounts/sub-accounts of the brokers (their clients) in the SC clearing system; d) provision, by the SC to the exchange, of the information about blocked funds by individual brokers and their clients (Fig. 1).

NBU regulations for payment systems, and classification of the securities settlement system as "systemically significant "), the authors of the reform went a different way.

Certainly, the SC model has become clearer and initially more attractive to the market compared to previous depository settlement schemes. There are several reasons for this:

1) finally, the settlement model in funds close to the payment system has been institutionally legitimized, which favorably differs it from most previous models;

2) operating activities in the sense of cash settlements are now as close as possible to activities usual for banks' payment services;

3) the active accounts (ordinary bank's current accounts, to which brokers can credit funds for participation in trading, as well as keep or transfer balances from the SC), on the one hand, and, on the other hand, clearing accounts/sub-accounts[33] for the reservation of assets (securities and funds) and performing clearing and settlement under securities agreements, are now functionally separated[34];

4) there is a possibility to open and maintain collective and personalized clearing sub-accounts for clients, and accordingly a clear identification of all beneficiaries in settlements;

5) brokers receive more or less clear and separate primary documents on the movement of funds on current and clearing accounts/sub-accounts and use software to control the movement of funds (Internet banking for current accounts) and blocking/unlocking assets (Internet clearing for clearing accounts/sub-accounts);

6) unification of settlement models into a single option for all stock exchanges, probably, initially added convenience to brokers, although it limited competition and opportunities for technological development of exchanges.

On the other hand, the formalization of the securities settlement system in the form of a commercial bank (and then creation of a bank based on a depository, whose main management activity has always been and remains the exploitation of its monopolistic position on the market) soon demonstrated the disadvantages of this approach:

1) The SC has become not just a specialized bank, but one that performs a monofunction: cash settlements on securities, i.e. specializes in services provided exclusively to participants of the stock market, which at the time of the functioning of the

[33] The legal status of clearing accounts/sub-accounts in the SC (procedure for their opening, mode of use, restrictions, etc.) is not provided by the existing legislation (in particular, legislation on depository system, stock market, payment systems and funds transfer in Ukraine, and NBU regulations) and hence is questionable. For comparison: the modes of accounts opened in banks are regulated in great detail not only at the level of laws, but also at the level of the Civil Code of Ukraine, in particular, the current bank account is dealt with in 12 articles of the CCU (§ 1 Chapter 72, Art. 1066–1076), conditional storage account (escrow) in 8 articles of the CCU (§ 2 Chapter 72, Art. 1076^1–1076^8). At the same time, clearing is not even mentioned in Ukraine's Civil Code.

The only definition of accounts used for clearing is available in a bylaw (Regulations on clearing activities, approved by the decision of the NSSMC of 26.03.2013 № 429). However, these definitions do not add much legal certainty, as they refer to the internal documents of the person who carries out clearing activities and do not specify the mode of operation of clearing accounts/sub-accounts.

[34] However, the need to reserve assets separately (including funds) for trading on different exchanges and for settlements in different depositories (NBU and NDU) still leads to significant operational difficulties for brokers, as it is necessary to block assets after trading on another exchange (off-exchange) or other type of securities, which requires both time and financial costs.

SC began to lose depth, liquidity and number of participants (later these trends only intensified, not least - due to the SC's tariff policy);

2) despite such a narrow market specialization, the SC as a commercial bank must meet all the numerous and considerable requirements of the banking law (to the greatly ramified structure of management, organization, IT, and banking risk management, which are significantly different from clearing and settlement risk management systems);

3) the SC was legally institutionalized as a central counterparty (CCP), but these functions are performed in a purely formal manner (the SC becomes a CCP only in the case of 100% assets provisioning by the transaction parties, i.e. in principle does not assume risks, working like a so-called facilitated ("light") CCP[35]). On the one hand, this was a step forward compared to some previous versions of central counterparties[36], at least the presence of (although formal) CCP in the form of a bank controlled by the NBU, greatly simplified life for banks and they were able to avoid exhausting compliance with each counterparty [19]. On the other hand, stock exchanges or related companies were deprived of the opportunity to perform the functions of CCP, which became an additional factor in the monopolization of clearing and settlement services;

and 4) for seven years of existence, the SC has not even tried to offer to the market any settlements for transactions other than the purchase and sale of securities.

Already at the time of the discussion on the legislative changes, which radically updated the clearing and settlement infrastructure, the negative consequences of such reform were obvious too (primarily for the leading stock exchanges) [37]. First of all, these aspects forced the Ukrainian Stock Exchange and most of its members to dec-

[35] Terminology of national Ukrainian policy papers (memoranda, concepts, etc.) aimed at the development of local market infrastructure. There are no such concepts in international recommendations.

[36] The functions of CCP on the Ukrainian Stock Exchange and the PFTS in 2010–2013 were performed by ordinary securities traders affiliated with stock exchanges. Given the lack of legislation, the reason for such a strange design of the institution of centralized clearing was the decision of the stock market regulator to conduct a pilot project. After 2013, the need for such CCP-brokers affiliated with exchanges disappeared. Until 2013, the functions of the CCP on Perspektiva were performed by the SFS payment organization, which provided transfer of funds for securities (i.e. actually performed the functions of the current SC for the exchange), but since 2013, after the de facto monopolization, at the SC level, of the services of money settlement on securities and money clearing, the payment organization could only service settlements on derivatives. Interestingly, the exchanges were deprived of the opportunity to perform the functions of the CCP, but they were left the right to clear derivatives (due to lack of interest in this by the SC). Therefore, since 2013, there has been a rather strange legal structure in Ukraine, in which centralized clearing of derivatives is carried out by exchanges in the absence of any mention of the CCP.

[37] First, the legislation includes in the exclusive competence of the SC the activities related to cash settlements under transactions in securities and other financial instruments made on the stock exchange and off the stock exchange, if the settlements are made on the DvP principle; similarly, only SCs and clearing institutions may be the central counterparty, but no clearing license was granted to any clearing institution, so the SC became a monopolist in these areas. Second, before 2013, the exchanges had invested considerable funds in their own clearing and settlement infrastructure, which after the creation of the SC became either unclaimed (the central exchange counterparties on the Ukrainian Stock Exchange and PFTS) or significantly limited their functionality (SFS payment system on Perspektiva). At the same time, the exchanges were "allowed" to clear and settle derivatives.

lare a strike in September 2012[38] in order to draw attention of the President of Ukraine to the negative consequences of the adoption of legislative changes. Other market participants assessed the infrastructure reform less negatively, believing that the legislation on clearing and settlement was really becoming clearer than before, but pointed out that such changes should only be intermediate, as the implemented settlement system did not fully comply with international recommendations and European trends of infrastructure development (in particular, the system does not use "central bank money" to ensure the finality of calculations).

Unfortunately, the worst expectations were met:

1) Ukraine's stock market from the very beginning was characterized by depositors ignoring the initiatives of exchanges and their members to introduce new or increase the convenience of existing settlement and clearing technologies, but in 2008-2012, due to inter-depository competition, some initiatives were implemented; however, since 2013, the SC has become the central link in the market not only by name and effectively conserved the clearing and settlement system in this country, depriving the stock exchange of any opportunities for initiatives in this area;

2) the increasingly obvious inconsistency with European practice makes even more surprising the-already seven-year conservation of the calculation model, despite repeated discussions on the problems existing in the market infrastructure with international experts;

3) the problems characteristic for previous models remain relevant[39];

4) due to the scarce and fragmentary regulation of certain important aspects at the level of legislation, practical issues of the SC were actually regulated in most detail at the level of its own documents and procedures, which only strengthened the SC's monopolistic position in the market and led to agreements with market participants (exchanges, the Central Depository, securities traders) on the terms most convenient for the SC[40];

5) the specialization of the SC activities appeared to be quite declarative, as the ability to perform certain banking services, as will be shown below, further increased the risks in its activities.

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[38] Probably, an exchange strike is an unprecedented case, although in fact, despite the pretentious name, the strike was reduced to a change in the exchange schedule on September 20, 2012 and the suspension of trading for 1 hour (postponement of trading from 10:00 to 11:00 am). Not everyone voted for such a PR campaign, but the most active bidders (55 out of 172 members of the exchange, which provided 98.66% of the trading volume). At the same time, the Ukrainian Stock Exchange has never been in the lead in terms of trading volume in Ukraine, although at that time it held leading positions in the stock and derivatives market, as well as in Internet trading technologies. It was announced that in case of the adoption of changes in the legislation on the depository system, Ukrainian Exchange with a probability of 70% would cease its activities. Instead, the exchange continues to operate, although a drastic reduction in its share in total trading on Ukrainian stock exchanges of (from 27% in 2011 to 1% in 2019) indicates the validity of concerns.

[39] These include competition with the banking system for financial resources, lack of incentives for banks as natural participants in cash settlements, concentration of cash settlement risks in one institution and performance of central counterparty functions (despite all the conventionality of such functions), etc.

[40] In particular, in May 2014, in order to insist on its own vision of contractual terms and the need to regulate them even in the rules of stock exchanges, the SC temporarily suspended for one of the stock exchanges the servicing of settlements with the SC as central counterparty.

Status of cash settlements on securities after the 2013 reform

During its operation as a depository, ISU-AUSD-SC was characterized by high profitability and significant personnel costs. Deprivation of depository incomes already in 2013 led to a significant reduction in marginality, which was impossible to compensate at the expense of incomes from new activities[41].

Due to the traditionally large staff and high operating costs[42], even the initially inflated SC tariffs could not bring the previous level of profitability. An offer of additional services could have changed the situation, but this did not happen.

The most obvious way to obtain additional income not related to the main (operating) activity was to place funds in other banks. All the much so as the SC always had a lot of free funds, because of the active absorption of the resources of the entire stock market, in particular, funds of securities traders (including banks) and their clients, which brokers reserved for trading and often did not have time to transfer in the evening from the SC[43]. Moreover, the SCs raised funds from some banks (reliable and solvent ones) and placed them (directly or indirectly) in other banks (problematic and risky ones) at a significantly higher interest rate[44]. Such SC's activity in the interbank credit market led not only to competition with banks for financial resources, but also to numerous bankruptcies of banks.

In April 2015, the Deposit Guarantee Fund (DGF) disclosed a scheme to withdraw assets from the Ukrainian Professional Bank (UPB). With the use of the SC's capabilities, UAH 800 million was withdrawn from the UPB, as a result of which 12 commercial banks suffered, most of which were later liquidated or ceased banking activities[45]. The main tools for the money withdrawal were correspondent accounts

[41] During the period when the SC was still operating as a depository, the average monthly operating income amounted to UAH 2.4 million, and during October-December 2013, when the SC became a banking institution and started providing only clearing and settlement services, the average monthly operating income halved (up to UAH 1.2 million). In 2014, the average monthly operating income from settlement (conditionally clearing) services of the SC reduced to UAH 0.9 million.

[42] During 2013–2015, the SC payroll, despite a slight decrease in personnel, increased from UAH 14.1 to 18.1 million and significantly exceeded the operating incomes (from the provision of "clearing" services), which in 2014–2015 decreased from UAH 10.9 to 6.9 million. For comparison: for 9 months of 2013, before obtaining the banking license, the SC received UAH 22.3 million of operating income as a depository, i.e. more than for subsequent next two years as a clearing house.

[43] In the evening, the balances of funds reserved in the RC are placed in money market instruments.

[44] In 2014, the SC's assets increased 2.5 times (from UAH 382 to UAH 978 million), and including funds on correspondent accounts with the NBU, other banks, overnight loans, etc. - 3.3 times (from UAH 261 to UAH 864 million). Liabilities also increased significantly: bank funds in the SC in 2014 increased 3.5 times (from UAH 225 to 778 million), customer funds (non-bank participants in settlements) - 2.5 times (from UAH 26 to 66 million) UAH). Interest income from the placement of financial resources in 2014 increased from UAH 2 to 78 million, interest expenses from attracting funds - UAH 35 million. Therefore, net interest income increased compared to 2013 from UAH 2 to 41 million, i.e. became the largest component of the SC's income.

[45] Losses from the UPB bankruptcy alone exceeded UAH 1 billion: according to the DGF, the book value of the bank's assets at the time of the introduction of the interim administration was UAH 1.3 billion, and the actual value was estimated at UAH 0.18 billion (14% of the book value). Thus, in addition to the affected banks, the state lost UAH 639 million (the DGF data) due to the payment of funds to some depositors (deposits up to UAH 200,000), while other depositors (owners of deposits over UAH 200,000) lost UAH 110 million.

in foreign banks, scheme-based lending to related individuals, and assignment of claims and the purchase of "junk" shares.

Certainly, the bankruptcies of the UPB and other banks had many reasons, often related to criminal activities of their shareholders, but in this case, an important aspect is the use of an infrastructure institution as a means of illegal action. In addition, regulatory incentives for the government bonds market and a new settlement model were applied to introduce a lending scheme for troubled banks, reflecting a legal dysfunction of the cash settlement system[46].

Media investigations and criminal case files[47] show that the SC was able to issue overnight loans of up to UAH 50 million to each bank serviced by it, if the funds remained within the SC's accounts. If the bank needed more than this amount, the SC could engage financial resources from other banks. As a result, small troubled banks, for which no limits were opened in other banks due to solvency doubts, attracted resources to meet mandatory regulations. The scheme, in which the SC acted as the banks' "shadow creditor", existed during August 2014 - April 2015 and reached UAH 800 million of daily turnover. Lending banks and the SC earned well at higher interest rates on loans (for the banks, it seemed an almost risk-free affair due to the participation of the SC). However, this scheme failed in lending to the UPB: the latter only returned the funds in favor of the SC, and was later declared insolvent; lending banks had to return funds to the SC to repay interbank loans without receiving funds from the UPB, and most of them went bankrupt (not only because of the UPB scandal); part of the SC leadership were dismissed. Thus, the specific behavior of the SC became one of the main reasons for a certain "domino effect" in the banking market. And the institutional design of the settlement model, which seemed to be better than before, unfortunately, became one of the factors that negatively affected the situation.

Rising tariffs and transaction costs

The following aspect of the dysfunction of the settlement system became the subject of an active discussion in 2016 and remains relevant to this day. To some extent, this dysfunction is a consequence of both previous problems in the SC and the degradation of the stock market in general. Unfortunately, the task of achieving a balance between ensuring the RC's profitability and the adequate cost of its services for market participants (investors and financial intermediaries) has not been solved.

[46] First, the NBU, as a government bond depository, established requirements that settlements on exchange and OTC transactions with government bonds (except for placement auctions and certain types of agreements between banks and the NBU) be conducted exclusively through the SC, which differs from the rules of the circulation of non-government securities (in the absence of such requirements, settlements with them in the SC under OTC agreements are still sporadic). Secondly, the NBU took into account the difficulties for banks (major participants in the government bond market), which regularly concluded government bonds agreements for significant amounts and diverted resources to SC accounts to participate in bidding and settlements, and liberalized reserve requirements for banks participating in settlements: the NBU Board decision of 18.12.2014 № 820 allowed the banks to fully count the balances on the accounts with the RC to cover required reserves.

[47] In particular, criminal proceedings initiated by the Security Service of Ukraine (№ 42015100000000795 dated 02.07.2015) and the National Police (№ 12015100000000601 dated 11.07.2015).

Clearing services have never been the most important for the SC's financial condition[48], but this did not prevent it from taking advantage of its monopolistic position and significantly increasing tariffs.

Already at the stage of legislative formalization of the SC, many market participants pointed out that the cost of SC services, whose competence is defined by law as exclusive (meaning a monopolistic nature of services[49]), is not regulated and approved by the NSSMC or antitrust authorities (in contrast to tariffs of the Central Depository and stock exchanges). It is therefore not surprising that instead of incentives for liquidity and reduction of transaction costs, market participants subsequently faced a constant increase in the SC tariffs. By design, the formalization of SC services as "clearing"[50] was aimed at their artificial separation from quite similar settlement services provided by ordinary commercial banks to avoid the possibility of adequate comparison of their cost, because the initial SC tariffs significantly exceeded the costs of the bank servicing of client accounts.

Initially, on January 4, 2016, the SC refused to charge individual transactions in accordance with the actual level of securities traders' activity (the tariff did not exceed UAH 2,500/month, while the vast majority of clients paid much less) and introduced a unified for all tariff of UAH 3,150/month. Actually, the cost of services was increased not by 26%, but many times!

Also in 2016, the SC, together with some stock exchanges, offered the market participants a specific "technological innovation": settlements under exchange agreements in the mode of so-called "group report" (virtually without depositing assets, within the pools of pre-planned fictitious transactions). "Cyclical" transactions in this mode were concluded on stock exchanges mainly in 2017-2019 and were largely related to the laundering of incomes from crime, tax evasion and price manipulation[51].

[48] Analysis of the financial indicators of the SC shows that the share of clearing services in its incomes for 2014–2019 fluctuated on average within 15–20%. The main source of income since the beginning of the SC's activities as a bank and central counterparty was interest income from the placement of funds in other banks (UAH 40.8 million in 2014, and UAH 23.8 million in 2015). According to the SC report for 2016, in May 2015 (after the events around UPB Bank), the NBU introduced a number of restrictions on SC operations with other banks (banned the placement of funds on correspondent accounts in national currency, placement of funds by providing loans, and placement of deposits), and limited the tools for operations on stock market exclusively with government bonds and NBU deposit certificates. Thus, now the SC's free own funds and those of market participants were placed by the SC in more reliable monetary instruments. Given their significant return (during 2016, the yield of government bonds in the primary market fluctuated within 15-20%); this should have been enough to maintain the SC profitability. Other banks and financial institutions in this period also faced difficulties, but tried to get out of the situation by optimizing costs and offering new services to customers, because, unlike SC, they could not take advantage of monopolistic position.

[49] According to Art. 9 of the Law of Ukraine "On Depository Activities" and Art. 8 of the Law of Ukraine "On state regulation of the securities market in Ukraine".

[50] Given the concentration of payment functions, the SC clearing services are only considered as an appendix (a purely conditional one), which allows to mask the increase in the cost of services in the field of securities settlements.

[51] According to NBU estimates and materials of criminal proceedings, during 10.01.2017 to 04.12.2018 alone, the share of transactions concluded by brokers for the formation of artificial investment income for individuals was no less than 30% of all transactions concluded on stock exchanges on government

At the beginning of 2018, the market was offered a new "modification" of SC tariffs. Now the approach was changed to the opposite: in addition to the fixed cost of servicing the clearing account (UAH 3,000 / month), tariffs transactions were reintroduced. According to the AMCU's estimates, this led to a 6-fold increase in the costs for some securities traders and caused a significant expansion of revenues from the SC's clearing activities (in the absence of growth in the number of service users and trading volumes in the stock market).

However, the AMCU's three-year investigation based on securities traders' appeals and recognition of the fact of abuse of monopoly position[52] did not change the situation. The only practical result was a quite formal recommendation issued by the AMCU for the SC: to take measures to reestablish the order in the tariffing of clearing services based on strict and full account of the components of service costs, as well as the grounds, conditions and procedure for their recalculation; to create an advisory body with the participation of representatives of professional market participants, to take into account and protect the interests of market participants [53].

bonds (i.e. 131 billion UAH). It was established that in the course of these operations 74 individuals (including 12 public persons) made a profit of about UAH 800 million and four legal entities (including two non-resident ones) in the amount of about UAH 95 million, while 18 legal entities (including six non-resident ones) incurred losses totaling about UAH 919 million. In respond to this, the NBU applied measures of influence (fines) to a number of banks, including the SC, for violating the legislation in the field of financial monitoring, and initiated another change in the SC management. See: Abuse in the capital market: economic and legal aspects (in Ukrainian) / ed. O.G. Koshovyi, V.M. Tertyshnyk, N.M. Sheludko. Dnipro: Lira, 2019.

[52] The AMCU Recommendations of July 25, 2019 №52-rk (URL: http://www.amc.gov.ua/amku/doc-catalog/document?id=151051&schema=main) recognize: 1) the SC is the only clearing institution in Ukraine and actually represents a settlement system; in 2016–2018, the SC held a monopolistic (dominant) position in the market of clearing services in the stock market with a share of 100%; 2) the monopolistic (dominant) position of the SC in the market of services for "clearing" and settlement services in the stock market, in the absence of a unity of approaches (methods) to tariffing for services provided under market dominance, allows to apply different approaches to costing the servicing of clearing accounts, charging individual services that may be part of the main service. As a result, the SC customers may have difficulty predicting costs. This situation would be impossible with the existence of significant competition in the market for clearing services; 3) the RC's actions to change the cost of clearing services in 2016-2018 contain signs of violation of the legislation on protection of economic competition in the form of abuse of monopolistic (dominant) position in the market by setting prices for clearing account services that would be impossible to set with the presence of significant competition in the market.

[53] The increase in SC tariffs did not significantly affect its profitability. In 2016–2018, the SC's revenues from "clearing" services more than doubled - from UAH 6.3 to UAH 13.1 million, but this was primarily due to settlements in the "group report" mode, which the NBU had to suspend after searches on stock exchanges, inspections and fines. Therefore, in 2019, profile revenues again decreased significantly (to UAH 7.9 million). At the same time, the main source of profitability remains the financial resources of the settlement participants and the income from their placement in government securities. Interest and other SC's incomes from securities in 2016–2018 increased from UAH 19 to 62 million, which led to an increase in the SC's profit from UAH 2 to 36 million. Nevertheless, neither the high profitability nor the AMCU's recommendations led to the correction of RC tariffs. On the other hand, for market participants, the "optimization" and multiple increase of RC tariffs made them unaffordable (at least for most brokers who carried out a moderate number of transactions), which caused another wave of reduction in the number of licensed brokers. Thus, the number of brokers participating in clearing on the SC in 2016-2018 decreased from 210 to 160. Besides, as of the end of 2019, one third of licensed brokers were not SC clients.

The most significant discrepancy between the SC's tariff policy and the real condition of Ukrainian stock market is the comparison between the SC's incomes and the indicators of exchange liquidity. Against the background of the rapid decrease in the number of exchange transactions with securities in 2014-2019 (from 403 to 23 thousand exchange transactions), the weighted average cost of the SC's clearing services per 1 exchange transaction grew from 27 to 335 UAH (from 2 to 13 USD, Fig. 2).

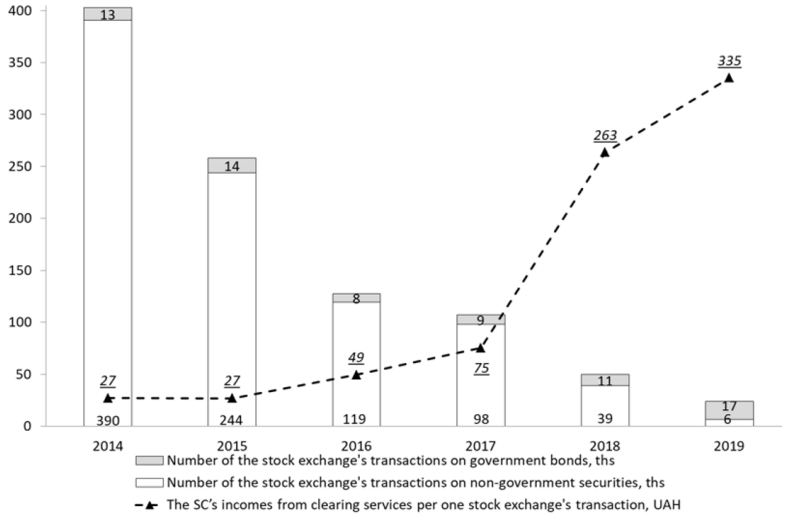

Fig. 2. Estimation of the weighted average cost of the SC clearing services SC services per one exchange transaction in 2014–2019

Source: calculated by the author based on data of NSSMC, SC, and stock exchanges.

It is exactly these excessive transaction costs that have become one of the factors inthe virtual disappearance of the segments of exchange trading other than govern ment bonds[54], because it only makes sense to incur such significant infrastructure costs for large-scale transactions characteristic for the government bond market (actually interbank ones). The stock market of government bands is the only one where a gradual reduction in the average value of transactions is going on against the background of their increased number, while for other types of securities the situation is exactly the opposite (*Table 3*). However, even in the government bond market, the average transaction value in 2019 was the equivalent of 600 thousand USD, which cut off ordinary investors from access to this market.

Thus, there is an institutional dysfunction: an institution created to encourage liquidity (a key infrastructural entity) to solve the local tasks of maximizing its own profitability negatively affects many market participants and the investment climate, hence attaining the opposite result (reduced liquidity, increased transaction costs, restricted market access, underinvestment, and degradation of circulation segments for a number of non-government financial instruments).

[54] In parallel with the dominance of government bonds in total volume of exchange trading, their share in total number of exchange transactions definitely increased - from 4% in 2014 to 81% in 2019.

Table 3

Weighted average cost of exchange transactions in Ukraine by security type, *UAH million*

Security type	2012	2013	2014	2015	2016	2017	2018	2019	Change, %
Government bonds	39.46	27.57	38.75	31.70	22.37	17.76	14.24	15.41	-61
Corps. bonds	5.66	5.56	2.71	1.57	12.53	18.32	19.34	16.46	+191
Promotions	0.03	0.10	0.07	0.03	0.02	0.06	0.04	0.10	+237
CII securities	0.16	0.29	0.18	0.09	0.04	0.01	0.28	1.58	+888
Others	0.96	1.36	0.90	0.80	1.84	2.03	1.72	2.29	+139
Total securities	0.32	0.90	1.51	1.09	1.84	1.89	5.22	12.93	+3984

Source: calculated by the author according to the NSSMC, and stock exchanges.

Besides, regular scandals and management dismissals add no confidence in the infrastructure and its legal basis to the market participants.

It should be noted that a significant part of the problems and risks associated with the basic system of cash settlements on securities in Ukraine is the institutional design of the settlement institution in the form of a bank. On the one hand, the reasons for this were clear[55], but, on the other hand, insufficient specialization of the SC as a settlement institution has led to the accumulation of banking risks, and most importantly, banks usually have to meet the highest requirements for business organization (significant staff, capital, complex management system, prudential standards, etc.) [56]. This significantly complicates (if not makes impossible) the task of minimizing the costs of the settlement institution and, accordingly, minimizing the cost of settlement services and transaction costs for market participants. The experience of alternative non-bank financial institutions (including the SFS payment organization) indicates the possibility of servicing settlements with a much smaller staff and at much lower tariffs.

[55] First, traditionally, the trust in banks in Ukraine is higher than in non-bank financial institutions (although after several waves of "bank failures" this is not so obvious). Secondly, the bank is the most common subject of payment infrastructure (although not the only possible one). Third, for the central bank, it is more common to control the bank and not another financial institution (however, even before 2013 and the creation of the SC, the NBU had granted permits for registration of payment systems, including those created based on non-banking institutions, i.e. had certain supervisory functions, which only intensified as a result of the transfer to the NBU in 2020 of powers to regulate a wide range of non-bank financial institutions). Fourth, the presence of a banking license simplifies the execution of certain types of financial transactions, as well as maintaining its liquidity by the central bank.

[56] As a result, the personnel of the SC at the beginning of 2020 (56 people) exceeds not only the personnel of any of the functioning stock exchanges in Ukraine (the personnels on Perspektiva, PFTS, Ukrainian Exchange, and UICE range from 8 to 17 persons), but even the total number of employees in the four above exchanges (49 people).

Settlement infrastructure on the eve of the next legislative reform

Against the background of systemic changes in the infrastructure of European financial markets, increased complexity, simultaneous encouragement of competition and networking, creation of centralized settlement systems, expansion of the range of settlement and clearing services, and diversification of mechanisms for risk reduction and guaranteeing settlements [20–22] the Ukrainian situation looks particularly pessimistic. As the more so as, in the EU, the modernization of infrastructure, associated with the objective processes of market enlargement, was carried out within a premeditated plan based on the above-mentioned recommendations.

Given the international recommendations, it is necessary to objectively assess the advisability of the existing system of settlements, especially with regard to the expected entry into force in 2021 of the Law of Ukraine of 19.06.2020 № 738-IX [23], which implements a number of European legislation. This law was discussed for five years and was adopted only on the fourth attempt. Among other things, from July 2021, the RC will be deprived of the status of a bank (according to paragraph 14 of the final provisions of the Law), which is almost the only positive news. Because, until 2023 the current situation is actually preserved: 1) the SC continues to provide clearing services for securities; 2) the SC monopoly on cash settlements on securities is no longer directly defined in the legislation, but it is unclear whether any alternative clearing institutions and settlement models will appear in Ukraine at least in 2023; 3) exchanges (in the new Law - "market operators") will continue to perform clearing, and in fact settlements on derivatives (provided the appropriate license is obtained). At the same time, it is doubtful that all stock exchanges (and much less the commodity exchanges) will be able to clear themselves. Besides, the NSSMC has the authority to independently determine the cases when clearing is mandatory.

Therefore, there is reason to believe that by 2023 the SC will have no alternative to servicing not only cash settlements, but also the clearing of securities and derivatives (on stock and commodity exchanges, as well as over-the-counter derivative contracts). At the same time, the updated legislation has nothing about the use of "central bank money" in the settlement system to ensure the unconditionally of settlements, or about other provisions of international recommendations.

Then why did the long and seemingly reform-filled development of infrastructure in Ukraine lead to such negative consequences?

It can be stated that systemic changes in infrastructure, in particular, given the complexity of the problem, were usually initiated by the government without much justification, without detailed planning and understanding of the consequences, without public discussion with market participants as the most interested persons, without international recommendations and without involvement of international experts[57], without formulating arguments in favor of the decision, and on

[57] Experts were involved after the implementation of the infrastructure reform in 2013. The actual involvement of experts and professional discussion began around 2015.
We should mention at least the proposals by the consulting company Oliver Wyman in 2015 to join Ukraine in the project of the regional CCR, which would service the not very mature markets of several Central and Eastern European countries simultaneously (URL: https://www.oliverwyman.com/ content

rather subjective (if not corrupt[58]) reasons. The main trend of infrastructure reform was its rather approximate consolidation (actually, the preservation of all its entities, in which public funds had been invested at different times, and the increase of these public investments. Thus the artificial separation of functions between depositories in 2013 did not lead to reduced risks, reduced transaction costs, encouragement of liquidity, or emergence of new and convenient trading and clearing technologies. Moreover, due to the creation of the SC in the form of a bank, the costs of maintaining the infrastructure only increased and were automatically passed onto the market participants.

The only noticeable consequence of all the transformations made before 2013 was the dominant share of the government in the clearing and settlement infrastructure. However, after understanding the problems and rather poor trends in the stock market, it is believed that the goal of the government as a majoritarian shareholder has changed to the opposite (another example of not very consistent public policy), that is, to get rid of the problems, reduce the share of infrastructure (by selling the consolidated government assets together with one or another private exchange as part of the again centralized exchange holding to the strategic investor) and at least somehow justify the logic of previous actions. Of course, the numerous concepts, consultations, memoranda and joint projects with international institutions in recent years have offered much more (from abstract wishes to improve the situation in the infrastructure and take into account international recommendations to quite logical measures to eliminate monopolization, deprive the SC of bank status, consolidate depository accounting and transfer the government bonds for the NDU's service[59] etc.), but the financial aspects and corporate structure were naturally taken into account. Unfortunately, on the way from concepts and legislation to practical implementation, best wishes often turn into additional problems for the market.

/ dam / oliver-wyman / global / en / 2015 / sep / EBRD_OW_Regional_Central_Counterparty_Report_ FINAL.pdf), involvement of the EBRD in 2016 by the same company as an advisor to the NBU and the NSSMC (URL: https://open4business.com.ua/oliver wyman-to-design-concept-to-develop-depository-clearing-infrastructure-in-ukraine /), involvement in 2017 of BTA Consulting Limited (https://www.ebrd.com/cs/Satellite?c= Content & cid = 1395269710429 & d = Mobile & pagename = EBRD% 2FContent% 2FContentLayout) and limited public information about their conclusions. It is also worth noting the signing on June 27, 2017 of the Memorandum of Understanding on cooperation in the development of capital market infrastructure in Ukraine between the NBU and the NSSMC (URL: https://bank.gov.ua/ua/news/all/nbu-ta-nktspfr- pidpisali-memorandum-pro-vzayemorozuminnya-stosovno-spivrobitnitstva-u-rozvitku-infrastrukturi-rinkiv-kapitalu-v-ukrayini). The very fact that financial regulators needed to formulate their positions specifically in the form of a Memorandum, clearly reflects the state of affairs in public policy in the field of infrastructure regulation. However, this Memorandum was not enough, because on 01.07.2020 a new Memorandum of Understanding was signed on the cooperation on oversight and supervision of capital market infrastructures in Ukraine (URL: https://bank.gov.ua/ua/news/all/efektivniy-oversayt -ta-naglyad-za-infrastrukturami-rinkiv-kapitalu-nbu-ta-nktspfr-domovilisya-pro-spivpratsyu). In 2018, the already mentioned Concept of Capital Markets Infrastructure Reform in Ukraine was formulated. And this does not include the state programs for the development of the financial sector until 2020 and until 2025. However, the actual changes in the settlement infrastructure have not yet taken place.

[58] Quite significant causes of corruption are related to legal (gaps, ambiguity and vagueness of legislation, insufficient control and settlement of officials' responsibilities) and organizational and managerial factors (in particular, the ability of officials to make decisions at their own discretion).

[59] Although even since 2013, the organizational and IT readiness of the NDU to service these most important financial instruments for the stock market of Ukraine has been questionable.

Anyway, after consultations with international experts, the government owners of the infrastructure (at least the NBU) came to a number of highly anticipated conclusions. In particular: 1) guaranteeing the execution of concluded exchange agreements via 100% preliminary deposit of securities and money on both sides is simple and reliable, but inefficient, inconsistent with global practice and unable to guarantee the execution of agreements on T + N terms, 2) implementation of DvP through deposit funds in accounts in a commercial bank (the SC) also fails to correspond to the world practices of settlements through the payment system of the central bank; as a result, the SC is an additional link in the settlement of securities transactions, whose use leads to unnecessary time and transaction costs and is an archaism in the context of international experience of developed financial markets[60].

Despite those sad conclusions, according to paragraph 6 of the final provisions of the Law of Ukraine № 738-IX of 19.06.2020, the monopoly position of the SC was extended until 01.01.2023

After five years of discussions at all levels of concepts and strategies, at the outcome the market only has an updated legislation, which in terms of settlement infrastructure has not become more detailed. Unfortunately, the experience of practical implementation of previous legislative changes does not add any optimism, so the real consequences of its introduction remain unclear.

At the same time, financial market regulators have demonstrated an inability to even formulate goals and objectives for infrastructure changes[61].

Thus, in the Law of Ukraine "On Capital Markets and Organized Commodity Markets" (a radically new version of the Law "On Securities and Stock Markets", which was adopted in accordance with the Law of Ukraine № 738-IX of 19.06.2020 and enters into force on 01.07.2021) as many as two sentences[62] (out of 286 pages) deal with settlements. From the context (since the future settlement model is not publicly presented until the spring of 2021), we can assume that the market is offered to return to model 1 with a single "improvement": instead of the depository, there is

[60] The regulators discussed ways to transform the capital market infrastructure with its participants / NBU. 09/01/2016 URL: https://bank.gov.ua/en/news/all/regulyatori-obgovorili-shlyahi-transformatsiyi-infrastrukturi-rinku-kapitaliv-z-yiyi-uchasnikami

[61] Despite the assurances of the NSSMC chairman appointed in early 2015 that the regulator will focus primarily on the infrastructure entities that can be changed in 2015, and other measures will be implemented over the next 24 months, that in five years (i.e. in 2020).) the financial market of Ukraine would become one of the largest in Eastern Europe, etc. (URL: https://www.stockworld.com.ua/ru/news/timur-khromaiev-v-ukrainie-po-formie-iest-fondovyi-rynok-no -po-suti-iegho-nie-sushchiestvuiet, https://www.unian.net/economics/stockmarket/1144407-hromaev-cherez-pyat-let-finryinok-ukrainyi-budet-odnim-iz-krupneyshih-v-vostochnoy -evrope.html) .

[62] For settlements in the system of clearing accounting and/or organization of settlement, the clearing institutions and the Central Depository only use accounts opened with the NBU, as well as those opened with foreign banks that meet the criteria established by the NBU. Funds of individuals and legal entities whose liabilities are admitted to clearing and are transferred to the accounts of the person who conducts clearing activities for performing/supporting the settlements, are not the income of such person (§ 5 of Article 59). One can only guess which settlements can be "made in the system of clearing accounting" and what activity "organization of performing settlements" means (at least, this is neither terminologically nor contently consistent with the Law of Ukraine "On Payment Systems and Funds Transfer in Ukraine" or with the detailed list of professional activities defined in Article 41 of the Law of Ukraine "On Capital Markets and Organized Commodity Markets").

a clearing entity that will open an account with the NBU. And within this account, "cash settlements" will be performed in the NBU. This is how the concept of "settlements in central bank money" is currently understood. Thus, banks will again be excluded from participation in settlements, and the status of funds of clearing members will again be "suspended", uncertain, while other types of collateral are not mentioned in the Law. There is no doubt that this "new-old" model awaits the fate of its prototype.

Generalized conclusions and prospects

For almost three decades of existence of the stock market in Ukraine, no system of securities settlements was built that would meet the modern requirements and be able to integrate into international systems. The main reason for this was the solely subjective incentives in the behavior of financial market regulators. However, des-pite the negative result, the experience gained in the of creating a system of securities settlements, as well as, hopefully, the review presented in this article, is not in vain and allows drawing some conclusions about the existing limitations of the development of the infrastructure of securities settlements and guidelines to change the existing situation:

1) the existing mechanism of securities settlements is doomed to degeneration: further narrowing of the market will have the logical consequence of further tariff increases and will turn the size of transaction costs into critical, while the reduction of interest rates on government bonds (and corresponding limitation of income from portfolio management) will lead to economic disadvantage of the use of such a costly infrastructure, hence considerable public funds may be wasted;

2) the exclusion of commercial banks from the participation in settlements leads to the dysfunction of the basic task of the securities settlement system, that is bringing the money and stock markets as close to each other as possible, and ensure their integrity;

3) unification of the functions of clearing and cash settlements in a single institution clearly fails to pay off, as it leads to competition between the functionally justified desire to reduce the risks of the payment system and the inherently risky activities of the clearing system (and the central counterparty as its basic component);

4) construction of a system of settlements in "central bank money" in the conditions of the EPS operating in Ukraine without the participation of the NBU as its operator and regulator is impossible by definition.

In the near future, the following alternatives are probable for Ukraine's settlement infrastructure.

The first option is to preserve the SC as a key infrastructural entity, but no longer a bank. The stronger the stock market of Ukraine (in terms of the number of participants and depth), the more reason to doubt: does the market really need such a cumbersome model of cash settlements, with contrived clearing functions (hardly so necessary with such a scant number of transactions)? Given the disappointing previous experience, it is unlikely that alternative settlement and/or clearing institutions will emerge from somewhere from 2023 on, that any real competition will appear in the market for these services, that an effective settlement model will be built by itself, or that the current institutional dysfunction will be at least overcome. Most likely,

everything will again end up with purely formal quasi-reforms, which will not provide any incentives for the recovery of the stock market in Ukraine.

The second option is, now or after another disappointment, to rationally conclude that with such a meager level of efficiency it is not worth continuing to invest in the existing local settlement infrastructure institutions, which in the near future will have to meet European requirements to capital and risk management systems. It is better to abandon attempts to build and maintain local infrastructural entities and integrate into the efficient and reliable European (international) infrastructural institutions. As the more so as there are already quite effective examples of such integration (significant increase in international investment in government bonds of Ukraine through the interaction with Clearsrtream, the beginning of placement and circulation of government bonds through Bloomberg services, and a gradual increase in the number of foreign securities admitted to circulation in Ukraine).

The third option is to try somehow to create a modern adequate infrastructure.

Returning to the difficult history and sometimes-unnecessary iterations in the reform of local infrastructure, we must mention that Ukraine has experience in building models of settlements on government securities, which much better correspond to international recommendations for cash settlements in the "central bank money" than the existing one. Certainly, the model of settlements on government bonds, which was introduced by the NBU using the so-called "ampersands" (automatic payment orders of the NBU to write off/credit funds for banks that served the parties to the agreements) and operated before the start of the SC, had significant restrictions. Instead, a rather competitive and convenient for banks and brokers settlement model within a special non-bank payment system lacked exactly the integration into the EPS (via opening separate correspondent accounts by the banks participating in the settlement under the guidance of such a system[63]). The SC model, despite the NBU's declaration of readiness to support it, lacked convenience, efficiency, quality of management and readiness for development. Besides, an increased role of the Central Depository in the monetary component of settlements is also possible.

Nevertheless, whatever option is chosen as a basis, experience indicates the fundamental ability to implement the best international standards within a new truly progressive payment system in Ukraine. Therefore, if the reform of market infrastructure is not reduced to another centralization and subjective approaches, there is a good chance to combine the best practices of different infrastructural entities and finally build a settlement system that is organically integrated into Ukraine's payment system and able to adapt to European settlement systems. Given the monofunction of cash settlements, it is logical to use a highly specialized non-bank payment system, which would be much less burdened by the extra organizational load inherent for banks, and able to non-competitively integrate with the banking system,

[63] Management does not in any way mean the direct integration of such a specialized payment system into the EPS. It is only about performing settlements by banks based on information from such a system.

and through it with EPS, on the one hand, and with the clearing and depository system, on the other hand.

In conclusion, it should be noted that the conclusions, although based on domestic experience, are fully consistent with international recommendations. This once again allows us to draw attention to the inevitability of applying international experience in the preparation and implementation of reforms in Ukraine's financial sector of Ukraine, in particular in the institutional design of the settlement infrastructure.

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ПЕРСПЕКТИВИ ТА ОБМЕЖЕННЯ МОДЕРНІЗАЦІЇ РОЗРАХУНКІВ В ОПЕРАЦІЯХ ІЗ ЦІННИМИ ПАПЕРАМИ В УКРАЇНІ

У статті обґрунтовано критично недостатній ступінь відповідності інфраструктури фондового ринку України міжнародним рекомендаціям, насамперед у сегменті розрахунків за цінними паперами. Констатовано, що, попри створення інфраструктури ринку в Україні та можливості уникнення проблем еволюційних помилок, учасники ринку стикаються із численними складнощами: правовими ризиками у законодавчому оформленні та діяльності ключових суб'єктів інфраструктури, обмеженістю

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конкуренції, надмірними трансакційними витратами, триваючою дефрагментацією системи депозитарного обліку, незручністю та обмеженістю існуючих систем управління ризиками.

У ході дослідження еволюції моделей грошових розрахунків за цінними паперами в Україні виявлено, що кардинальне реформування інфраструктури у 2013 р. призвело до суперечливих наслідків, зокрема, до зловживання розрахунковим банком та центральним контрагентом своїм монопольним становищем, активної участі цього монополіста у гучних ринкових схемах, тривалого застою у сфері технологій клірингу і розрахунків, гальмування розвитку ринку деривативів. Виявлено, що, незважаючи на тривале обговорення, оновлене законодавство у сфері організованих ринків капіталу, що покликане імплементувати низку законодавчих норм ЄС та має набути чинності у 2021 р., не вирішує проблемні питання існуючої інфраструктури, зокрема, через досить сумнівну перспективну форму реалізації розрахунків за цінними паперами та консервацію ще на кілька років монополії у сфері розрахункових та клірингових послуг. Обґрунтовано, що в Україні є конструктивний практичний досвід і напрацювання, які можуть дозволити реалізувати кращі міжнародні стандарти щодо побудови системи грошових розрахунків в "коштах центрального банку", органічно інтегровану до платіжної системи України та здатну до адаптації з європейськими системами розрахунків.

Ключові слова: *інфраструктура фінансових ринків, фондовий ринок, фондова біржа, цінні папери, депозитарій цінних паперів, центральний контрагент, кліринг, система розрахунків у цінних паперах, платіжна система, поставка проти оплати*