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**USAID FINANCIAL SECTOR TRANSFORMATION PROJECT**

# Delivery-versus-Payment in Ukraine: Roadmap, strategy and migration

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# Introduction

This report presents a roadmap for the Ukrainian securities market on the way of developing a modern capital market post-trade structure in line with international practice (see target model). Such development is required for attracting more issuers and investors – local and international alike - and for building competitive services for several market segments in the future.

The Request for Proposal which was issued by DAI in March 2021 for Phase 2: Delivery-versus-Payment in Ukraine roadmap, strategy and migration is a part of the USAID Financial Transformation Project.

The antecedent to this report is a paper prepared by SWIFT Business and Standards Advisory in 2020 (DvP Study in Ukraine)[1] and according to our intention the report is complementary with the outcome of the NEXT-UA project to be presented later this year.

This report is presented by Dentons Europe LLC and Bourse Consult LLP. We want to express our gratitude for the assistance we received during the past months from the National Bank of Ukraine, the National Depository of Ukraine, the Settlement Centre and other market players and colleagues working for DAI Ukraine.

[1] http://www.fst-ua.info/wp-content/uploads/2020/10/Ukraine_DvP_Study_Eng.pdf.

# Executive summary

Ukraine's capital markets are in transition. A part of this process is the necessary transformation of current post-trade institutions and processes.

Currently, the depository functions are performed by two entities in Ukraine: corporate securities settle within the National Depository of Ukraine ("NDU") and government securities within the depository department of the National Bank of Ukraine ("NBU"). Cash settlement for stock exchange and OTC trades in both types of security takes place within the Settlement Centre ("SC"). SC plays a key role in the settlement process and essentially orchestrates the whole process both on the cash and the securities side of the transaction – a function that is performed by the central depository in most countries.

Moreover, a main characteristic of the market is the 100% pre-funding of stock exchange transactions both for the securities and cash leg. While this concept practically eliminates replacement cost risk in settlement, prefunding and T+0 settlement generally have a damaging effect on market liquidity and deter cross-border investments.

The securities and settlement post-trade structure and legal framework are undergoing continuous change and, in our report, we propose a series of steps on the way to a target market structure for securities transactions:

**Step 1**: the process already in place since 1 July, which requires full prefunding of cash and securities for T+0 settlement

**Step 1.5**: replacement of the full prefunding requirement with a risk-based prefunding of margin to cover the risks between trade and settlement. This enables the market to move to T+2 settlement.

**Step 2**: based on the experience in Step 1.5, we propose to keep the risk-based prefunded margin requirement and bring together in the CSDs responsibility for managing the synchronization of cash movements in SEP and securities movements, with a CCP solely responsible for risk management.

From the perspective of the models laid down in the aforementioned SWIFT report ("to-be"), weighing the pros and cons of sub-accounts for direct settlement members, and the gross nature of the market, we believe that **a hybrid Model 1 and Model 4** serves the best interest of the Ukrainian market for Steps 1.5 and 2. While transactions are settled on a gross DvP basis, - from this perspective - we see no specific need for a direct access to SEP by the CCP/CSD, we propose to use **direct payments among settlement members (dedicated sub-accounts)**.

In our experience, a number of RTGS systems successfully operate sub account arrangements for participating direct settlement members. We present these supporting tools in the report.

We propose that (after the development and implementation of a risk management system, the process of collecting and managing collateral and a system to manage defaults and the development of the necessary legal arrangements between the clearing entity (SC), exchanges and participants)

Step 1.5 can be introduced in 2 years' time. Step 2 can be implemented relatively quickly after that: we calculate a year after Step 1.5.

**Step 3** (target model): an entity should obtain the respective license to act as a Central Counterparty to clear trades concluded on organized capital markets and OTC transactions, cash and derivatives transactions and possibly even extending services to markets in energy products and/or agricultural products as well. The concept of Clearing Membership should be introduced and we propose to consider merging the two depositories into one single central securities depository. Securities transactions settle on T+2 without any prepositioning and prefunding. Cash settlement is in central bank money - through the SEP accounts of the clearing members.

The role of a CCP can be undertaken by SC (after any necessary changes in its ownership structure) or by another entity duly established and licensed for this purpose.

Due to the net clearing and settlement environment that comes with the introduction of a Central Counterparty service, direct access to the SEP for the CCP and NDU need to be introduced, **cash settlements will be intermediated via the CCP account**. We propose that the **SWIFT Model 4** should be used in Ukraine.

Our understanding is that whether and how/when to establish a CCP will be one of the outcomes of the NEXT-UA project. Our experience tells that a full scale CCP project takes a minimum 3 years to implement after the decision is made.

From a **legal perspective,** an important development was the introduction of the Capital Markets Law in June 2020. While further legislation will be required in several aspects of the legal environment as the market transformation progresses (eg. clarification of the concept of "guaranteed security", protection of collateral and default fund resources, CCP's access to SEP etc.), the Capital Markets Law provides a good basis for the market developments envisaged in this report.

We also looked at the current status of **ISO20022 implementations** at the most important financial centres globally and we found that while such implementation projects are under way for many payment infrastructures, securities settlement is generally lagging behind. In this respect the NBU's implementation of securities settlement related payment messages within the SEP is in line with most global RTGS systems.

In this report we concentrated on the post-trade arrangements for the securities markets only. Obviously, with the evolving cash securities markets there will be a growing demand for derivatives products in Ukraine and other market segments, like the energy markets and the market for agricultural products will also develop significantly in the coming years. We are convinced that the post-trade structure (eg. CCP, clearing membership), the newly developed functions (eg. risk management, default waterfall) and main processes we propose in this report will also be able to service these developing markets in the future.

# Description of the legal environment

Current Ukrainian capital markets infrastructure and capital markets activities are governed by the following (not exhaustive) set of legal acts:

- Civil Code of Ukraine dated 16 January 2003 (as amended) (link)
- Law of Ukraine No 738-IX "On Amendments to Certain Legislative Acts of Ukraine Related to the Simplification of Attracting Investments and Introducing New Financial Instruments" dated 19 June 2020 (link)
- Law of Ukraine No 5178-VI "On Depository System of Ukraine" dated 06 July 2012 (as amended) (link)

Other laws may also be relevant, such as acts of the National Securities and Stock Market Commission (the "**NSSMC**") and acts of the National Bank of Ukraine (the "**NBU**") related to the NBU's depositary and clearing activities on the capital markets.

On 19 June 2020, the Ukrainian Parliament adopted the Law of Ukraine "On Amendments to Certain Legislative Acts of Ukraine Related to the Simplification of Attracting Investments and Introducing New Financial Instruments" (the "**Capital Markets Law**").

The Capital Markets Law is based on practices and standards of the European Union, including those set out in MiFID II, MiFIR, EMIR, FCAD, SFD and MAR.

Most of the provisions of the Capital Markets Law came into full force and effect on 1 July 2021.

While the main regulator on the capital markets in Ukraine is the NSSMC, the NBU is an active participant on the capital markets, as well as a main regulator of money market and depositary activities related to state bonds.

The Central Securities Depository (the "**CSD**") function is divided between the National Depository of Ukraine (the "**NDU**") and the NBU: the NDU acts as the CSD for securities (save for securities subject to custody by the NBU)[2] and the NBU as the CSD for state and municipal bonds.[3] Prior to 1 January 2022, depositary services with regard to municipal bonds should be transferred from the NBU to the NDU.[4]

Generally, the legal framework and in particular Capital Market Law is a good basis for improvement settlements under securities transactions and implementation of further legislative developments as outlined in this report.

[2] See Paragraph 8 of Article 9 of the Law of Ukraine "On Depository System of Ukraine"

[3] Pursuant to Article 9 and Paragraph 1 of Article 13 of the Law of Ukraine "On Depository System of Ukraine"

[4] Pursuant to the transitional provisions of the Capital Markets Law.

It is recommended to amend further the general legal framework – to ensure consistency with capital markets legal framework as outlined in this report, in particular in respect of collateral status under the clearing.

### Clearing activity

*Clearing*, pursuant to the provisions of the Capital Markets Law is a "process of determination of liabilities, including by netting, under derivative contracts and transactions with other financial instruments, currency values, commodity transactions, accompanied by ensuring the functioning of the risk management system and guarantees for the fulfillment of such obligations".

Among the novelties introduced by the Capital Markets Law is an updated clearing model for capital markets, whereby clearing activities are divided into:

- Clearing activities related to determining liabilities; and
- Clearing activities of the central counterparty (the "**CCP**").

Clearing activities are carried out with respect to transactions involving securities, derivative contracts and money market instruments, which are concluded both in and outside the regulated market, except for the instances when the clearing of these transactions should be carried out exclusively through the CCP. Foreign legal entities will be able to carry out clearing activities in accordance with requirements, which will be further developed by the NSSMC.

*Clearing activity on determination of liabilities* means provision of clearing, as well as implementation of settlements in the clearing accounting system and / or organization of settlements, including through preparation of documents (information) for settlements and their circulation to the relevant institutions, which conduct settlements[5].

*Clearing activity of CCP* means activity of a clearing institution on provision of clearing, provision of settlements in the clearing accounting system[6] and/or organisation of settlements, including by preparing documents (information) for settlements and sending them to the relevant institutions conducting settlements, as well as acquisition of mutual rights and obligations of the parties during or after the conclusion (carrying-out):

1. derivative contracts;
2. transactions with financial instruments;

[5] See Paragraph 1 of Article 59 of the Capital Markets Law.

[6] Pursuant to the Item 11 of Paragraph 1 of Article 2 of the Capital Markets Law, clearing accounting system is a system by which a person conducting clearing activities: a) keeps records of the rights and obligations of clearing participants, their clients and counterparties, own rights and obligations (if a person conducts clearing activities of the CCP) under derivative contracts concluded on the regulated market and OTC, transactions with financial instruments, currency values and commodity transactions; b) keeps records of information regarding to funds, securities, other financial instruments and other assets contributed for settlements or organization of settlements under contracts and transactions specified in item "a", above; c) keep records of the contributions of clearing participants to the guarantee and other funds related to clearing; d) carries-out settlements and / or organizes provision of settlements under contracts and transactions specified in item "a", above; e) keep records of other information determined by the NSSMC.

3. transactions in respect of assets other than those specified in points (1) and (2), admitted to trading on organized markets (including commodities).

As a result of the acquisition of rights and obligations in the cases referred to in point (1) above, such clearing institution shall become a party to each derivative contract, and in the cases referred to in items (2) and (3) above, to be a buyer for each seller and to be a seller for each buyer.[7] The clearing with involvement of the CCP should be provided under the following transactions:

- Transactions concluded on the regulated markets[8];
- Transactions concluded on multilateral trading facilities (the "MTFs") (if prescribed, in own discretion, by the rules of MTF and/or commodity exchange);
- Transactions with derivatives concluded on MTF and over the counter (the "**OTC**"), based on the respective decision of the NSSMC;[9]

Clearing activities related to determining of liabilities could be provided in cases when mandatory clearing by the CCP is not prescribed.

The clearing activities related to determining liabilities could be provided based on the license on provision of clearing activities related to determining liabilities by clearing institutions, operators of the organized market (including commodity exchanges) and the NDU.

NDU and the NBU may provide clearing activities related to determining liabilities in cases provided by the legislation [10].

The clearing activities of the CCP could be provided by clearing institutions based on the CCP's license. Pursuant to the Capital Markets Law, person providing activity of the CCP, based on its CCP license, can also carry-out clearing activity related to determining liabilities[11].

Under the Capital Markets Law, starting from 1 July 2021 clearing institutions (acting based on respective clearing license) and the CSD "for the purposes of provision of settlements in the clearing accounting system and/or for organization of provision of settlements should use accounts opened with the NBU, or with foreign banks subject to compliance with the requirements set forth by the NBU to such foreign banks"[12].

Pursuant to the Capital Markets Law: "derivative contracts, other financial instruments, currency assets, commodities, as well as monetary assets, which belongs to clearing participants[13] and has

[7] See Article 60 of the Capital Markets Law.

[8] See Article 36 of the Capital Markets Law.

[9] See Article 34 of the Capital Markets Law.

[10] See Article 59 of the Capital Markets Law.

[11] See Paragraph 2 of Article 60 of the Capital Markets Law.

[12] See Paragraph 5 of Article 59 of the Capital Markets Law.

[13] Pursuant to the Paragraph 3 of the Clearing Rules of the SC (version dated 22 December 2020): clearing participant could be legal entities that have a valid license for carrying out professional activities on the capital markets – activities related to trading of financial instruments, the NBU, as well as issuers of the securities.

been transferred to clearing institution in course of performance of its clearing functions cannot be arrested and / or enforced under the obligations of such person"[14].

Additionally, under the provisions of the Capital Markets Law, it is prohibited to arrest/ enforce monetary assets from the accounts of the person, who carries-out clearing activity and which are credited for the purpose of settlements / ensuring settlements under derivative contracts, transactions with financial instrument, currency values and commodities transactions on organized markets and OTC[15]. Under general rule pursuant to the provisions of the Code of Ukraine on Bankruptcy Proceedings, securities, monetary assets and other client's assets of the professional participant of securities (capital) markets (such as the SC (as defined below)) are not included into the liquidation estate of the professional participant (investment firm, clearing institution, CCP) and, consequently, cannot be used for satisfaction of creditors' claims of the insolvent professional participant party [16].

The current legislative framework for clearing activity introduced by the Capital Markets Law generally enable implementation of the well-established CCP on the capital markets in Ukraine.

At the same time, in order to implement step 1.5 (in the scope of settlements / margining) and further steps described in this report, the concept of "guaranteed security" to be clarified within Ukrainian legislation. For more information, please refer to the chapter "Step 1.5 solution step by step and legal analysis" of this report.

Additionally, in order to implement the model 3 as described in this report, the legal grounds for, inter alia, improvement of protection of collateral and default fund resources, as well as addressing other issues outlined in this report, should be established/developed. For more information of the required legal environment for implementation of the model 3 please refer to the sub-section "Securities Clearing Layer" of the section "Step 3: the Ukrainian post-trade infrastructure: target model".

### Qualified Investors

A separate category of investors in the capital markets — qualified investors — is established. The qualified investor shall assess risks independently and adopt decisions related to transactions with financial instruments. Qualified investors, in particular, can invest in securities without restrictions imposed with respect to non-qualified investors, concluding OTC transactions related to financial instruments without intermediation of an investment firm, etc.

Qualified investors list includes:

- International financial organizations;
- Foreign countries and their central banks;

[14] See Article 63 of the Capital Markets Law.

[15] See Paragraph 5 of Article 59 of the Capital Markets Law.

[16] See Article 93 of the Code of Ukraine on Bankruptcy Proceedings.

- The State of Ukraine represented by the Ministry of Finance of Ukraine and the NBU;
- Professional participants in capital markets and organized commodity markets, banks and insurance companies;
- Foreign financial institutions that meet the criteria set by the NSSMC; and
- Legal entities, including those established under the laws of another state, if they meet at least two of the following criteria:
    - the balance sheet total is at least the equivalent of UAH 20 million;
    - the annual net income for the last financial year is at least the equivalent of UAH 40 million, with the entity's own funds being at least the equivalent of UAH 2 million.

Other entities which meet a number of criteria established by legislation may also be recognized as a qualified investor by investment firms.

Please note that the conception of qualified investor is new in Ukrainian legislation, and provides for the possibility of such new players, in cases stipulated by the Capital Market Law entering into transactions with financial instruments without intermediation by investments firms. However, the rules of the SC do not provide qualified investor to be a clearing participant. In further legislative developments and clearing rules, this issue shall be further considered and addressed.

### Close-out netting

An important innovation under the Capital Markets Law consists of the introduction of the concept and mechanism for close-out netting. While provisions of the Capital Markets Law in respect of close-out netting are mainly drafted for derivative contracts transactions, the Capital Markets Law also provides that close-out netting should apply to transactions with securities.

According to the Capital Markets Law and the Code of Ukraine on Bankruptcy Proceedings, the main provisions for close-out netting are outlined as follows:

- Close-out netting– is a complex of the following actions as set out in an agreement, which provides for the close-out netting (the "**Agreement**"):
    - calculation of the value of obligations of the debtor under bankruptcy vis-à-vis creditor(s) under derivative contracts, which provide for mandatory close-out netting, concluded as of the close-out netting date[17];
    - novation, as provided by Article 604 of the Civil Code of Ukraine, of all obligations under derivative contracts, which provide mandatory close-out netting, into monetary claims, which are due; and

[17] "close-out netting date" is a date, determined by the Agreement, or the date, on which bankruptcy proceedings were commenced against a party to the Agreement. The date of bankruptcy proceedings commencement is considered as close-out netting date by default.

- termination of novated obligations, as outlined above, by set-off and calculation of netto-obligations[18].

- A person responsible for close-out netting should be determined in the Agreement.

- The parties to the Agreement may deviate from close-out netting procedure, provided by the Ukrainian law.

- Close-out netting in bankruptcy is not possible if the agreement does not provide for close-out netting and in few other cases.

Please note, while the Capital Markets Law introduced the concept of close-out netting, there are some ambiguities and gaps in respective provisions of the law which create uncertainty in respect of its enforceability. Its enforceability is to be further tested, including in the courts. Currently, the stakeholders are in discussion on further improvements of close-out netting concept in Ukraine, initiating amendments into the legislation.

In this regard clearing rules and contractual arrangements should be properly drafted to ensure efficient implementation of close-out netting.

Please note that improper applicability/ inefficiency of close-out netting concept would negatively affect the steps proposed within this report.

[18] "Netto-obligations" are defined as amount of monetary claim, determined as a difference between mutual claims of the parties to the Agreement in accordance with the Agreement.

# Description of post-trade settlement model before July 2021

Ukraine's securities market operates on an **interfaced model** with (mainly) **commercial bank money settlement**. Some specific types of transactions (primary market auctions and secondary market RvP (Receive-versus-Payment) instructions in government securities) settle directly within the NBU's SEP RTGS system.

Currently, corporate securities settle within the NDU and government securities within the NBU Depository. Cash settlement for stock exchange and OTC trades in both types of security takes place within the SC.

The main characteristic of securities settlement of all stock exchange deals is that generally it works with a **mandatory prefunding** concept both for securities and cash.

Cash is blocked on the account of the trading member's cash account with Settlement Centre and securities are blocked for trading at the NBU Depository (government securities) or the NDU (other types of traded securities).

**Settlement Centre plays a key role** in the settlement process and essentially orchestrates the whole process both on the cash and the securities side of the transaction.

Prepositioning and prefunding practically eliminates replacement-cost risk [19] in the post trade settlement process due to the "guaranteed" availability of cash and securities for settlement (no default) and the short time (intraday) between trade and settlement. But prefunding systems in general have a damaging effect on market liquidity and deter cross-border investments partly due to time zone differences. Also, the current settlement process in Ukraine comes with significant manual intervention, limiting volumes, and presenting high operational risk and overall costs.

It reflects a lack (low level) of trust between trading parties.

### The CCP

Before 1 July 2021 Settlement Centre (the "**SC**") was legally a banking institution. The SC kept cash accounts for all (intermediary) entities in the settlement process. Account holders could keep funds on their account with the SC, however commercial banks usually did not keep cash at the SC overnight. The SC could invest funds on the accounts held through the NBU in the form of overnight repo transactions or NBU certificates of deposit.

Prior to 1 July 2021 the SC provided its activity based on a license for clearing activity issued by the NSSMC and banking license issued by the NBU.[20] Starting from 1 July 2021, the banking license of the SC was revoked and consequently the SC currently have no direct access to the SEP (RTGS) system. As an "interim" solution, pursuant to the Capital Markets Law, until 1 January 2021 the NBU

[19] Replacement-cost risk is defined and explained in the description of Step 1.5 on page 22 below.

[20] https://settlement.com.ua/pro-bank/documents.html

had to open account for the SC for the purpose to ensure provision of cash settlements by the SC as a clearing institution.

Under the Capital Markets Law, starting from 1 July 2021 until 1 January 2023 the SC on the basis of its existing clearing license[21] can perform its activity of the CCP in respect of transactions with securities. The SC can continue to provide CCP's activity in respect of transactions with securities after 1 January 2023, if:

- no person (including foreign) obtains CCP license and register CCP rules pursuant to the requirements of the Capital Markets Law; or

- if the SC will obtain CCP license.[22]

According to the Law of Ukraine "On Payment Systems and Transfer of Funds in Ukraine"23 the CCP is not provided with direct access to the SEP (RTGS) system.[24] On 30 July 2021 the Parliament of Ukraine voted for the Law of Ukraine "On Payment Services", which will substitute starting from 01 August 2022 the Law of Ukraine "On Payment Systems and Transfer of Funds in Ukraine". The Law of Ukraine "On Payment Services" provides the list of participants to SEP, and CCP is not among them. The law however states that other parties determined by law could be the SEP members, if they met the requirements set by the NBU.[25]

Please note that in order to implement step 3 of this report, the direct access of the CCP to SEP is recommended; thus the respective legislative changes should be introduced.

### The NDU

The NDU acts as CSD[26] and provides depository services with regard to securities (save for securities subject to custody by the NBU)[27] based on its rules registered by the NSSMC.

The Capital Markets Law does not overhaul the requirements and legislative framework with respect to the depositary activities and only provides with minor changes.[28] Pursuant to the provisions of the

[21] According to the provisions of the Capital Markets Law, clearing licenses issued prior 1 July 2021 would be re-issued for clearing licenses for provision of clearing activities related to determining liabilities.

[22] Pursuant to the transitional provisions of the Capital Markets Law.

[23] In version effective starting from 1 July 2021.

[24] Pursuant to Article 11 of the Law of Ukraine "On Payment Systems and Transfer of Funds in Ukraine", only Ukrainian banks and State Treasury Service of Ukraine can have direct access to SEP through the accounts opened within the NBU. Prior to 1 July 2021 the Law of Ukraine "On Payment Systems and Transfer of Funds in Ukraine" envisaged such possibility.

[25] Part 5 of Article 72 of the Law of Ukraine "On Payment Services".

[26] Pursuant to Article 9 of the Law of Ukraine "On Depository System of Ukraine", CSD (NDU) ensures formation and functioning of the depository accounting of securities. CSD (NDU) keeps depository records of all securities issued, except for those kept by the NBU in accordance to the legislation.

[27] See Article 9 of the Law of Ukraine "On Depository System of Ukraine".

[28] Pursuant to Article 65 of the Capital Markets Law, depositary activities are subject to regulation of the Law of Ukraine ""On Depository System of Ukraine".

Capital Markets Law, the NBU until 1 January 2021 had to open account for the NDU for the purpose to ensure payment of income under securities.

Pursuant to the Capital Markets Law, the NDU (on the basis of the respective license) may carry-out clearing activities related to determining liabilities in respect of securities,[29] however, the NDU cannot provide activity of the CCP.[30]

In order to implement steps 2 and 3 described within this report, we note the respective legislative changes might be required. For more information on the available options, please refer to the section "Step 2 solution step by step and legal analysis" of this report. Please note that further discussions with market players/stakeholders in order to identify the best practically suitable option for initiation of payments by the NDU under securities transactions might be considered.

### Settlement of security transactions under the DvP principle

Settlements of security transactions under the delivery-versus-payment (the "**DvP**") principle are regulated by the Law of Ukraine "On Depositary System of Ukraine". Starting from 1 July 2021, settlements on securities transactions, the recording of which is carried out by NDU or the NBU, concluded on organized capital markets and OTC transactions in compliance with the DvP principle, shall be carried out by:[31]

1. transfer of funds by banks and the NBU in accordance with the procedure established by the NBU and/or reflection by a clearing institution in the internal accounting system of a clearing institution, changes in rights and obligations regarding funds between parties to securities transactions and other transactions with financial instruments within the reflection of transfer of the right of claim to funds, including the termination of obligations in relation to funds as a result of netting, in the manner prescribed by the NBU within approval of the NSSMC;
2. transfer of securities by the NDU or the NBU to clients' accounts in accordance to the NSSMC's procedure;
3. transfer / write-off / crediting of rights to securities by depository institutions to depositors' accounts in accordance to the NSSMC's procedure;
4. transfer / write-off / crediting of rights to securities by correspondent depositories to the accounts of their clients (depositors) in accordance with the legislation of another country.

Settlements on securities transactions in compliance with the DvP principle are considered completed after the implementation of:

- depositary operations performed by the NDU or the NBU in accordance with their powers, based on the settlements results on the transactions with securities on the depository

[29] See Article 59 of the Capital Markets Law.

[30] See Article 60 of the Capital Markets Law.

[31] Pursuant to the Law of Ukraine "On Depository System of Ukraine", as of 1 July 2021 (with the changed implemented by the Capital Markets Law).

institutions` accounts, in case if transactions` settlements require the fulfillment of the depositary operations on the depositary institutions` accounts;

- sending orders and / or notifications (information) by the NDU or the NBU on the performed by the depository institutions securities transactions for their [*to carry out their*] respective depositary operations on the security owners` accounts and/or nominal holders, in case if transactions settlements do not require depositary operations on the depositary institutions` accounts.

The NDU and the NBU, in accordance to its authorities, shall notify the person conducting clearing activities on the fact of completion of settlements regarding to securities transactions in accordance to the requirements established by the NSSMC.

Depository institutions are obliged to reflect in the depository accounting system the transfer of ownership of securities and rights to securities, as well as the restriction of rights to securities.

The clearing entities and the NDU and/or the NBU shall ensure compliance with the DvP principle under transactions with securities concluded on organized capital markets and/or OTC under the DvP principle.

Moreover, the SC's Clearing Rules[32] (the "**Rules**") contains peculiarities of clearing of the DvP transactions. The SC's Clearing Rules, inter alia, contain general clearing procedure, procedure and requirements of the admission of obligations to clearing, requirements to such obligations, etc.

The current legislative framework for settlements under the DvP principle provided in the Law of Ukraine "On Depositary System of Ukraine" provide a basis for implementation of T+[2] settlements in Ukraine. At the same time, the general legal framework on creation / perfection encumbrances, secured creditors rights in course of the insolvency need to be considered and taken into account under the clearing arrangements. For further details, please see the section "Step 1.5. solution step by step and legal analysis".

It is also worth noting that special RvP type transactions in government securities exclusively settle through the depository department of the NBU with no prepositioning and in central bank money (within SEP) without the involvement of Settlement Centre.

[32] The Rules (version dated 22 December 2020) could be find on the SC's official web-page at: https://settlement.com.ua/internal-documents/

# Drivers of change

The securities and settlement post-trade structure is undergoing continuous change for a number of reasons:

- Legal changes with effect from 1 July 2021 required the CCP to alter its role in the system. Other subsequent changes will require further changes and create opportunities for other changes.

- Although the current prefunding model with same day settlement is a very effective means of controlling credit risk, it comes at the cost of imposing costs and inefficiencies on the operation of the market. As a result, it is an obstacle for international investors entering the market and may result in reduced liquidity. T+2 settlement is needed to allow time for international investors to participate. Generally, markets in developing countries have moved away from prefunding/same day settlement to the more widely accepted T+2 settlement with some form of counterparty credit risk management.

- Encouraging greater participation by international investors also requires a market structure that uses internationally recognised structures: the current structure in Ukraine with DVP settlement divided between CCP and the CSDs is not used elsewhere. The market also needs to meet standards as represented by the PFMIs – see box below.

- In the longer term, new markets are emerging in Ukraine, in particular financial and commodity derivative markets. These require the introduction of a CCP. Economies of scale will push towards adoption of a single CCP serving multiple markets, which in turn will drive further change in the securities market infrastructure.

# Roadmap – on the way to a modern capital market post-trade structure

In this section we propose a series of three steps on the way to an eventual target market structure for securities transactions (described in the following chapter).

The steps are:

- Step 1: the process already in place since 1 July, which requires full prefunding of cash and securities for T+0 settlement
- Step 1.5: replacement of the full prefunding requirement with a risk-based prefunding of margin to cover the risks between trade and settlement. This enables the market to move to T+2 settlement
- Step 2: based on experience in step 1.5, we propose to keep the risk-based prefunded margin requirement and bring together in the CSDs responsibility for managing the synchronisation of cash movements in SEP and securities movements, with a CCP solely responsible for risk management.

These steps are summarised in the following table. Possible timing is discussed in the final section of the report.

| | To end-June 2021 | 1.0<br>From July 2021 | 1.5 | 2.0 | **Target** |
|---|---|---|---|---|---|
| Cash settlement | Through SC account in SEP | Through SC account in NBU | | Banks' SEP accounts managed by NDU (& NBU CSD) | Banks' SEP accounts managed by NDU (single CSD) |
| Applicable SWIFT Model | Current model | | Hybrid Model 1 + Model 4 | | Model 4[33] |
| Payment type | High quality commercial bank money | | | Central bank money | |
| Settlement model | 100% prefunding coupled with net position settlement | | Gross DVP | | Gross DVP vs CCP<br>Net in CCP |
| Settlement cycle | T+0 | | T+2 | | |
| Risk management | 100% prefunding | | Prefunded margin | | Classic CCP model |

[33] The respective legislative changes related to arrangements of direct access to the SEP (RTGS) for the CCP and NDU need to be introduced. Please refer to sub-section "The CCP" and "The NDU" of section "Description of post-trade settlement model before July 2021" of this report.

## Step 1: Settlement from July 1

Since 1 July SC has no longer been a banking institution and as such, has no longer been a direct SEP participant.

Measures were taken to manage this change, including:

- NBU opened an account for SC and now provides indirect access to SEP.
- NBU operates this account for SC, making and receiving payments on SC's instructions.
- (NBU has also opened an account for NDU – limited to corporate actions)

Although this is an extra "layer" in the current settlement process, apart from adding extra time for settling the cash leg, no major changes have been made. There are no changes to the prepositioning and settlement of the securities leg. The main characteristics – prefunding, T+0, commercial bank money settlement remain unchanged:

- At the start of day or during the day, clearing participants[34] transfer funds to the SC account at NBU to prefund purchases. NBU credits these to the SC account.
- The CSD (NBU or NDU), based on the respective order from depositary participant, blocks securities (which are subject to transaction) and notifies the SC.
- SC credits funds to the clearing account of a clearing participant within its own books and – along with the information about blocked securities positions - informs the exchange. This does not affect the cash balance at the NBU.
- When a transaction is ready to be settled, the SC makes the respective settlement [from the buyer to the seller]. It then informs the CSD which completes the transfer of blocked securities to the buyer.
- At the end of the day the clearing participant may either leave funds with the SC overnight or ask for them to be returned.
- The investment of funds held by the SC overnight is still under consideration.

[34]. Definition of "clearing participant" is based on the current Ukrainian legal framework. Pursuant to the Decision of the NSSMC No. 429 dated 26.03.2013 "On Approval of the Regulation on Clearing Activity", clearing participant is a person who has entered into a clearing service agreement with a clearing institution for provision of clearing for obligations under securities transactions (other financial instruments) made for the clearing participant's own interests and / or for the interests of its clients and counterparties. Please note that pursuant to the Paragraph 3 of the Clearing Rules of the SC (version dated 22 December 2020): clearing participant could be legal entities that have a valid license for carrying out professional activities on the capital markets – activities related to trading of financial instruments, the NBU, as well as issuers of the securities; Please note that the qualified investors are not among those.

NBU have said that they try to keep the cut-off deadlines, though it is likely the change will add less than an hour to processing times for payments.

SC does not enter into agreement with every single entity, which is a party of securities / financial instruments transactions. Instead, such buyers/sellers enter into agreements with Investment firms. Such Investment firms enter into clearing agreements with the SC. The Rules of SC do not refer to the "qualified investors" being the direct clearing participants.

On a general note, based on the insolvency law rules, assets of clients of the Investment firms of financial instruments should not be included in the liquidation estate of such Investment firm or seized in respect of Investment firm's obligations.

Pursuant to the Rules, for the purpose of provision of clearing related to determination of liabilities and clearing activities of the CCP, the SC enters into the different agreements in relation to the clearing, including:

1. agreement with an operator of the organized capital market for the purpose of providing clearing services in respect of the agreements concluded on the organized capital market, which is managed by such operator. This agreement basically regulates relations in respect of the information exchange on which basis clearing is performed;
2. agreement on settlements in securities based on the results of the clearing – with the NDU/the NBU;
3. clearing services agreement - with a legal entity, which is a clearing participant.

Pursuant to the Rules, clearing/sub-clearing accounts are maintained for clearing participants/their clients, as well as respective cash payments arranged/clearing performed, based on the clearing agreements. Pursuant to Paragraph 3 of the Rules: clearing participants could be legal entities that have a valid license for carrying out professional activities on the capital markets – activities related to trading of financial instruments, the NBU, as well as issuers of the securities. The SC provides clearing services to the clearing participant on the basis of concluding a clearing agreement (cl. 3 above).

Additionally, pursuant to the item 5.4.6 of the Rules, the SC shall register clients of the clearing participant and counterparties of clearing participant, based on the information provided by the clearing participant. This requirement in Rules is quite vague and require further clarification in line with provisions in respect of the clearing sub-accounts.

Based on the provisions of the Rules, clearing participants could open clearing sub-accounts within the SC. Pursuant to the item 6.4 of the Rules, a clearing sub-account is a sub-account, which is an integral part of the clearing account of the clearing participant, aimed at accounting for clearing assets of a client of a clearing participant/counterparties of a clearing participant. Clearing sub-accounts are maintained for the purpose of separate or general (collective) accounting of clearing assets of clients of clearing participant/counterparties of the clearing participant. Status of sub-clearing accounts remain unclear under current Rules and general legal framework and may require further clarifications.

Pursuant to the item 5.3.3. of the Paragraph 5 of the Rules, the SC has a right in case of default of the clearing participant or of the client of the clearing participant to terminate the obligations of such clearing participants and obligations of the SC as the CCP, as well as the respective unfulfilled counter-obligations of the clearing participants and unfulfilled counter-obligations of the SC as the CCP regarding to delivery or payment, in accordance with the internal documents of the SC. Moreover, pursuant to the Rules, including, inter alia, Paragraph 13 of the Rules, in case of insolvency of the party to a securities transaction, the SC applies close-out netting.

According to the Rules, the close-out netting concept is defined as "a procedure of termination by the SC as a clearing institution of all existing on the date of close-out netting obligations in relations to securities transactions irrespectively from their content/term (timeline) of fulfilment, the party of which is insolvent". Practice of close-out netting implementation is to be developed, including in court proceedings.

### Assessment

This model in fact represents very little change from the current model and thus presents the same strengths and weaknesses: it eliminates counterparty credit risk through an effective DVP mechanism and the use of prefunding and T+0 settlement, but at the cost of depressing liquidity.

In assessing this model, the main question is whether it constitutes payment in central bank money settlement. Our view is that strictly speaking it does not, on the grounds that the asset that the seller receives in the DVP process is a claim on an institution that is not a central bank. However, it can be described as very high quality non-central bank money. In this, the current model is neither better nor worse than the model in use up to the end of June 2021.

The grounds for this analysis are the following.

Most significantly, assets held by the SC from settlement banks should be segregated from SC's own assets for bankruptcy purposes and therefore would not be at risk in the event of the failure of SC. Under general rules pursuant to the provisions of Article 93 of the Bankruptcy Code of Ukraine, securities and other client's assets of professional participants of securities (capital) markets (such as the SC) are not included into the liquidation estate of the professional participant (investment firm, clearing institution, the SC) and, consequently, cannot be used for satisfaction of creditors' claims of the insolvent party.

Moreover, pursuant to Article 63 the Capital Markets Law "derivative contracts, other financial instruments, currency assets, commodities, as well as monetary assets, which belongs to clearing participants and has been transferred to clearing institution in course of performance of its clearing functions cannot be arrested and / or enforced under the obligations of such person".

Additionally, pursuant to the provisions of Article 59 of the Capital Markets Law, it is prohibited to arrest /enforce monetary assets from the accounts of the person, which carries-out clearing activity and which are credited for the purpose of settlements / ensuring settlements under derivative contracts, financial instrument, currency values and commodities on organized markets and OTC.

We note that respective implementing regulation and clearing rules should provide for the efficient implementation of the above provision of the Laws (including clearing accounting system/ accounting, etc.). Due Diligence / legal analyses in this regard is recommended with further adjustments in the regulations, rules if needed.

This model still contains the weaknesses of the current structure:

## Step 1.5: Margin prefunding

The objective of Step 1.5 is to enable the Ukrainian market to move to T+2 settlement without increasing the risks in the system or imposing unnecessary costs on participants. For example, if the market moved to T+2 settlement but retained full prefunding from trade date, risks would be well controlled but at the cost of keeping cash and securities tied up over the 2-3 days between trade and settlement. On the other hand, if the market moved to T+2 but only required pre-positioning of cash and securities on settlement date (this is the current practice for the small number of trades executed for T+2 settlement) counterparties would be exposed to credit risk between trade and settlement. However, it is possible to manage the credit risk without full prefunding if the amount prefunded is related to the actual risks. We therefore propose an interim solution based on margin prefunding. The intention is to enable SC and the market to gain experience and confidence in risk management techniques before moving to Step 2.

The risk analysis underlying this proposal is set out in the following section.

### Post-trade risks

There are two types of post-trade risk:

*Principal risk*

This is the risk is that one party to a trade delivers their side of the transaction and receives nothing in return.

SC effectively eliminates this risk by the use of a strong DVP system (PFMI Principle 12).

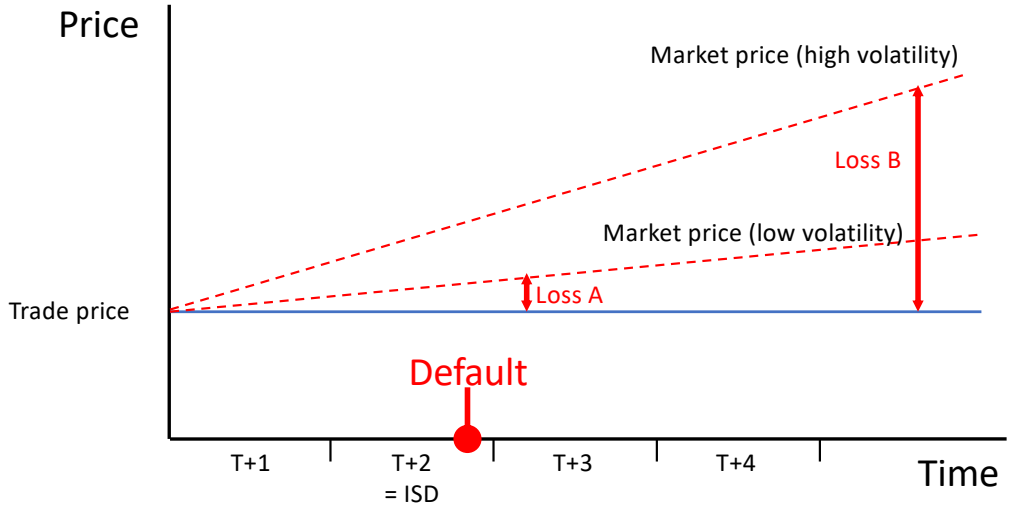
*Replacement-cost risk*

This is the risk that one party to a trade defaults before settlement and the non-defaulting party has to replace the trade at a worse price.

The size of the loss under replacement cost risk depends on two factors:

- The length of time between the original trade and the replacement trade
- The volatility of the market price of the asset.

This is illustrated in the diagram below.




A market participant buys an asset at the trade price for intended settlement on T+2. However, before settlement, the counterparty defaults and the market participant has to replace the trade in the market. If the price has fallen since the trade date, they can replace the trade at no loss. If the price has risen, then there will be a loss on replacing the trade.

The loss will be small (Loss A) if the trader can move quickly to replace the trade on T+3 and the market is not volatile, so the price has not moved very far from the trade price.

The loss will be large (Loss B) if the trade cannot be replaced for several days and the price has moved further away from the trade price.

The intermediate solution therefore is that clearing participants (including investment firms, qualified investors, etc.) place cash with the SC in advance of trading sufficient to cover the replacement cost to their counterparties if they default before settlement. The amount required to cover a given trade is based on the potential price movement of the security traded between trade and settlement date using data on the volatility of market prices and the time taken to carry out the replacement trade. Market liquidity (which determines how quickly the non-defaulting party can execute a replacement trade) and market volatility (which determines how the market price has moved since trade date) need to be measured, as they are not under the control of SC. However, any delay in declaring a participant in default extends the time before a non-defaulting party can replace the trade. An efficient process for declaring a participant in default and starting the replacement trade reduces risk (PFMI Principle 13).

The amount of margin prefunded by the clearing participants, therefore, would give that participant trading capacity for either buying or selling, removing the need to preposition securities before selling. In the event of a party defaulting and not completing settlement, the margin would be used

to compensate counterparties who had to replace their trades at a less advantageous price. The margin of each clearing participant and their clients (if applicable) would be accounted separately in the accounts of the SC and not commingled: unlike a traditional CCP structure, there would be no mutualisation of risk (i.e., the margin paid by a non-defaulting party could not be used to top up the margin of a defaulting party) and no guarantee provided by the SC. This is intended to keep the overall structure simpler.

In calculating trading capacity several decisions need to be made:

- frequency of calculation: if the trading capacity calculation is made more frequently (eg daily), it can be more closely aligned with market conditions, but will change frequently. If there is a requirement for more stability, then trading capacity is likely to be a lower multiple of margin

- confidence level: the purpose of margin is to cover potential price movements with a given degree of confidence. The margin required to cover 95% of potential price movements will be lower than the margin required to cover 99% of potential price movements: the PFMIs set a baseline of 99% confidence level.

- granularity: calculating a different multiplier for each asset class (or each individual security) is more accurate but more difficult to apply in practice

- period of exposure: the purpose of the margin is to cover potential price movements between the trade date and the time when the non-defaulting counterparty can replace the trade. This period will depend on (1) how quickly after T+2 the default process is initiated and (2) how quickly the trade can be replaced in the market (i.e., the liquidity of that particular asset). Depending on these factors, the period of exposure is likely to be greater than 2 days.

**Illustration of calculation of margin and trading capacity**

Suppose that for Security X, the historical volatility of daily price movements over the agreed lookback period is observed to be < 5% for 99% of the time

Suppose the period of exposure is set at 3 days

The margin requirement is then 5% x 1.732* = 8.66%. This gives a multiplier of 11.5.

Thus prefunded margin of UAH3mn gives trading capacity of 11.5 x 3mn = UAH34.5mn.

* Historical volatility is multiplied by the square root of the number of days in the holding period for calculating the margin rate. $\sqrt{3} = 1.732$

Legal structuring and documenting (under regulations, rules and contracts involved) of the proposed structure is of essence to ensure no risk of defaulting party is on the CCP under the trades with strong legal nature of the margin.

**Step 1.5 solution step by step and legal analysis.**

| | | Notes on legal structure |
|---|---|---|
| Pre-trade | Participant A (defined by SC Rules) pays margin to SC on its own behalf or for its client | This is an outright payment which could be structured as prepayment under respective contractual arrangement so that in the event of bankruptcy of Participant A it is not part of the liquidation. While the Capital Markets Law refer to "guaranteed security", its nature (legal classification) under general legal framework remains unclear and there is a risk of different interpretation. Amendments/ clarifications/definition to laws in this regard are advisable to ensure that "guaranteed security" is a separate type of collateral (not the pledge), does not require registration and other formalities applicable to security instruments under general rules; could benefit from close-out netting, etc. When the legislation is changed/ clarified, it should be characterised as collateral given against SC's undertaking to A's counterparties. |
| | SC calculates the trading capacity for Participant A based on available margin after covering unsettled trades from previous days. To keep the calculation simple this is the gross total of unsettled trades.<br>SC allocates trading capacity for Participant A to exchanges based on instructions from Participant A. | SC gives an undertaking (covered by the rules of SC) and confirmed contractually to the participants of the exchange that<br>- if Participant A defaults before settling the trades executed on the exchange;<br>- SC will pay compensation to Participant A's counterparties who make a loss replacing the trades at the current prices<br>- up to the amount of margin paid by Participant A and allocated to that exchange [i.e., SC cannot use margin paid by other clearing participants or allocated to other exchanges: the damages to be covered by SC are limited by contract, so that there is no mutualisation of losses];<br>- if the margin paid by Participant A and allocated to the exchange is insufficient, compensation is reduced pro rata. |
| Trading | Exchange monitors Participant A's trading exposure (buying and selling) against available trading capacity and does not allow bank to exceed it | Compensation for replacement cost losses on trades executed through the exchange is provided under SC rules and contract. |

| | | |
|---|---|---|
| Settlement date<br>(T+2) | Participant A ensures there is sufficient cash in its account with SC to settle purchases and sufficient securities to settle its sales.<br>Participant A settles trades and SC calculates change in trading capacity | Based on contractual arrangements and rules. |
| | Participant A can request return of margin (in part or in total) and SC notifies exchanges of reduction in trading capacity | |
| Default | Participant A is put into liquidation/bankruptcy procedure with trades waiting for settlement<br>Unsettled trades are cancelled and compensation is paid to counterparties where they face a loss in replacing trades at current prices | SC makes payments to counterparties who suffer a loss based on the results of close-out netting and/ or respective contractual arrangement.<br>We note that there are uncertainties in respect of implementation of recently adopted concept of close-out netting. Court practice is still to be developed and law may need to be further amended to clarify the concept. At the same time in respect of any amounts due to Participant A from its counterparties the mandatory provisions under the bankruptcy procedure to be considered, if a counterparty of Participant A makes a gain on replacing the trade. |

### Assessment

Step 1.5 enables the move to T+2 settlement by retaining the prefunding concept but reducing the level of prefunding required to the amount required to cover replacement-cost risk. This requires the development of risk management skills in SC and banks and the development of a sound legal and contractual framework for the role of SC. The actual settlement process is unchanged from Step 1.

Where the trading participant is not a bank, they must use a servicing bank to make the payment in SEP. However, the responsibility for making the payment remains with the trading participant. Depending on circumstances, the bank may not make the payment until it has received payment from the trading participant. In Step 1.5 when prefunding is no longer required before trading, this requires the trading participant to fund its account with its servicing bank or make other arrangements before settlement date in order to prevent delays to settlement. We therefore recommend

- that SC sends notifications of forthcoming payments to banks the day before settlement day so they can ensure they have the necessary funds available from their clients to make payment,
- that participants, that trade regularly put in place agreed credit lines with their banks so that the bank can make payment ahead of receiving funds (if required).

It is essential that the rules and standard form contracts supporting the aforementioned arrangements are well drafted, approved by regulator(s)[35].

## Step 2: Central bank money settlement

The objectives of Step 2 are to build on the experience gained in step 1.5 to consolidate T+2 settlement and move to settlement in central bank money. This is achieved by moving the responsibility for managing cash settlement of trades from Settlement Centre to NDU/NBU Depository.

*DVP Settlement process*

On T+2 (morning) clearing participants will have to make sure securities are available at NDU/NBU Depository account (seller) and cash is credited to the relevant clearing account. On the question of the status of clearing account and whether there is a single account in SEP or a separate account for securities settlement, see the discussion on relevant section later in this report. On settlement day, each CSD (the NDU and the NBU) identifies the transactions due for settlement that day. In each case it blocks the securities on the seller's account and sends an instruction to SEP to make payment from the buyer to the seller (respective investment firms). On receiving confirmation from SEP that the payment has been completed, the CSD transfers the securities from the (blocked) seller's account to the buyer's account. Payment is made directly between the buyer bank and the seller bank accounts in SEP.

### Step 2 solution step by step and legal analysis.

| | | Notes on legal structure |
|---|---|---|
| Pre-trade | Participant A prefunds margin as in Step 1.5<br>SC calculates trading capacity and communicates to exchanges | As in Step 1.5 |
| Trade date | Participant A buys and sells securities<br>Exchange monitors Participant A's trading exposure (buying and selling) against available trading capacity and does not allow bank to exceed it | As in Step 1.5 |

[35] According to section 2 of clause 59 of the Capital Markets Law, prior to start conducting clearing activities, the CSD, clearing institutions, operators of the organized market (including commodity exchanges) shall register the rules of clearing activities with the NSSMC. The rules might contain the standard form of the contract.
In respect of the standard form of the contract (which practice exists in some jurisdictions), we note the following. Under general legal framework (article 179 of the Commercial Code of Ukraine), state authorities may be entitled to approve standard agreements (in Ukrainian "*typovi ugody*") in cases specified by law. Current regulatory act, which regulates the authority of the NSSMC, namely the Order of the President of Ukraine "On the NSSMC" dated 23.11.2011 does not grant the NSSMC relevant authorities. Thus, respective legislative amendments may need to be introduced in this regard.

| | | |
|---|---|---|
| Settlement date<br>(T+2) | Participant A ensures there are sufficient funds in its clearing account (account with its servicing bank) and sufficient securities in its CSD account to cover the day's settlement.<br>For sales by Participant A, CSD blocks securities due for delivery in Participant A's accounts and instructs payment by the buyer banks. Payment is made direct to Participant A's clearing account.<br>For purchases by Participant A, CSD instructs payment from Participant A's account clearing account to seller's account. When CSD receives confirmation payment has been made, securities are released from blocked account at seller to Participant A.<br>SC calculates change in Participant A's trading capacity after trades are settled. | We note that Participant A (unless it is a Ukrainian licensed bank) does not have direct account in SEP - it has account with its servicing commercial bank, which servicing bank in its turn has account in SEP. Thus, the authorisation to CSD to initiate payment in SEP under securities trading could be given by the Participant A – Ukrainian licensed bank in respect of its own securities trading.<br>In case Participant A is non-banking institution (investment firm, qualified investor), there should be two chains of the authorisations involved – Participant A gives authorisation to CSD to initiate the payment from its account opened with commercial bank (servicing bank), and the servicing bank gives instructions to CSD initiate the payments from its account in SEP in respect of the Participant A's payments under its security trading. The challenge of such two chain authorisations is that CSD has no access to the Participant A's account (cannot confirm in real time the availability of the funds for the payment) and potentially may initiate payment from servicing bank's account in SEP when the same is not available at the Participant A's account. Thus, availability of the credit lines to Participant A from its servicing bank would be of assistance.<br>Authorisation to CSD to initiate payment from the SEP account of the servicing bank and account of the Participant A opened with the servicing bank could be based on the clearing rules, SEP rules, and contractual arrangements between Participant A, servicing bank and CSD.<br>Contractual arrangement may provide for the "contractual withdrawal of funds ("*dogovirne spysannia*")[36] by CSD from the Participant A account. The Law of Ukraine "On Payment Services"[37] does not contain definition of the "contractual withdrawal of fund", however it contains a close concept of the "Debit transfer".[38] The regulation implementing the Law of Ukraine "On Payment Service" is to be monitored and further analyzed in this regard to address those respectively in contractual arrangements. |

| | | |
|---|---|---|
| | | Alternatively, CSD could be authorised via power of attorneys issued by the Participant A and its servicing bank. We note however that under general rule power of attorney could be revoked by its issuer,[39] thus amendments to the law are recommended to provide a possibility of non-revocable Power of attorney in this case.<br><br>For the purpose of instructing payments by the CSD from the accounts opened in SEP also the following options could be considered:<br>(1) clearing participant has direct access/ accounts with SEP and CSD is authorised to instruct payment from such account. The law needs to be amended allowing direct access to SEP by clearing participants.<br>(2) CSD has account with SEP and Participant A transfer the funds to such CSD's account – similar model as existed for SC. Amendments to the law allowing NDU opening account with SEP would be required. |
| | Participant A can request return of margin (in part or in total) and SC notifies exchanges of reduction in trading capacity | |
| Default | Participant A is put into liquidation/bankruptcy procedure with trades waiting for settlement<br>Unsettled trades are cancelled, and compensation is paid to counterparties where they face a loss in replacing trades at current prices | As in Step 1.5 |

[36] Article 26 of the Law of Ukraine "On Payment Systems and Transfer of Funds in Ukraine".

[37] The Law of Ukraine "On Payment Services" comes into force on 01.08.2022 (except for some provisions) and will substitute the Law of Ukraine "On Payment Systems and Transfer of Funds in Ukraine".

[38] Pursuant to Item 6 of Part 1 of Article 1 of the Law of Ukraine "On Payment Services" a "debit transfer" is a payment transaction performed from the payer's account on the basis of a payment instruction provided by the payee, subject to obtaining the payer's consent to perform a payment transaction provided by the payee, the payee's or payer's payment service provider, or on the basis of the payer's payment instruction.

[39] Article 249 of the Civil Code of Ukraine.

### Assessment

Step 2 consolidates the move to T+2 settlement while moving to DVP settlement in pure central bank money, as payment takes place between accounts in SEP. This allows experience of risk management to develop in SC and the banks without further changes.

Regulation and or law need to be amended allowing implementation of this Step as commented above.

Also, as under Step 1.5 it is essential that the legal drafting of the rules and standard form contracts supporting these arrangements must be carefully drafted and reviewed/ approved by regulators.

To provide smooth cash leg settlement, it is advisable to review the current NBU practice of not providing any fully secured/collateralised (against high quality assets with an appropriate hair-cut) intraday liquidity to SEP participants. Provision of secured intraday liquidity (or in some cases even unsecured ones) is common practice among central banks to support smooth operation of the RTGS system for both securities and clean payments. The provision of intraday liquidity arrangements, either by a central bank/monetary authority or the commercial sector, is seen as a significant risk mitigant as without such arrangements the potential for system gridlock in the RTGS system is a real possibility.

# Step 3: the Ukrainian post-trade infrastructure – target model

Below we describe the changing roles of post-trade infrastructures and a proposed securities settlement flow for Ukraine – in line with the international best practice.

Changing roles and responsibilities of the post-trade actors

- An entity based on respective CCP license acts as a Central Counterparty to capital markets (organized market and OTC), to clear cash and derivatives transactions and possibly even extend services to markets trading in agricultural products and/or energy products as well. It operates a full set of risk management tools and default management procedures to provide a safe and cost-efficient environment for market participants.

- Clearing Members: a new category of participants to be introduced into the legislation with the introduction of CCP clearing - the clearing members (not to be confused with the "clearing participant"). Clearing members are often, but not necessarily, the same entities as settlement agents and payment banks (see flow diagram below).

- NDU: by merging with the NBU depository, it offers central securities depository and settlement services in all types of securities on the Ukrainian market. It is responsible for managing both the securities and the cash leg of securities DvP transactions.

## The Securities Clearing Layer

The role and responsibility of a central counterparty (CCP) could be undertaken by SC or by another entity established for this purpose based on respective license.

However, there are additional costs in assuming this larger role, and for this to be financially viable, CCP will need to extend the scope of its service from securities to derivatives. This may require NSSMC to mandate clearing requirements. In case SC provides CCP role probably changes in the ownership of SC will also be needed.

The PFMIs describe the role of a CCP as follows.

> "A central counterparty interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer and thereby ensuring the performance of open contracts. A CCP becomes counterparty to trades with market participants through novation, an open-offer system, or through an analogous legally binding arrangement. CCPs have the potential to reduce significantly risks to participants through the multilateral netting of trades and by imposing more-effective risk controls on all participants. … As a result of their potential to reduce risks to participants, CCPs also can reduce systemic risk in the markets they serve. The

effectiveness of a CCP's risk controls and the adequacy of its financial resources are critical to achieving these risk-reduction benefits[40]. "

A CCP reduces operational, credit and counterparty risk between the trading members. Trades are netted out (BIS DvP Model 2 or Model 3) and the CCP guarantees the settlement of netted positions for each clearing member.

A CCP contributes to the efficient functioning of financial markets by introducing:

- novation: a CCP stands between the buyer and the seller. Thus, counterparty risk is reduced, which supports greater liquidity. CCP preserves anonymity of the trading parties and thus supports pre-trade anonymity as well.

- clearing membership: a CCP operates a Clearing Membership concept/system. The CCP sets requirements (capital, legal, operational) for CMs. Usually there are two levels of CMs: a. General CMs (clearing their own (and own client) transactions as well as transactions concluded by non-clearing members) and Individual CMs (they can clear only own (and own client) transactions).

- margining: a CCP operates a multi-layer collateral system and holds collaterals in the form of individual (clearing member) margins (typically the main types are initial and variation margins) and collective guarantee funds of clearing members. The levels of margin, default fund required are based on risk management models which need to be tested regularly and – if required – adjusted. The main purpose is to cover the CCP's exposure in case of a default, such collateral can be used in default situation. A list of eligible collaterals is determined by the CCP, along with valuation rules and applied haircuts. CCPs usually accept cash (local currency and some foreign currencies) and securities as collateral.

- default management: a CCP develops detailed and transparent default management rules. In a default, a CCP manages this by using the collateral and operating a detailed "default waterfall" – including the CCP's own funds – that minimizes knock-on effect of a potential fall of even the largest player(s) on the market.

- clearing: multilateral net clearing (introduced to a market whenever it is practical[41]) reduces liquidity needs of clearing members, reduces number of transactions, and thus operational costs and risks. (On the other hand, handling defaults become more complicated with netting.) Netting can be effected on the cash leg only (BIS DvP model 2) or on both the securities and cash leg of the transactions (BIS DvP Model 3).

- markets: a CCP can cover both organized markets (including stock markets) and OTC markets. Standardising OTC products (specification) can bring liquidity to OTC markets. Also, a CCP can cover cash markets, derivatives markets and a wide range of products from securities to agricultural and energy contracts. It can offer services to several trading venues.

[40] PFMIs, Introduction 1.13, page 9

[41] Without netting, only cash products (securities and commodities) could be cleared and settled. For clearing of derivatives netting is necessary.

If SC undertakes this role, it can build on the service enhancements it achieved throughout the different transition steps toward this phase of post-trade infrastructure development.

If SC assumes responsibility for guaranteeing transactions in securities, financial derivatives and potentially energy and commodity markets, the NBU is likely to consider that it is not appropriate for the central bank to be the owner of SC, which could be seen as implying its financial support in the event of major default, undermining the principle of "moral hazard". This implies that new ownership would need to be found for SC. Defining this new ownership is beyond the scope of this report and as far as we are aware is under review as part of the NEXT-UA project. It would be necessary to ensure that SC is adequately capitalized, as a CCP's own capital is the last line of defense in the traditional default "waterfall" (see below).

The main characteristics of securities pre- and post-trade processes:

- pre-trade: CCP will introduce margining system with initial and variation margins introduced. The collected margins reflect the actual (post-trade) risk of the clearing member's position, but it does not limit the trading capacity.

- trading: the exchanges do not monitor available collateral vis-à-vis trades to conclude. But in case of a non-performance of a member of its settlement obligations (T+2) and/or collateral deposit obligations (regarding already opened positions), the CCP will have to ask all exchanges to suspend non-performing trading member(s).

- EoD trading day: CCP – based on the trades received from the organized markets (exchange(s)) will have to calculate cleared positions for each clearing member. According to BIS DvP model 3 both cash and securities positions are netted out on a multilateral basis. Cleared positions are reported to CMs, on own/client/(in case of General CMs) on individual non-clearing member(s) level as well.

- between trade day and settlement: CCP calculates margin requirements for each clearing member. The requirements depend on the level of actual open interest valued at the latest available price.

- settlement: On T+2 cleared cash and securities positions have to be available on the respective settlement agent's cash and securities account dedicated for Stock Exchange settlement. Multinet positions are settled against CCP's "technical" account. The balance of CCP's account should be nil after all (net) positions are settled.

- default: However, in case securities and/or cash is not provided (on time) by the respective agents, CCP will have to initiate default procedures against the non-performing party according to its rules. The CCP still has an obligation to settle against the other party(-ies) and depending on whether it is cash or securities that are missing, different procedures will be initiated to fully meet these obligations.

At the same time, the CCP can (and should) utilise the resources available to manage this default situation. The different resources are used in a specific (and published) sequence, that is usually called as "default waterfall". A typical default waterfall:

1. margin collateral of the defaulting clearing member

2. default fund contribution of the defaulting clearing member

3. dedicated amount of CCP;

4. default fund contributions of non-defaulting clearing members

5. assessment on non-defaulting clearing members (capped)

6. CCP's further own funds.

Some of the most important "preconditions" (main characteristics) to operate a strong CCP institution:

| | |
|---|---|
| Legal and regulatory framework | See separate section |
| Legal environment | Legislation that supports novation of trades to CCP (or similar mechanism), legal validity of netting (the current close-out netting framework to be tested and if necessary – updated), protection of collateral and default fund resources held for CCP in case of a default of a CM, clarification of the margin collateral status as a separate security outside of the general requirements for securities perfection, legal and tax status of default fund creation, feasible tax consequences ; introduction of clearing membership concept / multi level CMs, their status; settlement agents; access to SEP to clearing members, settlement agents is to be considered; etc. |
| Supervisory framework | Build supervisory powers at NSSMC and create/strengthen oversight function at the NSSMC to monitor CCP. |
| Ownership issues | If SC takes on the role of a CCP, NBU's ownership role needs to be reviewed. In potential conflict of the owner role vs. the regulator/overseer role. It is understandable that the NBU has a strong interest of the safe operations, stability, controlled risk management and healthy development of the CCP, but this can be achieved from the overseer position. With extending services to agricultural and/or energy markets, NBU's ownership in SC will be even more debatable. |
| Capital | The CCP needs to have a strong financial background in the form of own capital as a backstop to CM resources and have access to lender of last resort liquidity from the Central Bank). Look for potential owners, eg. Market institutions, exchange(s), CSD, international investors, other CCPs, IFIs… |
| Capital requirements calculations for banks | Bank exposures to a Qualifying CCP[42] may benefit from lower capital weights. |
| Reliable price information | Obtain (have) real-time and reliable price information for use in risk models. |
| Products/markets serviced | Due to significant costs in establishing a CCP previous calculations showed that the Ukrainian markets will not be able to support two separate CCPs in the near future. Develop relationship with potential new markets – agricultural and/or energy. |

[42] A "Qualifying CCP" is one that, according to the rules of the relevant regulator, materially conforms with the requirements of the Principles for Financial Market Infrastructures and therefore its counterparties benefit from lower capital risk weights on their exposures to it.

| | |
|---|---|
| Exchanges | Develop real-time connection to organized markets to obtain concluded trades and real-time price information. |
| Products | Create liquid products working together with exchanges and market participants. |
| Risk management | Abandon prefunding practice. Build up RM tools. Introduce T+2 settlement. Gain RM know-how, build team. |
| Default management | Create default waterfall. |
| IT system | Procure clearing system to process trades, calculate clearing positions, calculate collateral requirement. |
| Internal regulations | Clearing rules, clearing membership agreement, transparent risk management framework, default management rules (default waterfall). |
| Financials | Develop pricing to support stable financial operation. |
| SEP | Become direct member of SEP[43], need access to central bank in order to hold cash as risk free asset. |
| NDU | Develop real time connection. Transaction settlement, collateral management, default management. |
| Clearing members | Have investment firms (including banks, brokers) with financial and operational capability to become clearing members who can take on obligations vis-à-vis the CCP on behalf of their clients. |
| Training | Market players, investors, regulators. |

## The Securities Settlement Layer

According to international best practice a Securities Settlement System (usually operated by a CSD) **controls both securities and cash settlement**. This role is currently mostly controlled by SC and needs to be moved to NDU. DvP process thus needs to be operated by NDU for all types of trades (primary market, exchange, OTC). This is a change already foreseen at Step 2 of the roadmap.

By merging into NDU the government securities CSD operated by the NBU, NDU becomes **the sole Central Securities Depository in Ukraine**.

**Securities collateral** – if accepted by the CCP as eligible collateral – is held at NDU, blocked/pledged on the accounts of respective clearing members[44] in favour of the CCP. NDU reports on pledged securities to the CCP. The CCP calculates collateral value based on the blocked securities, the amount, the current price of securities and the applicable haircut. Unblocking pledged securities is only possible if remaining collateral is sufficient to cover CM's margin obligations.

[43] Pursuant to the Law of Ukraine "On Payment Services", the CCP (including the SC) would not be provided with a direct SEP membership and thus, the respective legislative amendments are required.

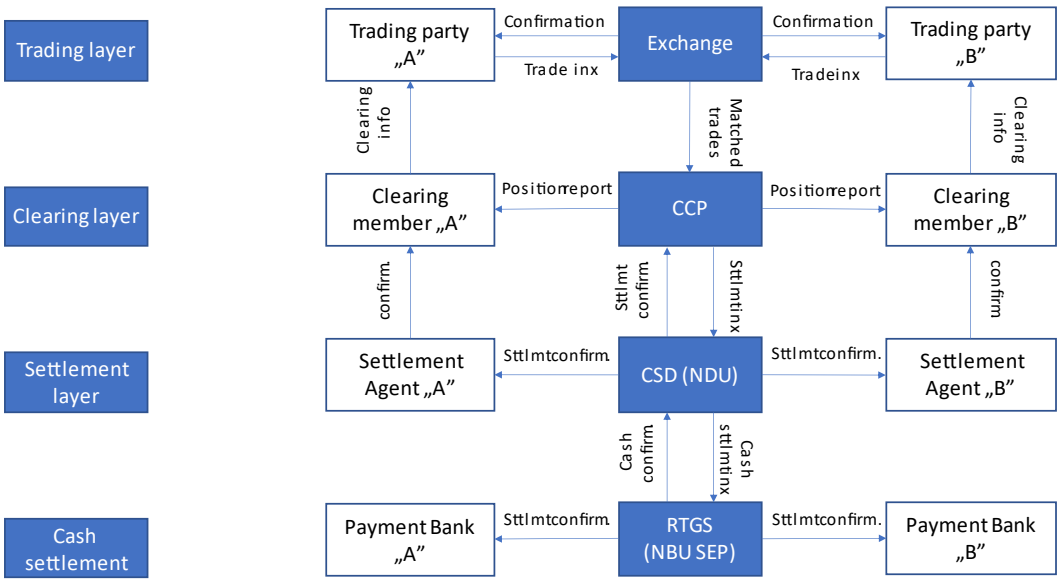
[44] In most cases clearing members also hold account with the CSD, otherwise the CM has to enter into an agreement with a settlement agent. Collateral as well as settlement of CCP cleared transactions will then settle through the settlement agent's account. For the sake of simplicity, here we consider that the clearing members are also acting as settlement agents.

Settlement takes place on T+2 (for Stock Exchange transactions). **No prepositioning and prefunding** required.

**Securities settle on T+2 within NDU** based on the cleared positions calculated by the CCP. Securities are moved between clearing members' (dedicated) securities settlement accounts: from net securities seller clearing members to net securities buyer clearing members via the CCP's own account – which should be in a flat position by the end of the settlement batch.[45]

Cash settlement is in **central bank money** at NBU (SEP) and is managed by NDU based on cleared positions calculated by the CCP. NDU has the power to initiate cash movements on clearing members' accounts opened with SEP based on contractual arrangements and/or potentially by power of attorneys. Cash is moved between clearing members' SEP accounts: from clearing members with a net buy position to clearing members with a net sale position via the CCP's own account. At the end of the settlement batch, the CCP's account should be in a flat position.

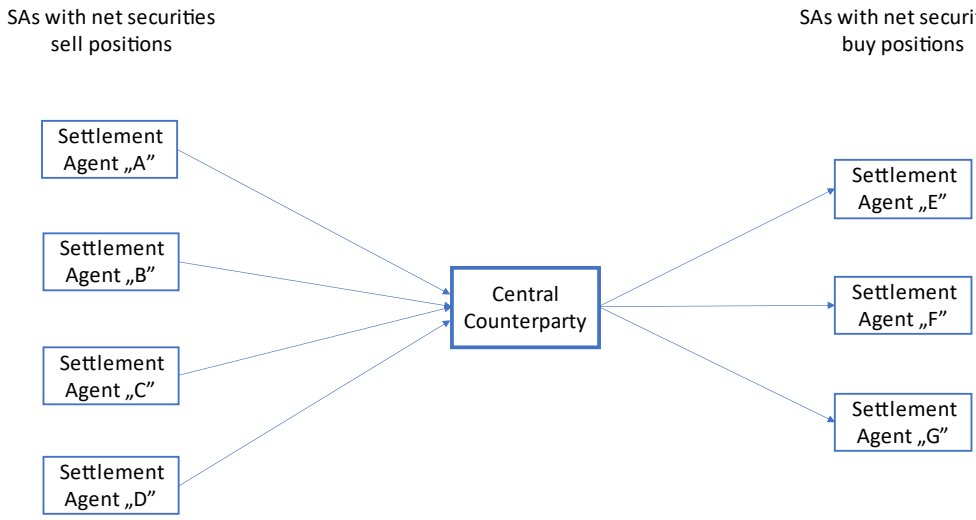
NDU receives status information about non-settled cash transactions from CCP.




Trade - post-trade flow. The different roles of trading party, clearing member, settlement agent, payment bank can be provided by the same entity. Theoretically all "combinations" are possible.

Securities settlement is on a multilateral net basis (in case of BIS DvP Model 3) between the settlement agents ("SA") securities accounts and the CCP's securities account within NDU:

45 Multilateral netting is among the clearing members as calculated by the CCP while settlement within the CSD is on a „gross" basis between the CM account and the CCP account – there is no multilateral netting on the level of the CCP account.


SAs with net securities sell positions
SAs with net securities buy positions
Settlement Agent „A”
Settlement Agent „B”
Settlement Agent „C”
Settlement Agent „D”
Central Counterparty
Settlement Agent „E”
Settlement Agent „F”
Settlement Agent „G”

# Compliance with the Principles for Financial Market Infrastructures

The Principles for Financial Market Infrastructures (PFMIs) established by CPSS-IOSCO set out the basic standards that post-trade infrastructures internationally are expected to meet.

A summary assessment of the proposed evolution of post-trade processes in Ukraine against the most relevant PFMIs is set out below.

| | Steps 1-2 | Target |
|---|---|---|
| **General organisation** | | |
| Principle 1: Legal basis<br>An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions. | The basis in Ukrainian law for post-trade activities is well-founded and needs to be further amended – see comments above. | |
| Principle 2: Governance<br>An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders. | No need to change in Steps 1-2 | When SC, or other respectively licensed entity, becomes a full CCP and extends coverage to a wider range of markets, there will be a need to review its ownership and governance structure. |
| Principle 3: Framework for the comprehensive management of risks<br>An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks. | This does not differ between the proposed Steps | |
| **Credit and liquidity risk management** | | |
| Principle 4: Credit risk<br>An FMI should effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each | In these Steps the clearing entity does not take credit exposures to participants in Step 1. As SC moves to managing risk through margin, the intention is to limit SC's exposure to the level of margin provided. | In the Target model, when a licensed entity assumes the role of CCP, its management of credit risk on participants becomes critical. |

| | | |
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| participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. | | |
| Principle 5: Collateral<br>An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits. | In Steps 1.5 and 2 we propose that SC only accepts cash at NBU as collateral | In the Target model, the CCP may extend to accepting securities as collateral and will need to assess the terms on which they are accepted. Amendments / clarifications to the legislation might be required to ensure that execution, perfection of the security arrangement are practically affordable and provide strong security status . |
| Principle 6: Margin<br>A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed. | This becomes relevant from Step 1.5 onwards and the CCP will need to build up its risk management expertise to be able to model and manage risks. | |

| | | |
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| Principle 7: Liquidity risk<br>An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of<br>confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions. | Not relevant in steps 1-2 as SC does not provide liquidity | This becomes relevant in the Target model when the CCP may be obliged to make payments before receiving payment. |
| **Settlement** | | |
| Principle 8: Settlement finality<br>An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time. | Definition of finality has been recently introduced to Ukrainian law. However, settlement finality concept to be further practically tested and if needed upgraded. | |
| Principle 9: Money settlements<br>An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money. | Settlement is in central bank money from step 2 onwards. | |
| Principle 10: Physical deliveries<br>An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries. | The clearing entity is not involved in physical settlement of securities. (Its role in the physical settlement of commodities is beyond the scope of this report.)<br>. | |

| | | |
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| **Central securities depositories and exchange-of-value settlement systems** | | |
| Principle 11: Central securities depositories<br>A CSD should have appropriate rules and procedures to help ensure the integrity of securities issues and minimise and manage the risks associated with the safekeeping and transfer of securities. A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry. | Not affected by the proposed Steps | |
| Principle 12: Exchange-of-value settlement systems<br>If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other. | DVP is used throughout | |
| **Default management** | | |
| Principle 13: Participant-default rules and procedures<br>An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations. | Default rules become important from Step 1.5 onwards to limit the closeout period in the event of a default. | In the target model the CCP will need to have detailed default rules and procedures, tested regularly through "firedrills". |
| Principle 14: Segregation and portability<br>A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions. | Not relevant | |

| General business and operational risk management | |
|---|---|
| Principle 15: General business risk<br>An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services. | This does not differ between the proposed Steps |
| Principle 16: Custody and investment risks<br>An FMI should safeguard its own and its participants' assets and minimise the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks. | This does not differ between the proposed Steps |
| Principle 17: Operational risk<br>An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption. | This does not differ between the proposed Steps |
| **Access** | |
| Principle 18: Access and participation requirements | This becomes more important from Step 2 when it is critical to manage the creditworthiness of the clearing entity's participants<br>. |

| | | |
|---|---|---|
| An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access. | | |
| Principle 19: Tiered participation arrangements<br>An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements. | | Tiered clearing membership can be introduced along with the introduction of the clearing membership concept in Step 3. |
| Principle 20: FMI links<br>An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks. | This does not differ between the proposed Steps | |
| **Efficiency** | | |
| Principle 21: Efficiency and effectiveness<br>An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves. | This does not differ between the proposed Steps | |
| Principle 22: Communication procedures and standards<br>An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording. | It is proposed to adopt SWIFT ISO 20022 messages, the current international best practice | |
| **Transparency** | | |
| Principle 23: Disclosure of rules, key procedures, and market data<br>An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed. | This does not differ between the proposed Steps | |

| | |
|---|---|
| Principle 24: Disclosure of market data by trade repositories | Not applicable |

# DvP Cash Operation in SEP

In the previous 'DvP Study in Ukraine' published by SWIFT[46] a number of potential models were identified to settle the cash leg of securities transactions, the Payment element in "Delivery versus Payment". In this proposed Roadmap, on the way to a modern capital market post-trade structure, an interfaced arrangement between the CSD/CSDs and SEP operates. In Step 2 there is a responsibility for the CSD/CSDs to manage the synchronisation of messages to enable simultaneous cash movements in SEP with securities title exchanges in the CSD/CSDs. This will be achieved by allowing the CSD/CSDs to initiate payment instructions over the cash accounts of Settlement Members in SEP.

There are two principle issues to resolve in designing these arrangements:

- Whether Direct Settlement Members of SEP make securities related payments on behalf of themselves or their customers through a single SEP account or through dedicated sub-accounts.
- Whether payments are intermediated through a CSD or paid direct from a buyer's to a seller's account via Direct Settlement Members in SEP

## The use of sub-accounts in SEP

There are potentially two arrangements for sub-accounts assuming that the CSD/CSDs are able to initiate payment instructions across Settlement Member cash accounts in SEP, a push or pull model for cash movements to settle securities transactions.

In the push model individual direct settlement members would be able to allocate a predetermined amount of liquidity to the account/s of the CSD/CSDs in SEP which would give them headroom to settle securities transactions either on a net or gross basis and allocated to a single settlement cycle or a number of settlement cycles during the day. The amount of liquidity made available on a daily or cycle basis would be predetermined by experience and could be varied depending on day of the week, timing of the DvP cycles, value of transactions and following Step 1.5 enables the move to T+2 settlement by reducing the prefunding requirement to cover the replacement cost risk as described.

In the pull model the CSD/CSDs would generate the payment instructions on behalf of the direct settlement members to settle the cash leg of securities transactions on a net or gross basis and depending on the number of settlement cycles.

### Pros and cons of sub-accounts for direct settlement members

If sub-accounts are opened in SEP to facilitate the settlement of securities transactions, then there is an argument that other sub-accounts could also be used to support the settlement of other retail payment systems and other specific/important transactions for individual direct settlement

[46] DvP Study in Ukraine, SWIFT Business & Standards Advisory, 31 August 2020. For more information, please see: http://www.fst-ua.info/wp-content/uploads/2020/10/Ukraine_DvP_Study_Eng.pdf.

members. The following pros and cons are applicable to one or a number of sub-accounts for individual direct settlement members in SEP:

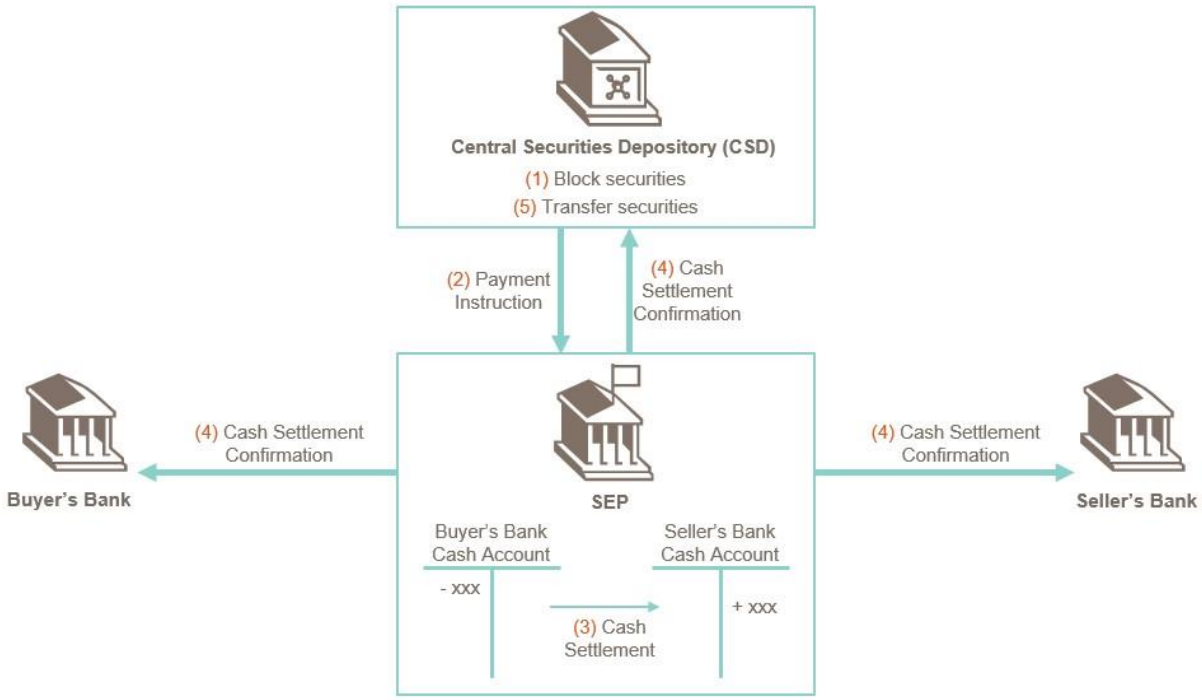
Pros

- In many payment systems direct settlement members must segregate 'own' and 'client' funds and therefore sub accounts support this disaggregation.
- The use of sub accounts supports the identification and/or reconciliation of particular types of transactions be they other clearings, specific transactions, timed transactions and securities transactions for example.
- In a number of RTGS systems pre-notification messages are produced which allow direct settlement members to pre-position sufficient liquidity to a sub account/sub accounts to meet specific settlement obligations.
- The use of sub accounts can easily identify to the direct settlement member when transactions have settled either by system messages or monitoring real-time positions through a User Interface.
- Funds deposited on sub-accounts are considered as part of the total main account position, as a quasi single virtual account. Such subaccounts have no separate legal nature. From an accounting and legal perspective, the total of funds held on the main account and all sub accounts form the total liquidity position for each participant. It may be necessary to sweep funds held on the sub accounts back to the main account at end of day for reserve accounting purposes.

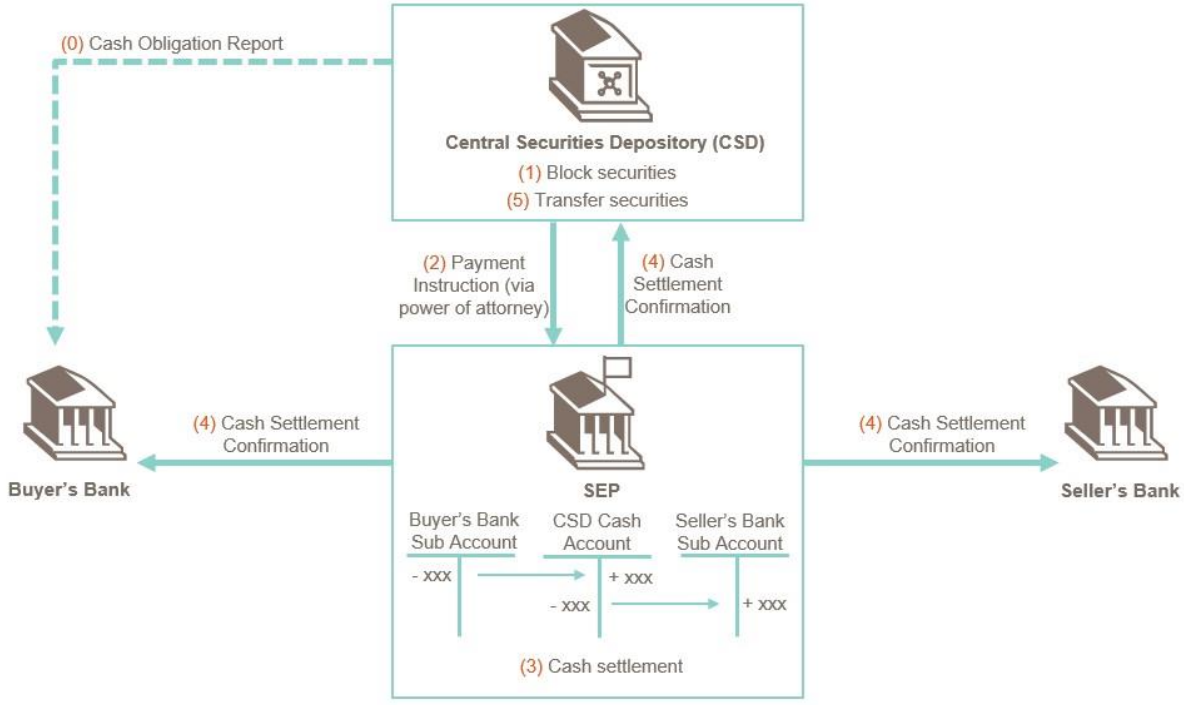
Cons

- Setting up and maintaining numerous sub accounts for individual direct settlement members can be complex for both the direct settlement member and the system operator.
- The use of sub accounts can be a potentially significant liquidity management issue for individual direct settlement members:
    - by creating segregated pots of liquidity which could significantly increase the gross amount of liquidity required across all accounts maintained by individual direct settlement members
        - this could necessitate the requirement of individual direct settlement members to hold additional high quality eligible collateral
        - this could significantly increase the cost of providing sufficient liquidity across a sub account structure to meet obligations
    - creating a complex web of accounts which need monitoring to ensure adequate liquidity is available to meet obligations

The proposed model, incorporating a sub-account structure for Settlement Members in SEP is therefore a combination of the previously described SWIFT Model 1 and Model 4.




**# SWIFT Model 1 – 'DvP Study in Ukraine', SWIFT Business & Standards Advisory, 31 August, 2020**




**# SWIFT Model 4 – 'DvP Study in Ukraine', SWIFT Business & Standards Advisory, 31 August 2020**

### Potential hybrid sub-account structure

Currently the Bank of England is in the process of renewing its current RTGS platform, CHAPS, and is proposing to employ a more flexible arrangement for sub account management for cash accounts in CHAPS.

They have considered the Pros and Cons of operating a sub account structure in the UK context and recognise that in an RTGS system with a large number of direct settlement members, 37 currently, (including banks, payment service providers and asset clearing services providers) a more flexible approach to sub account management is required as there are a large range of capabilities as volumes and values of individual settlement members varies considerably. It should be noted that not all direct settlement members have access to the full range of intraday liquidity and other Liquidity Standing Facilities and unsecured intraday overdrafts/negative cash positions are not allowed in the system.

The larger direct settlement members in CHAPS will have a significant number of people engaged in the real-time management of their cash and securities clearing and settlement whilst the smaller direct settlement members will have sufficient people to manage the operational demands of CHAPS but may not need to manage their positions to the same extent. Therefore the Bank of England will propose a non-mandatory cash account structure whereby the larger direct settlement banks may choose to operate off a single cash account which they are able to manage in real-time with all the sophisticated tools and monitoring devices at their disposal to identify, track and reconcile individual transactions and manage their intraday liquidity whilst the smaller direct settlement members can operate a series of sub accounts or 'allocations' to meet their obligations and benefit from the Pros highlighted above.

### Tools to support a sub-account structure

A number of RTGS systems successfully operate sub account arrangements for participating direct settlement members by:

- Providing real-time monitoring tools/information to individual direct settlement members allowing them to monitor and maintain adequate liquidity in each sub account to meet both the value and timing/s of the specific obligations.
- Providing liquidity management tools to allow individual direct settlement members to effectively manage their liquidity across their main and sub accounts as if it were a virtual single pot of liquidity by
    - facilitating not only end of day sweeps to the main settlement account but allowing intraday top up and drawdowns to/from sub accounts to the main account if and when required
    - providing access to fully secured intraday liquidity in addition to existing Standing Facilities – such facilities are more likely to be required as market volumes and values increase over time.

### Steps to implementation of a sub-account structure

If it doesn't already exist in the current SEP platform there will be a requirement to enable a sub-account structure to be assigned/linked to the parent Direct Settlement Member account.

## Direct vs. intermediated payments

The answer to the question whether it is better for payments to pass directly from seller to buyer or to be intermediated through another institution depends on the settlement model adopted.

In the proposed evolution of settlement models, securities-related cash movements will initially be arranged on a gross payment by payment basis for individual transactions in Steps 1.5 and 2. In Step 3, the Target Model, a CCP is introduced with netting/off-setting for multiple trades on a given settlement day. These two settlement models require different approaches to payment flows.

### Payments in Steps 1.5 and 2

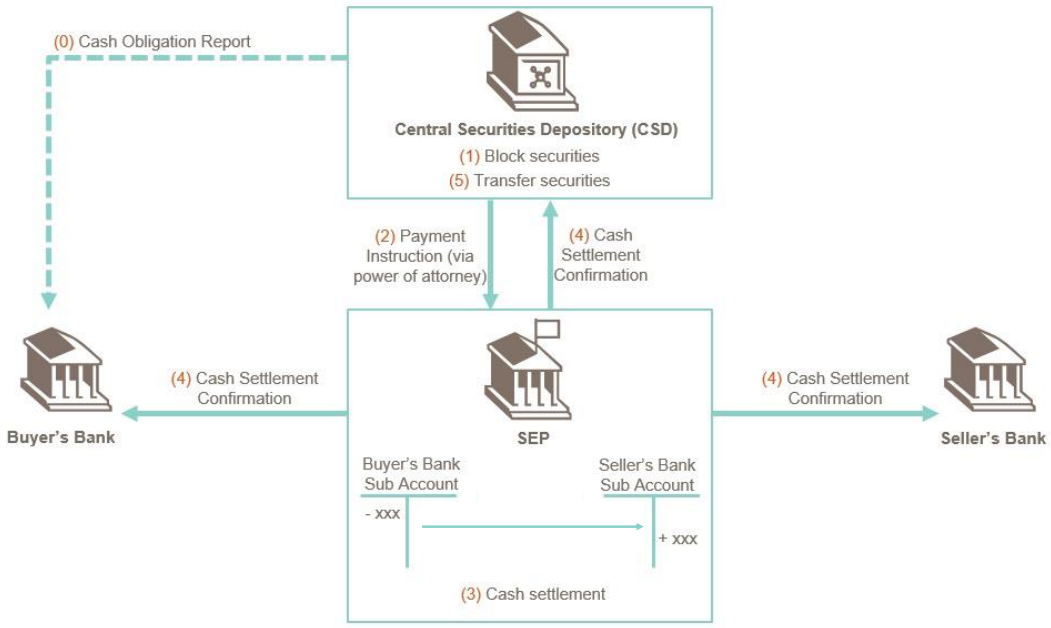
The recommendation in this paper is that in Steps 1.5 and 2, securities related payments should be made on a gross payment by payment basis for individual transactions, as for the majority of participants this will facilitate simpler reconciliation and easier management in the event of a default.

The recommendation proposes that securities related payments are made directly from buyer to seller via a Direct Settlement Member in SEP and not intermediated through a CSD.

The primary reasons for making payments direct from seller to buyer in Steps 1.5 and 2 are the following.

- Direct payments from the buyer to the seller will necessitate fewer payments as it will remove the set of payments through a CSD. This will reduce the end-to-end payment flow, time taken to process and more importantly reduce operational risk.
- This model does not require NDU and/or other CSD to have a Direct Settlement account in SEP which under current legislation is not possible. Current rules would require payment operations through a client account/indirect SEP account which introduces complexity and possible end to end payment delays.
- This model is used by a number of leading CSDs including T2S for the euro area, Switzerland and the United Kingdom and is a recognised international model.

The proposed arrangements would be similar to Model 1 in the previous SWIFT paper, published 31 August 2020, but should consider the use of Settlement Member sub-accounts as an additional benefit to facilitate the clear identification and reconciliation of securities transactions and indeed could also support the settlement of other specific items and the appropriate segregation of funds.




**Hybrid SWIFT Model 1+4**

### Steps to implementation of a direct payments structure

The requirements to implement this model are described under Step 2 above. Critically, the CSD must be able to instruct payment and receive notification it has been completed.

The appropriate message type groups are already in-use and identified by the NBU, pacs (payment clearing and settlement) and camt (cash management) and are covered in 'Credit Transfer Implementation Based on ISO 20022 Standard, Functional Requirements V2, 2021', subject to the CSD/CSDs being able to instruct payments and receive notifications.

## Payments in Step 3

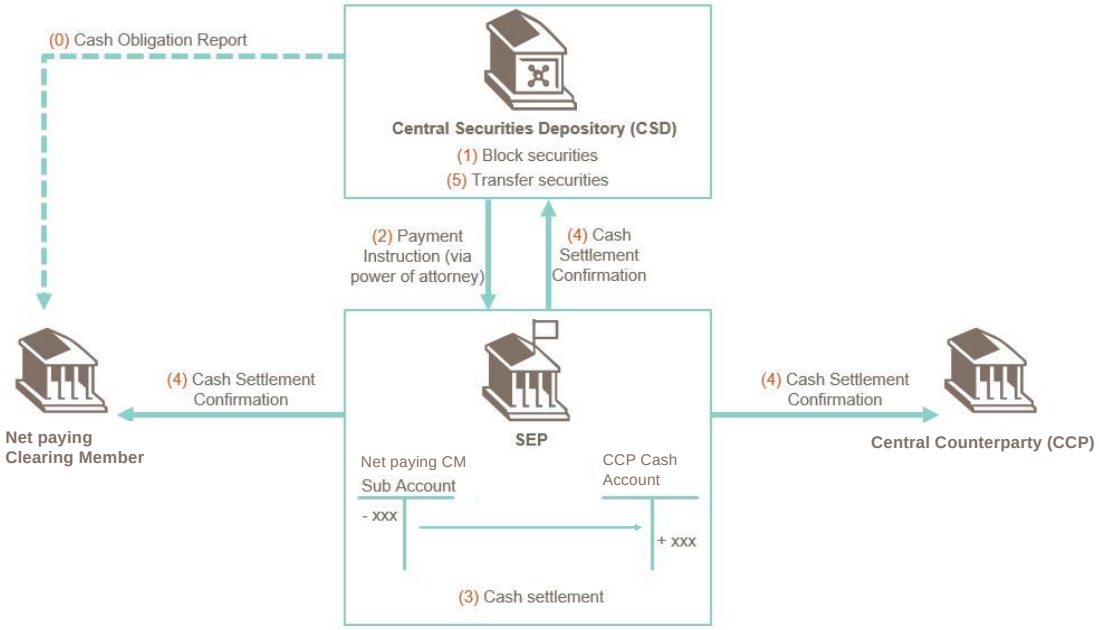
In the Target Model, when a CCP is introduced, most settlement will be intermediated through the CCP, which will net payments. The CCP will therefore receive payments from the Clearing Members that are net payers and make payments to the Clearing Members that are net receivers.

### Steps to implementation of a CCP payments structure

A CCP account would need to be enabled in the SEP with the ability to make and receive payments and should include access to secured Standing Facilities/Liquidity Facilities as required.

The CCP would net its settlement obligations with each Clearing Member[47] and then would settle individually with each Clearing Member, either receiving or delivering, according to the result of the netting. The diagram below shows an example where the CCP is a net seller of securities to a Clearing Member.

The CCP would also use its SEP account to make and receive payments of initial and daily variation margin, assuming these are paid as cash.




**SWIFT Model 4 adapted for CCP**

[47] With regards to cash netting, there are different structures possible whereby cash net position is calculated per each line of securities (and thus DvP – against the CCP - is effected per net security and net cash exchange) or cash could be netted for all lines of securities (thus providing a bigger gain in cash liquidity). This and other details of the CCP model will have to be decided at the stage when stakeholders enter into discussions about introducing CCP to the Ukrainian market.

# Adoption of message standards for the proposed solution

## Adoption of ISO 20022

ISO 20022 is the rapidly emerging global standard for payment messaging which creates a common language for payments data for national and global environments. The richer data which payments will be able to carry in messages will deliver significant long-term benefits to national, regional and the global economy. These benefits include:

- **enriched data** which will enable not only more information to be carried but more detailed information and better structured reference information aiding rapid reconciliation and identity matching.
- improved **straight-through processing** with less need of manual intervention which can lead to potential delays for end users.
- the whole area of **regulation and compliance** can be supported by richer data making it easier for all parties to detect potential fraud and target financial crime.
- by adopting ISO 20022 across many national payment and securities settlement systems it can enhance **resilience** as it creates a landscape in which payments can be re-routed if any systems have operational difficulties.
- more than 75 countries globally have adopted ISO 20022 therefore the new messages will be **harmonised** across a great many systems around the world.
- the new message standards will add **flexibility** as they will be able to adapt to changes in the economy, further advances in emerging technologies and open to innovation.
- this flexibility can improve **completion and encourage product and service innovation**.
- there is a rapidly expanding data science world and the new enriched data formats can significantly improve a whole array of **analytics**.

## Implementation of ISO 20022

**Payments** - The whole payments chain (end-to-end) is covered by ISO 20022 messages including customer to bank (payment), interbank (payment clearing and settlement) and cash management (reporting). Over 75 countries are now in the process of implementing the new ISO 20022 standards including all of the major global economies and financial centres for delivery in 2022.

**Securities** - To improve and facilitate the processes of clearing and settlement of securities, new international and local market infrastructures (MI) have emerged. As the number of trans-border transactions increase day by day, Market Infrastructures needed to choose a messaging standard to use in their communication. Most important and eminent ones such as Eurosystem's renewed securities settlement service TARGET2-Securities (T2S), the US Depository Trust and Clearing

Corporation (DTCC), JASDEC, the Japanese Central Securities Depository and the Monetary Authority of Singapore (MAS) decided on using ISO 20022 as the messaging standard.

Whilst ISO20022 implementation is underway for many payment infrastructures, securities settlement is generally lagging behind, so there is currently little to compare apart from Singapore.

**Example of implementing ISO20022 payment and securities formats**

The following example is taken from the Monetary Authority of Singapore plan for the roll-out of ISO 20022 formats for payment and securities messages simultaneously.

Based on a High Level Impact Assessment and findings from a High Level Gap Analysis, it was recommended that adoption of ISO 20022 be carried out in a two phased approach:

**Phase 1: Like-for-Like++ (Big Bang Adoption for Payments in MEPS+, the current RTGS platform)**

Built on the existing MEPS+ platform, the Like-for-Like schemas allows payments participants to progressively enrich the data using a common ISO 20022 message structure

**Phase 2: MEPS+ NextGen, the planned next generation RTGS and SSS platform (Full ISO for Payments and Securities)**

Utilising the MEPS+ NextGen platform, the new RTGS platform, in the second phase provides for the mandatory adoption of a full data rich ISO 20022 schemas across payments and securities flows. It will be a big bang migration from MEPS+ to MEPS+ NextGen

As can be seen from the above section the majority of ISO 20022 implementations are favouring the roll-out of payment related messages formats first followed by securities related messages at a later stage apart from the Singapore example. The National Bank of Ukraine implementation of securities settlement related payment messages within the SEP is in line with most global RTGS systems.

A full range of ISO20022 documentation has been made available by NBU via its website and a discussion forum has been established.

Implementation of ISO 20022 (bank.gov.ua)

# Progression from ‘as is’ to a potential future model

Implementation of the models proposed in this report will need to progress through a series of steps. These are described in detail earlier in the report and summarised below. It is difficult to put precise timescales to these stages as there are dependencies on actions outside the control of the institutions involved, but an outline timescale is suggested.

### Step 1.5: Margin prefunding

Benefit: remove 100% prefunding requirement and move to T+2 settlement

Requirements:

- Implement risk management system to calculate margin requirements, collect and manage collateral, manage defaults
- Develop legal arrangements between SC, exchanges and participants

Timescale: we suggest 2 years for development, implementation and testing

### Step 2: Central bank money settlement

Benefit: T+2 settlement in central bank money

Requirements:

- Implement legal arrangements for CSDs to initiate payments by sellers
- Implement hybrid Model 1 payment arrangements in SEP

Timescale: we suggest this can be implemented shortly after Step 1.5 if preparations run in parallel, say 1 year after Step 1.5

### Step 3: Full CCP model

Benefit: comprehensive risk management structure for on and off exchange trades for securities and derivatives

Requirements:

- Establishment of CCP entity, with necessary infrastructure
- Decisions on ownership and governance of CCP
- Ability of banks to act as Clearing Members in the CCP
- Implementation of legal infrastructure for CCP

Timescale: the decision whether and how to establish a CCP will be one of the outcomes of the NEXT-UA project and will be determined by its timescales. In any case, it is a major project and 3 years from the time the decision is taken is the absolute minimum time required. As a decision is not imminent

and more time is likely to be required, implementation of Step 3 is likely to be at least 2 years after Step 2.