OliverWyman

PATHWAYS FOR THE SWEDISH SECURITIES MARKET

FOREWORD

This report reviews pathways for the Swedish securities market in light of ongoing harmonisation efforts in the Eurozone, and the Riksbank's directional decision to move SEK central bank money settlements to the common securities settlement engine TARGET2-Securities (T2S).[1]

The study was commissioned by Euroclear Sweden, the Swedish Central Securities Depository (CSD), and was independently conducted by Oliver Wyman between June and October 2021. The study was based on interviews with 15 key market participants, including market infrastructure providers (exchange operators, central clearing counterparties (CCPs) / clearinghouses), CSD participants (including domestic and international banks, asset managers and brokers), issuers and industry organisations.

The objective of the report is to show the market stakeholders' various viewpoints and preferences for harmonisation and the potential pathways forward for the Swedish securities and post-trade market, and in particular highlight the considerations related to a potential move towards T2S. The report does however not represent the entirety of the market, as solely a selection of key market participants was involved, and stakeholders such as retail investors have not participated given the complexity of engaging such a wide and diverse audience. However, many institutions serving them raised perspectives on retail investor impacts which have been reflected in this report.

1 Sveriges Riksbank: Decision guidance - Future securities settlement – renewed position on T2S (DNR 2020-00780)

EXECUTIVE SUMMARY

Post-trade is undergoing several changes: settlement compression, arrival of new and advanced technologies, as well as harmonisation in the Eurozone, notably the joint settlement platform T2S

In the EU, capital markets are permeated by a gradual harmonisation journey, including the capital markets union (CMU) initiative aiming to deepen and integrate capital markets following the European wide post-financial crisis regulations of MiFID II, EMIR, UCITS V, CRD IV and CSDR, which imposed more harmonised prudential and licensing requirements for CSDs. The series of new regulations opened the market for competition, and several consolidations have taken place.

As part of the harmonisation, work with the Eurosystem's securities settlement system TARGET2-Securities (T2S) initiated in 2008 and launched in 2015, with objective to enable securities settlement against Euro across EU on one platform.

T2S has delivered some benefits, including increased harmonisation, and ability to collateralise with a single account for Eurozone cross-border settlements. However, it has not met all expectations, e.g. volumes have been lower than expected, which have caused high settlement costs given the initial investment required, and cross-border settlements are <1% of total T2S transactions to date. More efficient alternatives, in combination with differences in corporate law and tax are plausible reasons for this. In addition, migration to T2S has been costlier and taken longer than expected in several markets.

Alongside the harmonisation efforts, the post-trade industry is subject to trends of settlement compression, digitalisation, and new technologies such as distributed ledger technology (DLT). These are in the medium to long-term expected to revolutionise market infrastructure by enabling real-time data and increasing operational efficiency and transparency, but are yet to be adopted at scale.

Sweden has, until now, not aligned with the majority of Eurozone harmonisation efforts, though with aging financial market infrastructures there is a pressure to invest and decide on the path forward

The Swedish post-trade market has, up until now, not aligned with the European harmonisation efforts to a large extent, and the market is therefore seen to be different from many other Eurozone markets. The T2S platform is currently adopted in 20 markets, including Denmark for the DKK, but for Sweden a formal affiliation application has not yet been filed. In studies performed by the Riksbank, market participants conveyed strong support to harmonise to European standards, but split views on moving to T2S. On September 23rd 2021, it was however announced that the preferred direction of the Riksbank is to use T2S for securities settlement going forward.

As financial market infrastructures are aging in Western Europe, there is pressure to invest to follow market evolutions and enable better information security and resilience. The broader the community that shares infrastructure, the smaller each party's contribution needs to be, which was one of the key benefits brought up by the Riksbank in their directional decision.

This study serves as an independent investigation by Oliver Wyman, commissioned by Euroclear Sweden, gathering inputs from 15 market participants (including exchanges, CCPs, domestic and international banks, and brokers) to investigate the path forward for Swedish securities market, and thereby complementing the Riksbank studies.

The study confirms the market's split views on the path forward regarding T2S, with Swedish exchanges, international CCPs and banks with international operations being more positive towards a T2S migration

The study confirms that there are split views on the preferred path forward — a large share of interviewed participants (~40%) prefer a direct migration to T2S, whereas others (~20%) prefer harmonisation to European standards without T2S, only one participant prefers keeping the current model, while the rest (~33%) are undecided. Concerning T+1/ settlement compression and DLT, participants do not see these as preferable options for Sweden at this point in time.

Moreover, the study conveys that views differ by type of actor — along with the Swedish trading venues, international players with operations in several European markets, e.g. the CCPs and large international banks, are more keen to migrate to T2S due to increased cross-border operational efficiencies and the fact that they already have invested in T2S in other markets. Most local/ Swedish banks are either negative or neutral towards a T2S migration, due to the uncertain nature of the benefits, the limited operations in other markets, as well as the potential drawbacks and costs.

Participants raised that benefits with a T2S migration include accelerated harmonisation, being part of a broader harmonisation effort in Europe, and being prepared for future EU changes

Participants highlighted that T2S could yield accelerated harmonisation, including corporate actions (messaging standards, dividend payments, interest payments, etc.) across geographies and settlements, potentially yielding reduced costs and complexity for settlements in different EU markets.

Another positive aspect raised, is that a T2S migration would imply being part of a broader harmonisation journey in the EU, with long-term benefits of preparing the Swedish market for future regulatory EU changes.

Key concerns raised with T2S include reduced control, lower benefits to Sweden (compared to Euro markets), high costs (investment and running), and the potentially negative impact to end investors

T2S would imply outsourcing of settlement to a platform outside Sweden, creating risk of reduced control (especially given Sweden is not under ECB governance) which would require careful considerations of e.g. investor protection and the Security Protection Act.

The Swedish market with significant retail participation and the use of SEK would not benefit directly from many of the T2S advantages, and several actors see limited business potential. For instance, the liquidity/ collateral advantages with T2S are limited for Sweden due to the use of SEK (and only accrue to Euro settlements). This was different in Denmark (with a more active corporate bond market and a DKK ERM-pegged to Euro) and Finland (Euro).

The cost concerns relate both to migration costs and running costs, as participants have experienced increased settlement costs in e.g. Denmark, Finland and the Baltics after migrating to T2S. As such, there are concerns that a similar move in Sweden would negatively impact end investors. Nordic banks with significant retail business are particularly concerned about the impact on retail investors, which constitute a significant share of the Swedish market.

Despite potentially limited direct benefits, participants agree that T2S should be seen as part of a wider positive agenda towards EU harmonisation, and that a potential migration to T2S should be pursued as a direct, non-layered, transition

- Putting preferences around T2S aside, participants agree that a potential migration should be direct, not gradual, and that Sweden should avoid a layered account model as in e.g. Denmark (i.e. some CSD accounts held directly in T2S for settlement in central bank money against other CSD participants and accounts in T2S, whilst others, e.g. CSD account for retail customers and the like, would be held in the local CSD system and settlement would thus be performed in two steps)
- In order to enable full benefits from a potential T2S transition, a set of principles should guide the path forward:
  - **Full harmonisation with as few local specificities as possible** — in case of a T2S migration, a full and direct harmonisation should be pursued without retaining non-essential local market specificities. Thus, legislative changes would likely be required and the harmonisation model to aim for needs to be defined as a first step
  - **Future-proof solution** — a T2S migration should be seen as an opportunity to build a future-proof solution and facilitate continuous improvements in the future. Also, as the planning and execution of migration will take place at the same time as the industry is changing, there is a need to consider the ongoing market developments to avoid risk of implementing a solution that is outdated when being rolled out
  - **Open to learnings and dialogue** — work should be permeated by open dialogue between market participants, to ensure alignment and that learnings from Denmark and Finland are fully leveraged
  - **Involvement of full stakeholder spectrum** — migration is deemed to be most successful if the full spectrum of stakeholders, including regulators, lawmakers and market participants are aligned and there is a political consensus

A T2S migration would entail significant effort, and all stakeholders must therefore commit to the work required, and beyond investments in time and resources, each institution must put considerations to:

- Business model vision for 2028/2030
- Appropriate staffing and re-skilling of staff
- Legal changes, e.g. legal repapering across the securities value chain
- IT program encompassing changes to messaging, information security, account structure, and business process, together with significant testing
- Long-term P&L and balance sheet impact (beyond project costs)
- Communication and stakeholder management, both between institutions to align timelines and testing, but also internally to ensure commitment from CFOs/CEOs due to size of investment
- Engagement with the Eurosystem, and continuous standards changes during the transition period
- Design of areas adjacent to settlement (i.e. areas not covered by T2S), including corporate actions, proxy voting, account opening, issuer agent model, nominee reporting, static data, tax reporting etc.
- Preparations, planning and securing resources to ensure as short timelines as possible to avoid a “tunnel effect”, with a long period of crowding out other initiatives

CONTENTS

INTRODUCTION

The European Union (EU) comes from a history of national market infrastructure providers (exchange operators, central securities depositories (CSDs) and central clearing counterparties (CCPs)), banks, issuers, investors as well as central banks with national currencies. With the launch of the Euro, it became possible, and to some degree necessary, to integrate the financial markets to attain greater economies of scale and remain competitive vis-à-vis markets such as the United States (US). To strengthen competitiveness and strategic autonomy, a series of initiatives, directives and regulations have been introduced which opened for competition. This has led to a diversification of trading flows to alternative trading venues, and changes in post-trade – a portion of clearing has been transferred to London (now partially migrating back), while some listings and CSD-registrations have been moved outside the EU or to pan-European venues. The markets in Paris, Frankfurt, and Stockholm have continued to remain attractive next to London, but as data is becoming more essential and fully integrated processing chains are winning ground, the historical model of splitting up financial market infrastructures, often along national borders, is put under pressure.

A string of corporate consolidations amongst exchanges have taken place, such as SIX's purchase of the Spanish Bolsas y Mercados Españoles (BME), and Euronext's purchase of a string of exchanges, including the Borsa Italiana and Oslo Børs. The technical consolidation has however proven to be much more difficult, not least due to the sensitivity and complexity of such undertakings. The result is a mix of silo and independent structures of exchanges, CCPs, CSDs, trade repositories, and message services used.

Adjacent to consolidation, the European capital markets are subject to broader harmonisation with a series of initiatives and regulations shaping the markets. Among these are the EU Capital Markets Union (CMU) initiative aiming to create deeper and more integrated capital markets, and the many financial market regulations introduced in the wake of the financial crisis in 2008, including MiFID II, UCITS V, CRD IV, EMIR and CSDR. The latter came into force 2014 and introduced harmonised requirements for CSDs, which opened for competition on equal terms among CSDs in the EU member states. Beyond these, another regulation expected to significantly impact post-trade, is the SRD II and in particular the Golden Operational Record for corporate action events and general meetings.[1] Moreover, the Single Collateral Management Rulebook for Europe (SCoRE) aims to harmonise collateral management, corporate actions and billing processes and is expected to enable market participants to move collateral between EU countries with less friction, and make it easier and quicker for banks to move collateral and securities. Overall, the SCoRE standards are expected to yield increased efficiency, lower costs, interoperability, and lower risk in managing securities and collateral.[2]

1 ECSDA: Shareholder rights directive II — www.ecsda.eu/shareholder-rights-directive-ii

2 ECB: Collateral management harmonisation — www.ecb.europa.eu/paym/integration/collateral/html/index.en.html

One of the largest harmonisation initiatives shaping the European securities and post-trade landscape is arguably though the Euro-area central banks joint settlement platform TARGET2-Securities (T2S). The project was initiated in 2008, with the platform launched in 2015, and functions as a common platform on which securities and Euro-central bank money can be transferred between investors of member states across Europe.[3] The T2S platform solely caters to selected infrastructures and banks, focused on settlements (i.e. does not provide corporate actions, issuance, tax, collateral management or similar services) for all T2S-eligible financial instruments issued and safekept in the CSDs that have joined T2S. The platform is currently used by CSDs in 20 countries, and in 2020 an average of 700,000 transactions were settled daily via T2S, constituting a daily average volume of almost Euro 700 billions. However limited cross-border/cross-CSD transactions (~1%) take place to-date, despite the ambition to increase these. Main hindrances include alternative efficient offerings, and differences in legal, tax and corporate actions standards between countries.[4]

In the Nordics, several markets are already connected to, or in the process of connecting to, T2S. This includes Denmark, which was the first currency (Danish krone) other than the Euro to migrate to the platform in October 2018. However, the migration resulted in challenges, including significant matching problems of clients' settlement instructions, and increased operational complexity. The Finnish CSD Euroclear Finland had originally planned to move to T2S in February 2017 but was required to delay the migration until 2022 as a new system, Infinity, was being rolled out.[5] ECB further postponed the migration to 2023 due to changes on the T2S platform.

Looking at the broader themes for change in the industry, key trends include settlement compression, the rise of digital assets and currencies, and digital transformations including new technologies such as distributed ledger technology (DLT). These are in the medium to long-term expected to change and revolutionise the way market infrastructure works. Technology such as DLT is expected by some to drastically increase operational efficiency via transparent, harmonised and real-time data for all stakeholders in the system, along with more efficient settlement of transactions and reconciliation. The possibility to move to instant or at least trade-day (T+0) settlements is further viewed as an advantage.[6, 7] The Depository Trust & Clearing Corporation (DTCC) announced in September 2021 the plan to implement T+1 and T+0 settlements in the US as of Q1 2022, as well as to use DLT[8] for certain instruments. Although the technology is yet to be widely adopted and deployed at scale, it can be expected to increase its presence in the market over the coming years.

3 ECB: What is TARGET2-Securities (T2S) — www.ecb.europa.eu/paym/target/t2s/html/index.en.html

4 ECB TARGET2-Securities Annual Report 2020

5 New system with the ISO messages rolled out for the Money Market instruments in early 2015, equities added in May 2018

6 ISSA & Oliver Wyman: Future of Securities Services (2020)

7 It should although be noted that real-time settlement can be pursued without DLT

8 DTCC: DTCC'S project ion platform moves to development phase following successful pilot with industry (press release September 15th, 2021) — www.dtcc.com/news/2021/september/15/dtccs-project-ion-platform-moves-to-development-phase-following-successful-pilot-with-industry

As the surrounding market is moving fast, the Swedish securities market needs to make a decision on the pathway forward. With regards to T2S, a formal affiliation application has not yet been filed and the Swedish central bank, the Riksbank, is currently investigating how the cash leg of settlement of SEK denominated securities should evolve, and whether T2S should be used or not. As part of the joint Coordination Forum work in 2020, it was concluded that continued attractiveness and efficiency of the Swedish market requires harmonisation. However, the study conveyed diverse views on the path forward. On September 23rd 2021, the Riksbank's Executive Board although announced that the preferred direction going forward is to use T2S for securities settlement in SEK.[9]

This study serves as an independent investigation by Oliver Wyman, commissioned by the Swedish CSD Euroclear Sweden, with the aim of gathering inputs from a wide range of market participants (including exchange operators, CCPs, domestic and international banks, and brokers) and thereby complementing the study performed by the Riksbank. The report can be seen to form part of the harmonisation roadmap for the Swedish post-trade securities market published in 2021[10] (see Appendix E) and enrich the debate on the future of the Swedish securities markets. As such, the report aims to cover the market participants' views on T2S and the future of central bank SEK settlement, in light of the fastmoving industry trends of digital transformations and techniques.

9 Sveriges Riksbank: Decision guidance - Future securities settlement – renewed position on T2S (DNR 2020-00780)

10 Sveriges Riksbank: Harmonisation road map for the Swedish post-trade securities market — www.riksbank.se/globalassets/media/rapporter/ovriga-rapporter/coordination-forum-for-swedish-post-trade-harmonisation---harmonisation-road-map-swedish-post-trade-securities-market.pdf

OVERVIEW OF THE SECURITIES MARKET

The securities market, where securities such as stocks and bonds can be bought and sold, involves a wide range of participants throughout the value chain, from issuers and sellers/ buyers, to custodian banks and CSDs. The market can be split into two parts: the primary markets, where new securities are issued, and the secondary markets, where buyers and sellers trade existing securities.

Put simply, the key participants in securities markets are CSDs, CSD participants (CCPs, exchanges, brokers, custodian banks), issuers and investors, as well as regulators, industry organisations and authorities. The exchanges provide trading venues where some of the instruments are formally listed and priced, the CCPs secure trades from trade date to settlement and act as counterpart to all parties in cleared transactions, followed by the CSDs who handle the settlements. Surrounding this ecosystem are the banks taking on multiple roles, including custodians, paying/ issuer agents, account operators, clearing- and CSD-members.

Exhibit 1: Key participants in securities market

Participant	Description
Central Banks	**Access to central bank** money in settlement process
Central Securities Depositories (CSDs)	**Operate the securities** settlement system, i.e. handle the delivery of securities and the corresponding payment following a trade (change of owner), and notary service or central maintenance service • E.g., Euroclear Sweden, Clearstream Banking Frankfurt
CSD Participants	**Central counterparty** clearing houses (CCPs) — Facilitate exchange of securities by acting as intermediaries between buyers and sellers of financial instruments, thereby securing trades from trade date to final settlement, and interpose themselves as counterparty to all others in cleared transactions • E.g., EuroCCP, SIX x-clear, LCH and Nasdaq Clearing **Exchange operators** — Facilitate venues for trade, where some of the many issued instruments are formally listed and priced • E.g., LSE, Deutsche Börse and Nasdaq OMX Stockholm **Brokers** — Arrange purchase or sale of stocks, bonds, and other securities on their customers' behalf **Custodian banks** — Responsible for safekeeping customers' securities and e.g. arrange settlements
Issuers	**Develop and sell securities** to the investors
Investors	**Trade securities** in the financial markets
Regulators, Authorities, Industry organisations	**Promote stability** and efficiency in the securities market

Source: European Central Securities Depositories Association (ECSDA), Oliver Wyman analysis

A well-functioning securities market is dependent on a set of enablers, including efficient and appropriate legal frameworks, availability of expertise, risk capital or saving surplus, and liquidity pools. The market is further subject to influence from broader dynamics and trends, including development of advanced technology such as DLT, settlement compression, resilience, and market consolidation.

Despite being a relatively small market, the Swedish securities market is characterised by a high degree of retail participation, many initial public offerings (IPOs), and a large number of foreign investments. When it comes to securities settlement, Sweden is the largest markets in the Nordics and Baltics in terms of the number of securities accounts and the number

Exhibit 2: Overview of securities market (simplified)

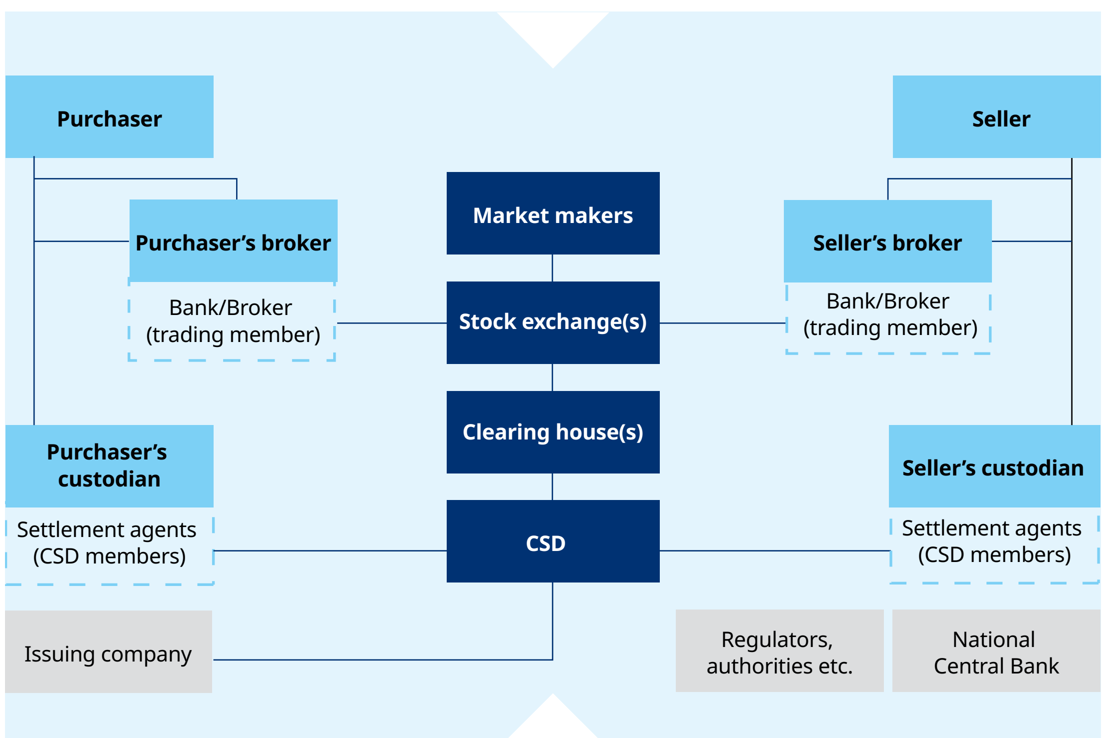
Stable and efficient/ appropriate legal framework

Education/skills development

Risk capital/ savings surplus

Entrepreneurship

Liquidity pool depth and breadth



Influencing dynamics & trends

Market consolidation

Settlement compression

Resilience: data and processing assurance within currency/ national defense area

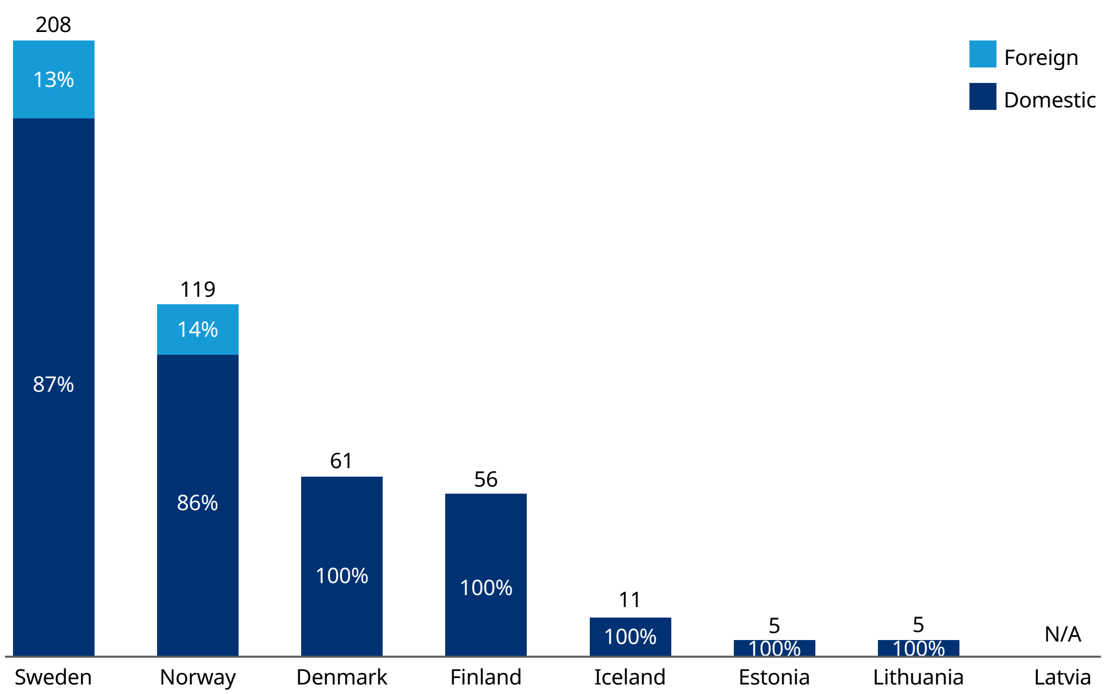
Advanced technology (e.g. DLT)

Source: European Central Securities Depositories Association (ECSDA), Oliver Wyman analysis

Note: Highly simplified overview — does not cover all actors and roles in market, and does not cover OTC/non-CCP flows and value of settlement instructions.[1] Nasdaq OMX Stockholm ranks among the 6th largest exchanges in Europe, and Euroclear Sweden settles around 75,000 transactions per day (1/10 of all of T2S) for some 500,000 account holders, and around 40 participants.[2]

Overall, the Swedish securities market mainly constitutes an equity/stock market, as oppose to e.g. the Danish market constituting mainly a bond market. Swedes invest on average 20% more in the stock market per capita than culturally similar countries and more than twice as much per capita than major European economies. Moreover, there are considerably more IPOs in Sweden compared to the Nordics and Baltics, and a higher number of foreign companies choose to list in Sweden. About 40% of the total market value of stocks listed in Sweden is foreign-owned, while the same is true for about 30% of bonds denominated in SEK, and foreign investors own the majority of Swedish bonds denominated in foreign currencies.[3, 4]

Exhibit 3: Overview of Nordic and Baltic IPO activity 2018-2021



Source: Dealogic

1 European Central Securities Depositories Association's (ECSDA) members database 2019

2 Euroclear Sweden

3 Safekept at Euroclear bank and Clearsteram International, not Euroclear Sweden

4 Euroclear: Aktieägandet I Sverige 2020 — www.euroclear.com/dam/ESw/Brochures/Documents_in_Swedish/Euroclear_aktie%C3%A4garrapport_2020.pdf

OVERVIEW OF EUROPEAN SECURITIES SETTLEMENT HARMONISATION & THE SWEDISH SET-UP

OVERVIEW OF SECURITIES SETTLEMENT HARMONISATION IN EUROPE

T2S resulted from an initiative to address the highly fragmented securities settlement landscape in Europe by providing harmonised and commoditised securities settlement to Euro CSDs and applying a single set of rules, standards and tariffs. By pooling Euro-cash as well as the related collateral for central bank credit in a single account, the objective was to yield liquidity and collateral savings. By further consolidating and harmonising the processes of issuance, account keeping, matching, messaging and holdings reporting, T2S was expected to bring benefits to issuers, banks, infrastructure operators and investors from unified processes and ability to issue anywhere, trade anywhere, safekeep anywhere and settle in one place.

As of 2021, 21 CSDs are connected to T2S across 20 markets[1] Despite this, cross-CSD settlements account for less than 1% of total T2S transactions. This is due to alternative paths, such as the use of International Central Securities Depositories (ICSDs), custodian networks and bundled bank offerings.

To conclude from past studies, T2S has delivered on some objectives, including a harmonised solution across markets increasing operational efficiencies, and ability to collateralise with a single account for Eurozone cross-border settlements. However, not all objectives have been met. For instance, the number of links between CSDs[2] has not increased, due to differences in company law, tax etc. Moreover, participants have generally experienced increased cost of settlements as CSDs not have been able to reduce internal running costs versus the additional T2S costs. For an overview of the T2S objectives and example benefits/ barriers, see Appendix B.

The development of T2S though aims to continue, with key focus on consolidating systems, expanding across markets, and ensuring compliance with regulatory requirements.

1 As of September 2021, via www.ecb.europa.eu/paym/target/t2s/html/index.en.html

2 CSD link is an arrangement allowing a CSD to give clients access to securities issued in another CSD without being direct participants, and thus aims to contribute to market integration by facilitating cross-border securities deliveries

Exhibit 4: Countries with CSDs connected to T2S

Countries with CSDs planning to join TS2

Countries with CSDs connected to TS2

Source: As of September 2021, ECB: TARGET2-Securities Annual Report 2020

Exhibit 5: Ongoing and future development of European system and T2S

Consolidation

Plan to replace current TARGET2 with new RTGS system, by introducing centralised tool for liquidity management (CLM) across all TARGET services (T2, T2S, TIPS, ECMS) – expected go live date November 2022

Aim to introduce Eurosystem collateral management system (ECMS), which will replace local collateral management systems with single cross-border interface

Expansion

Euroclear Finland aiming to migrate to T2S in Sept 2023; expected to bring more than 2 million securities accounts/ additional volumes to T2S

SKDD Croatia plans to change from Croatian kuna to euro (Jan 2023), and to join T2S

Compliance and risk

CSDR settlement discipline regime is expected to enter into force in February 2022

Eurosystem deployed the T2S penalty mechanism, providing a major set of new unctionalities to support T2S CSDs in their compliance with the regime

Ongoing workshops are being conducted on measure of settlement efficiency in line with CSDR regime

Source: ECB: TARGET2-Securities Annual Report 2020

HARMONISATION EFFORTS IN THE NORDICS

In the Nordics, most markets are either connected to, or in the process of connecting to, T2S with only Norway and Sweden being undecided. Norway, however, is neither an EU nor a Euro country, but affiliated with EU through the EEA agreement, whereas Sweden is an EU country without exception from the Maastricht treaty and has thus committed to join the Euro area someday.

As the first currency other than the Euro, securities settlement in Danish krone (DKK) was migrated to T2S in October 2018. Given the local Danish setup with segregated retail accounts at CSD level, the Danish CSD VP Securities opted for a layered account model aiming to ensure continuation of segregated accounts at CSD level. However, the migration resulted in challenges for the Danish market, including significant matching problems of third-party transactions and increased operational complexity.[3] Finland, having segregated retail accounts at CSD level just as Denmark, opted for a different solution to put all accounts on T2S based on learnings from Denmark. The Finnish CSD originally planned to move to T2S in February 2017, alongside Germany, Austria, Hungary, Slovakia and Slovenia, but the migration has been delayed to 2023.[4] Joining T2S in 2023 will thus mark the end of Finland's multi-year transformation journey, during which processes and procedures have been reformed to meet requirements of the evolving European landscape.[5]

Drivers to join T2S are somewhat different between countries. Finland, having Euro, had a natural rationale for joining T2S. For Denmark, key drivers could arguably include that the DKK is pegged to the Euro, and that it mainly is a fixed income/mortgage bond market largely dependent on the European market.

3 Euronext VP securities: Evaluation of the Danish market migrating to TARGET2-Securities — www.vp.dk/Post-Trade-Services/Evaluation-of-the-Danish-market-migrating-to-T2S

4 The system has been implemented but the final date was postponed by ECB. Note that participants in Euroclear Finland have had to pay the T2S adaptation fee, 10 Euro cent per trade, since the start of the project until the planned migration in 2023

5 Global Custodian: Euroclear's Finnish CSD set to join T2S in November 2022 — www.globalcustodian.com/euroclears-finnish-csd-set-join-t2s-november-2022/

CASE STUDY
DENMARK

BACKGROUND

The Danish CSD went into operation with T2S in September 2016, and DKK migrated in October 2018

Prior to the migration, the CSD had participated in the T2S project for ten years and was part of the first group of CSDs that signed the T2S Framework Agreement in May 2012

This was a transition from local post-trade market to integrated European internal capital market

CHALLENGES

Considerable operational problems arose:

- Differences in interpretation of the market practice for third party transactions resulted in matching problems
- Continuation of Danish tradition of segregated retail accounts at CSD level required alignment between two platforms
- Other problems such as differences in message standards, account models etc. increased operational complexity
- Decision to keep existing platform while migrating settlement to T2S, and keeping settlement of certain accounts/ instruments on own platform made it more complex

Still charge settlement cost for every instruction, even though participant only settles on T2S account in T2S (also for Direct connected participants on T2S), implying double settlement costs

KEY BENEFITS

Ensuring good market and distribution channel for Danish mortgage bonds to foreign investors

- This market has high value for Denmark: >DKK 3.5 Billion
- Many investors in Danish housing bonds are outside Denmark and bonds are distributed via International Central Securities Depository (ICSD) Euroclear Bank

T2S offers solution for issuers of Danish housing bonds to reach investors in all markets connected to T2S (if the T2S CSD builds link with VP and accepts Danish securities)

A large Danish issuer of housing bonds has gained new investors since joining

SOLUTIONS

A task force with Danske Bank, Nordea Bank and SEB (participants representing the bulk of custody activities in the Danish market) was set up and identified issues and solutions

Most issues were resolved by the end of the year through short-term solutions

Medium term initiatives to resolve problems related to:

- Account structure
- Need for establishing new market practices
- Harmonisation of matching standards
- Communication protocols

Source: VP securities: Evaluation of the Danish market migrating to TARGET2-Securities, The Danish National Stakeholder Group (DK NSG): The Danish market joining Target2-Securities with DKK, Riksbank Study June 2019: What should Swedish securities look like in the future; Oliver Wyman analysis, Workshops and interviews with participants

CASE STUDY
FINLAND

BACKGROUND

Euroclear Finland signed the T2S framework agreement in June 2012 following consultation with Finnish market participants

Euroclear Finland decided to change their platform, pursuing a project in several steps, first moving settlement and all functions to the new system, and then have the migration of settlement in 2023

Plan was to migrate in 2017, but it was delayed to 2022 as new system, Infinity, being rolled out — new system with ISO messages was rolled out for Money Market instruments in 2015, equities added in 2018. ECB then postponed to 2023 due to changes on the T2S platform

The initial plan was, as Denmark, to have a layered model but after the Danish experience, all accounts were put on T2S — performance testing is ongoing, as putting all accounts on T2S might require certain restrictions on when to process certain corporate action events

EXPECTED/EXPERIENCED CHALLENGES

Participants in Euroclear Finland have had to pay the T2S adaptation fee, 10 Euro cent per settlement instruction, since the start of the project until the planned migration in 2023

Substantial increase of securities accounts (>2MM) will require update of Service Level Agreement provisions and create constraints on operating model for Euroclear Finland

Euroclear Finland will need to comply with T2S Corporate Actions standards

KEY BENEFITS

Finnish market participants have been supportive of the transition

Timing is set to coincide with launch of the European Collateral Management System (ECMS), ensuring access to collateral eligible securities is smooth from the onset

Joining T2S completes Finland's multi-year transformation programme — renewing infrastructure and processes to meet requirements of European settlement landscape

- E.g. replacing core legacy system by Tata Consultancy Services MI technology

SOLUTIONS

Technical adjustments required to ensure smooth migration are being analysed by Euroclear Finland and the ECB

- This includes detailed user testing, migration testing and volume testing at different stages

Further work to ensure full compliance will be undertaken

Detailed impact analysis will also be conducted once functionality and technical details are analysed by Euroclear Finland and the ECB

Source: Global custodian: Euroclear's Finnish CSD set to join T2S in November 2022, ECB: TARGET2-Securities Annual Report 2020, ECB Impact analysis report (December 2019): Non-compliance with T2S harmonisation standards, Oliver Wyman analysis, Workshops and interviews with participants

SPECIFICITIES OF THE SWEDISH MARKET

Historically, Sweden's securities and post-trade infrastructure has been characterised by a range of specificities distinct from other continental European markets. Out of these, the most notable are the CSD participant and account structure, the split between AM and PM sub-markets, and the issuer agent model.

- The Swedish CSD participant and account structure consists of a model where both individual owner accounts and nominee (omnibus or segregated) accounts are used in parallel (although also present in Denmark and Finland).
- The split between AM and PM submarkets means, in turn, that the settlement process distinguishes between settlement of equities and settlement of bonds/money market instruments. In Sweden, these two sub-markets require different securities accounts and have some differences in matching and settlement of transactions as well as in corporate action payments, driving complexity and cost. In addition, for settlement of equities, the process in the VPC system is based on "two component instructions", which is a specific Swedish solution.
- The issuer agent model means that Swedish issuer agents act as a single issuer agent per corporate action event, where the appointed issuer agent has, in regards to receiving instructions relating to the event, a direct communication with holders of owner accounts, including those accounts operated by other CSD members. Nominees receive instructions from their clients and send aggregated instructions to issuer agents. Instructions are not sent to issuer agents as ISO messages via SWIFT or other communication methods, and hence require manual processing for both nominees and issuer agents. The Swedish instruction process, including payment, is not only non-compliant with European standards — it also raises issues with regards to issuer agents receiving instructions from investors that are not their clients.

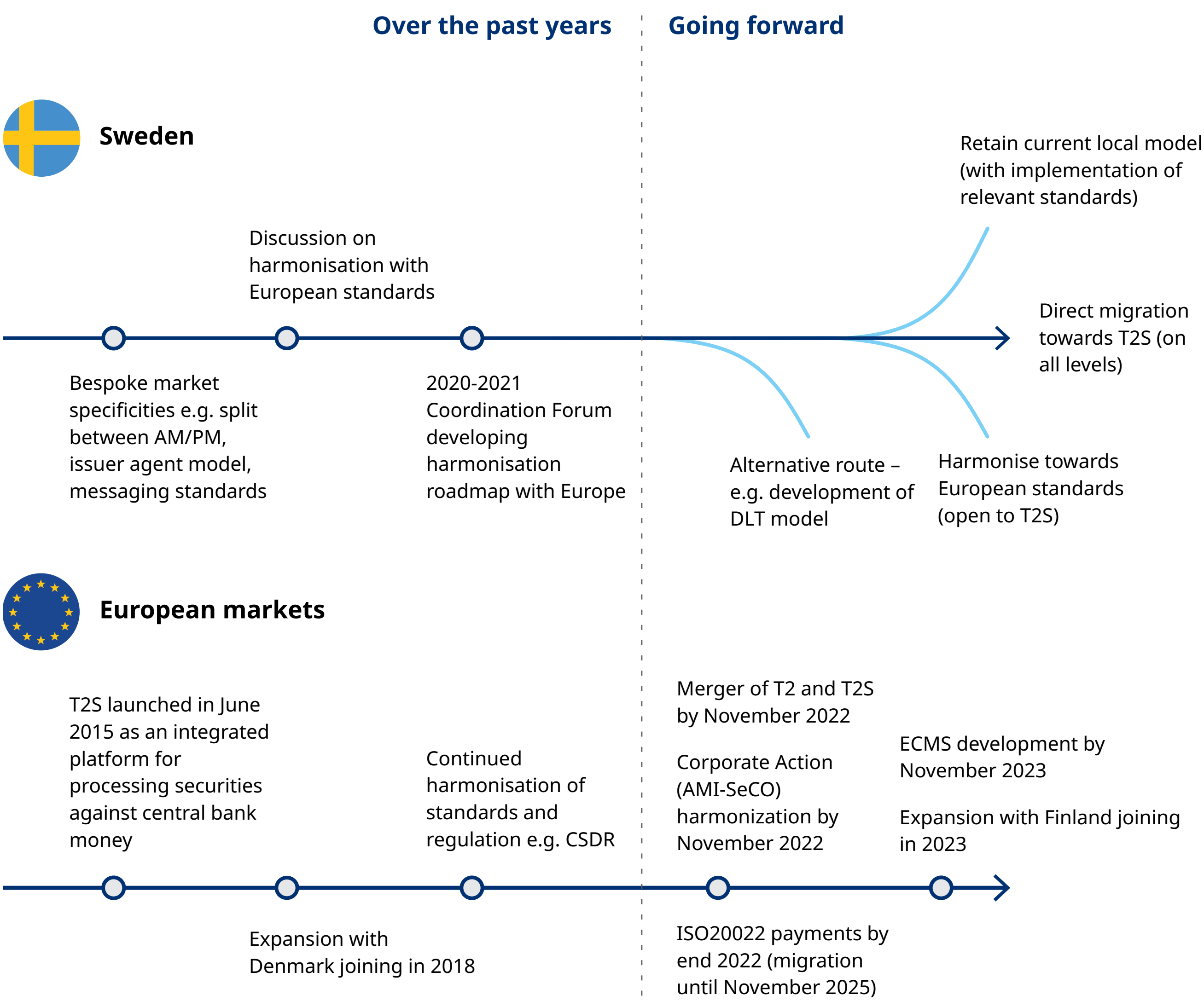
For an overview of Swedish market specificities compared to European standards and T2S, see Appendix D.

In recent years, the Swedish and European markets have developed in parallel tracks, with the European track moving at a faster pace with regards to harmonisation and implementation of T2S, while Sweden is due to decide on its path forward. Although the markets are developing in parallel, some of the European activities have been implemented in the Swedish market, such as changes to comply with e.g. Article 6 of CSDR and implementation of SRD II.

Already in 2010-2011, the Swedish market discussed settlement of securities on T2S, but due to the project still being in its infancy and the uncertainties associated with it, the Riksbank decided to not enter a T2S currency participation agreement for the Swedish krona. As a result, the standards for settlement and corporate actions were adopted to a relatively low degree in Sweden compared to markets that migrated to T2S and, consequently, the setup on the Swedish market remained significantly different.

Given the increasing harmonisation of European post-trade during recent years, the Riksbank decided to reassess a potential migration to T2S. As part of this investigation, the consultation paper "Use of T2S for securities settlement in central bank money" was published in February 2021. The Riksbank received 18 responses, and the consultation conveyed a strong support for harmonisation of the Swedish securities market's processes to European standards in order to maintain efficiency and attractiveness of the Swedish securities market. However, respondents had different attitudes towards using T2S as a future settlement platform. Positive aspects of T2S included efficiency gains and economies of scale, whereas drawbacks were mostly related to concerns about increased costs, as well as availability, robustness and continuity.[6]

Exhibit 6: Parallel tracks of Swedish and European markets



Source: Studies from the Riksbank and ECB, Oliver Wyman analysis, Workshops and interviews with participants

6 Sveriges Riksbank: Summary of responses to the consultation Use of T2S for securities settlement in central bank money (Dnr 2020-01330)

After consultation with the market, the Riksbank published a harmonisation roadmap for the Swedish post-trade securities market[7] (see also Appendix E) in 2021. From this, a T2S decision should be taken prior to analysing settlement as this would affect the ability to harmonise to the standards, which according to the plan would be in 2023. However, already in September 2021 the Executive Board of the Riksbank communicated that its preferred direction going forward is a migration to T2S.[8]

As market participants understand that the Riksbank's ultimate goal is to allow equal access to SEK for settlement in central bank money, there is a need to chart a path forward that ensures stability, consistency and functionality.

7 Sveriges Riksbank: Harmonisation road map for the Swedish post-trade securities market

8 Sveriges Riksbank: Decision guidance — Future securities settlement — renewed position on T2S (DNR 2020-00780)

APPROACH FOR EVALUATING PATH FORWARD

PURPOSE, APPROACH AND PARTICIPANTS

To identify a roadmap going forward, Oliver Wyman, commissioned by Euroclear Sweden, conducted a market study to assess the pathways for Swedish securities settlement and how to best proceed. In light of the announcement that the preferred direction of the Riksbank's Executive Board is to use the T2S going forward, this study should be seen as independent input enriching the considerations to the debate.

In order to gather inputs to the study, the following sources were leveraged:

- Interviews with a range of market participants
- Workshops and Editorial Board meetings with key market participants
- Review of existing analyses and studies performed, e.g. by the Riksbank
- Investigation of case studies of similar markets opting for European integration (e.g. Denmark, Finland), and the corresponding learnings

In involving market participants via interviews, workshops and Editorial Board meetings, a wide range of actors were considered. The interviews covered 15 of the key market participants, including:

- Exchange operators
- CSD participants (including CCPs, domestic and international banks, asset managers, brokers)
- Issuers
- Industry organisations

The report does however not represent the entirety of the market, as solely a selection of key market participants has been involved. For instance, stakeholders such as retail investors have not participated, given the complexity of engaging such a wide and diverse audience. However, many institutions serving them raised perspectives on retail investor impacts which have been reflected in this report.

The list of market participants, including participants in the Editorial Board, is found in Appendix A.

For the investigation of case examples and previously performed studies, the main data sources constituted reports and webpages of the Riksbank, the ECB, and the different European CSDs.

OVERVIEW OF PLAUSIBLE SCENARIOS AND ASSESSMENT

Oliver Wyman proposed and evaluated a set of scenarios intended to cover the full spectrum of plausible ways forward for the Swedish market, including 1) retain current local model (with implementation of relevant standards), 2) migrate directly towards T2S (on all levels), 3) harmonise towards European standards (open to T2S), and 4) Go on an alternative route, e.g. develop a DLT model. The scenarios were discussed in various forums and refined based on input from market participants.

Given the Riksbank's announcement that T2S is the preferred direction going forward, focus shifted to T2S during the writing of this report. Emphasis was therefore given to the associated concerns and considerations, and its implications to different market participants.

Exhibit 7: Overview of scenarios initially assessed

← Scenarios possible depending on level and sequencing of harmonisation → (scenarios 2–4)

1 Retain current local model (with implementation of relevant standards)	**2 Migrate directly towards T2S (on all levels)**	**3 Harmonise towards European standards (open to T2S)**	**4 Go on an alternative route – e.g. DLT**
Continue with a locally tailored model Only harmonise where clear demand exists	Harmonise with European standards Migrate Swedish infrastructure to T2S - varying models possible Target migration to T2S around 2028	Gradually align messaging and other standards (e.g. account model) Make a decision on T2S transition as part of the harmonisation process	Future proof system based on emerging technology (e.g. DLT)
Used as baseline to compare benefits of the other against			*Used as an alternative challenger scenario*

Source: Oliver Wyman analysis, Workshops and interviews with participants

MARKET PARTICIPANTS' VIEWS ON SCENARIOS AND T2S

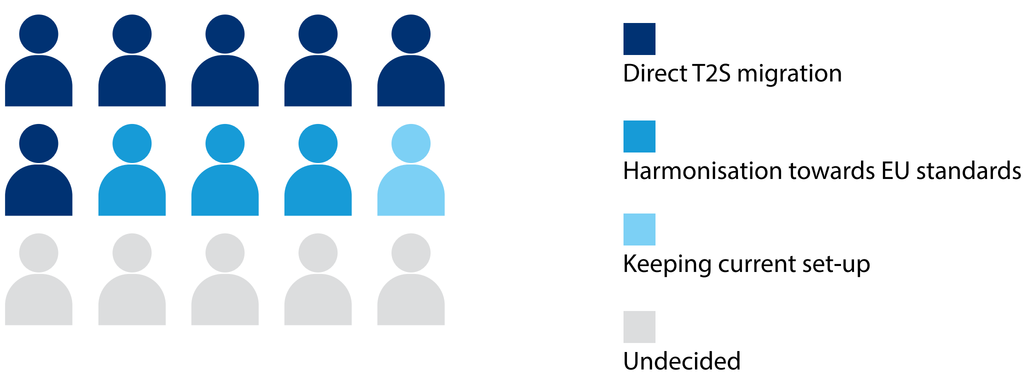
MARKET PARTICIPANT'S VIEWS ON PLAUSIBLE PATHWAYS AND T2S

From interviews and workshops with market participants, it is evident that there is no distinct consensus regarding the preferred future pathway for the Swedish securities market. Market participants are generally debating whether Sweden should migrate directly to T2S, or pursue harmonisation towards European standards but without T2S, and from workshops it is evident that few seem to consider a scenario based on alternative technologies such as DLT or T+1/ settlement compression a viable option for Sweden at this point.

These results, however, represent equal votes between all interviewed actors, where a few constitute the large settlement actors mostly affected by the change.

In general, international players with operations in several European markets, including the large international banks and CCPs, tend to be more keen to migrate to T2S due to the increased cross-border efficiencies T2S could bring and the fact that they already have migrated to, and thus invested in, T2S in other markets. Most Swedish/ local account services, however, are either negative or neutral towards a potential T2S migration, due to the uncertain nature of the benefits, or potentially even drawbacks, in comparison to the costs.

Exhibit 8: Participants' preferences towards harmonisation scenarios



Concerning the current local model, several participants highlighted that it is perceived as robust and cost efficient, enables local control and is particularly well-functioning in terms of issuing. However, there is a broad consensus that it is favourable to be closer to EU standards, and a great share of the participants pointed out disadvantages and issues with the current set-up. Among those, the most common drawbacks mentioned were manual processing of corporate actions, different settlement instruction rules for AM and PM, complex account structures (different technical accounts to separate different characteristics of holding), as well as having to transfer collateral/payments between multiple accounts.

Exhibit 9: Benefits and drawbacks with current system

47%	**20%**
Explicitly highlighted they experience issues with current system	**Explicitly highlighted that issuance works particularly well in current set-up**

Although most of the market participants agree that some sort of harmonisation to EU standards is needed, there are split views on whether that should be pursued via a T2S migration, the path that the Riksbank advocates for, or via a harmonisation without T2S.

The greatest concerns regarding a T2S migration include giving up control by outsourcing settlement to a platform outside Sweden, and high costs combined with limited revenue upside.

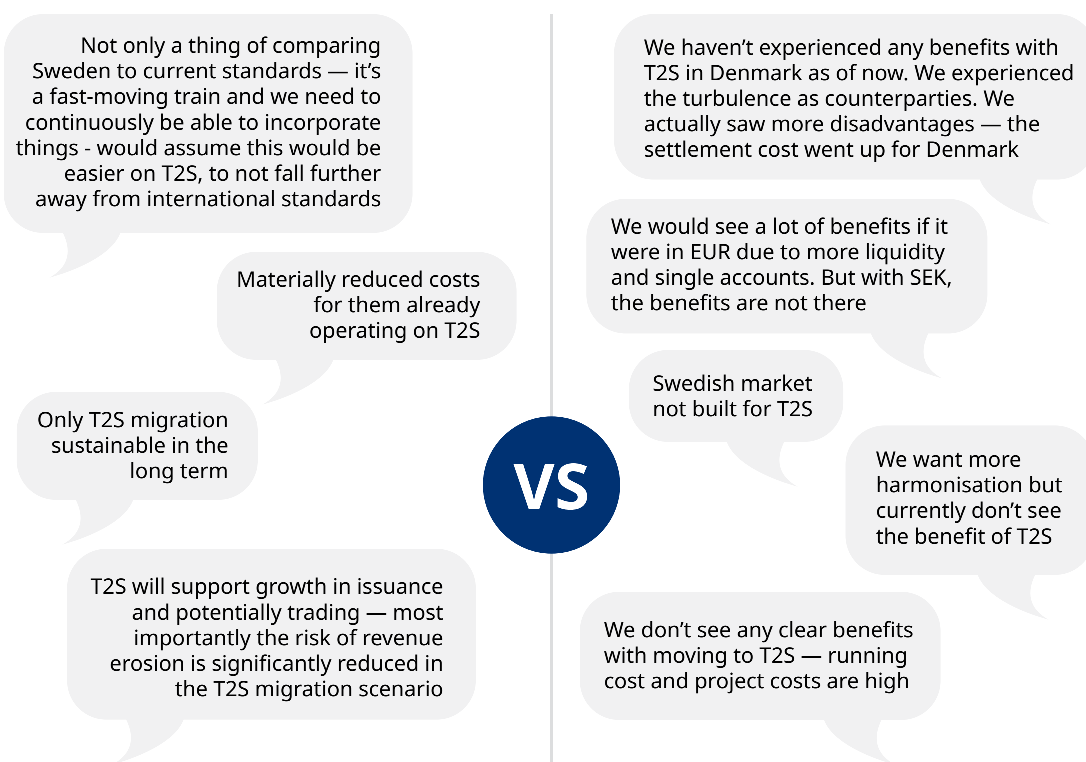
Migrating to T2S would imply outsourcing of settlement to a platform outside Sweden, which creates a risk of reduced control, in particular considering Sweden is not under ECB governance. This would thus reduce control of issue resolution and product development, but would also require careful considerations of implications to e.g. investor protection and the Security Protection Act.

In terms of costs, market participants highlighted not only migration costs and higher running costs, but also costs in terms of other activities and processes that come with a T2S migration, such as surveillance and security. The increased running cost relates to current infrastructure not being able to be replaced but needs to remain in parallel with new costs of T2S being added on top. Moreover, concerning running costs, the participants highlighted that they have observed higher settlement costs following the T2S migration in Denmark, Finland and the Baltics. In relation to this, participants raised the concern that these increased costs could negatively impact the end investors and issuing companies. As the Swedish securities market is characterised by significant retail participation, the concern, especially from Swedish banks with significant business in the retail segment, is thus that costs would fall on the Swedish retail investors and yield adverse effects to the market.

Overall, several participants did not believe that benefits associated with T2S would outweigh the issues and costs, and some participants even stated that they do not expect T2S to bring any benefits whatsoever. However, a long-term benefit brought up include that T2S would prepare the Swedish market for future regulatory EU changes. Moreover, other potential benefits brought up include accelerated harmonisation of corporate action processes (messaging standards, dividend payments, interest payments, etc.) across geographies and settlements among other, potentially yielding reduced internal costs and complexity for performing settlements in different EU markets. Other advantages mentioned include potential increased attraction among international players, and lower development and maintenance costs as they are shared among T2S members. Some market participants also mentioned expectations of T2S to bring operational efficiencies, in terms of faster and easier operations, due to its single interface and easy connectivity rendering separate operations per CSD unnecessary, and due to the high degree of automation in processing requiring limited manual work, particularly around equities and corporate actions. However, many of these benefits are not dependent on T2S, but could be achieved through harmonisation without T2S, though some argue that this could be achieved more easily and at faster pace through T2S.

With regards to the lack of direct benefits from T2S, participants accentuated that the Swedish market is different from other European markets, including the use of SEK (T2S is seen to be built for Euro markets), and mainly constituting a stock market with significant retail participation. As such, many advantages of T2S do not directly apply to Sweden, and many participants thus see limited business potential. For instance, collateral and liquidity savings is generally brought up as an advantage with T2S due to the ability to use a single liquidity account across markets. However, this will not constitute a benefit if Sweden moves to T2S, since this is only applicable for Euro and potential future benefits would depend on the specific set-up for the SEK and Euro. Moreover, as Sweden is characterised by a stock market with significant retail participation, participants highlighted that comparison cannot directly be made to e.g. Denmark (bond market, DKK pegged to Euro) and Finland (Euro).

Exhibit 10: Considerations from market participants with regards to T2S



IMPLICATIONS FROM T2S ON MARKET PARTICIPANTS

A potential transition towards T2S would impact the various market participants differently, both based on the actor's position in the value chain, but also based on their position in the broader European market.

A T2S migration would imply a large project spanning over a long period of time, affecting all market participants. As such, it would affect participants' focus and investment capacity on other areas and projects, and would require large investments, both in terms of resources and time.

For the market, implications from a move to T2S would include changes to post-trade operations to manage the longer opening hours, including e.g. changes to funding timing, which could yield positive business impact but also costs.

For Euroclear Sweden, constituting the CSD, implications would not only be in terms of the need to change systems/platform and processes, but also in terms of potential change in settlement flows and competition, which in turn also would affect all participants in the market. It would also imply changes in services, as Euroclear Sweden would outsource settlement functionality to T2S. As T2S is expected to increase competition among CSDs — by taking over the core settlement of cash versus securities, but not the issuance services, corporate actions, collateral management/servicing — some expect that larger CSDs could position as aggregators, and thus become a potential business risk for the local CSD if Swedish securities would be transferred to other CSDs and, ultimately, of issuers moving to other CSDs. CSDs are also under increased competition from custodian banks and settlement internalisers, which can add margin lending, off-exchange pricing, and other prime brokerage services on top of settlements and safe-keeping.

Concerning intermediaries, a T2S migration is expected to yield most benefits to the large international players due to the increased efficiency of cross-border operations and alignment with other markets, and that they already are T2S capable. Local domestically focused players, serving the retail and SME segments, however, are expected to benefit the least from a potential T2S migration due to limited revenue upside. The intermediaries are also expecting significant costs, including adapting systems, interfaces and testing, as well as expected higher settlement costs, which has been observed in other markets. Other potential T2S benefits like cash netting and collateral cross-usage depend on the specific set-up for the SEK and the Euro.

As for issuers, impact from T2S will be present in terms of e.g. change of issuer agent model. Moreover, potential key upsides of a T2S migration include potential access to an enlarged market, and increased attractiveness of local debt instruments, but this assumes an increase in CSD links as it depends on the number of CSD that would link up with the issuer CSD. A complete switch to the ISO 20022 standard used by T2S and others is however likely to require additional data from issuers, as well as changes of issuance account numbers and reconciliations. Where issuers have integrated their investor and bond holder relations management with data feeds, they may also be impacted. Many entities in the securities industry now at most use ISO 15022 messaging, but by 2028 it is expected that the market will have migrated towards the ISO 20022 standards, which also has been the pathway chosen by T2S from start.

Concerning investors, T2S could in theory enable investors to get easier access to non-local securities, but that again assumes that links with other T2S CSDs would be developed and would only address the settlement part of investing in non-local securities. However, there is also a likelihood that costs for domestic securities would increase for investors.

For an overview of implications from T2S on different market participants, see Appendix F.

CONSIDERATIONS AND PRINCIPLES FOR PATH FORWARD

To conclude from the study, participants agree that a migration to T2S should be seen as part of a wider positive agenda towards harmonisation in the EU, despite limited short-term direct benefits from T2S itself for participants in the Swedish market. A T2S migration would however force harmonisation of the Swedish market at a faster pace, which in the long-term could be beneficial for the market.

Putting T2S preferences aside, participants agree that a migration should be direct, and not gradual, and not use a layered account model.

We need to either go fully into T2S or out, but not a middle, layered solution like Denmark

Participants moreover agreed that in a potential T2S migration, a full harmonisation should be pursued with preserving as few local specificities as possible. Participants acknowledged that a full, non-gradual, migration would require large work and up-front costs, but is necessary in order to reduce complexity.

T2S is further not only implying changes to the technical platform, but also to policies, processes and legislation. As such, in case of a T2S migration the full spectra of market participants need to be ready to commit to the work a full harmonisation requires, and its implications. Given that the migration likely also requires changes to the Swedish legislation, it is though likely that not all changes will occur simultaneously and in a coordinated manner with a migration to T2S.

In terms of a T2S transition, there are clear views from the market that the direct benefits for Sweden are limited and less synergies can be realised, as opposed to Euro markets. Some of the greatest concerns include the expected increase in costs, combined with the limited revenue upside, and the risk of reduced control. As for the costs, concerns go beyond the migration costs and increased settlement costs that the participants would be subject to, to the plausible scenario that parts of the costs would have to be placed on the end-clients, the investors and issuers. In particular, great concerns relate to the retail investors, which constitute a significant share of the Swedish securities market.

To ensure a potential T2S transition in Sweden is as effective and efficient as possible, learnings from the recent migration in Denmark, and the ongoing transition in Finland should be leveraged in designing the target state and roadmap, including learnings on sequencing, process, systems, costs and timelines. Virtually all market participants stressed the inability to commit to a timeline before conducting pre-studies, however, initial reactions convey that the preliminary 2028 timeline, as communicated by the Riksbank, might be challenging. The timeline also raises questions on budget/funding, and prioritisation against other critical activities. Specifically, participants raised that the 2022 budget already has been set, and that it thus will be hard to allocate resources to the T2S project before 2023.

From experiences on other markets, market participants highlighted that large-scale system changes are time-consuming, and that there is a need to early on understand which systems that would be used in connection with T2S, and a migration thereto. In designing a roadmap towards T2S, explicit considerations and headroom should also be given to the ECB approval process, as a CSD looking to join T2S needs to pass through a non-binding letter of intent, a feasibility study, and a binding framework agreement. Furthermore, for Sweden to migrate to T2S, an approval process involving all members would be required, as well as potential legislative changes.

In order to enable full benefits from a potential T2S transition, a set of principles should guide the path forward:

- **Full harmonisation with as few local specificities as possible** — in case of a T2S migration, a full and direct harmonisation should be pursued without retaining non-essential local market specificities. Thus, legislative changes would likely be required and the harmonisation model to aim for needs to be defined in first step
- **Future-proof solution** — a T2S migration should be seen as an opportunity to build a future-proof solution and facilitate continuous improvements in the future. Also, as the planning and execution of migration will take place at the same time as the industry is changing, there is a need to consider the ongoing market developments to avoid risk of implementing a solution that is outdated when being rolled out
- **Open to learnings and dialogue** — work should be permeated by an open dialogue between market participants, to ensure alignment and that learnings from Denmark and Finland are fully leveraged
- **Involvement of full stakeholder spectrum** — migration is deemed to be most successful if the full spectrum of stakeholders, including regulators, lawmakers and market participants are aligned and there is a political consensus

As a T2S migration would require significant efforts from all market participants, all stakeholders must be ready to commit to the work required with a potential migration. Beyond investments in time and resources, each institution must thus already now plan for and put considerations to:

- Business model vision for 2028/2030
- Appropriate staffing and re-skilling of staff
- Legal changes, e.g. legal repapering across the securities value chain
- IT program encompassing changes to messaging, information security, account structure, and business process, together with significant testing
- Long-term P&L and balance sheet impact (beyond project costs)
- Communication and stakeholder management, both between institutions to align timelines and testing, but also internally to ensure commitment from CFOs/CEOs due to size of investment
- Engagement with the Eurosystem, and continuous standards changes during the transition period
- Design of areas adjacent to settlement (not covered by T2S), including corporate actions, proxy voting, account opening, issuer agent model, nominee reporting, static data, tax reporting etc.
- Preparations, planning and securing resources to ensure as short timelines as possible to avoid a “tunnel effect”, with a long period of crowding out other initiatives

LIST OF ABBREVIATIONS

Abbreviation	Description
AM/PM sub-markets	Equities market (sv. Aktiemarknad)/ Money market (sv. penningmarknad)
CCP	Central counterparty clearing house
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CMU	European Capital Markets Union
CRD IV	Capital Requirements Directive
CSD	Central Securities Depository
CSDR	Central Securities Depository Regulation
DKK	Danish krone
DLT	Distributed Ledger Technology
DTCC	Depository Trust & Clearing Corporation
ECB	European Central Bank
ECMS	Eurosystem Collateral Management System
EEA	European Economic Area; the Member States of the European Union, Iceland, Liechtenstein and Norway
EMIR	The European Market Infrastructure Regulation
ERM	The European Exchange rate mechanism
EU	European Union
EUR	Euro
ICSD	International central securities depository
IPO	Initial public offering
ISO	International Organization for Standardization
MiFID II	Markets in Financial Instruments Directive (2014/65/EU)
SCoRE	Single Collateral Management Rulebook for Europe
SEK	Swedish krona
SIX	Swiss Infrastructure and Exchange
SKDD	Croatia
SRD II	The Shareholder Rights Directive II
SWIFT	Society for Worldwide Interbank Financial Telecommunication
T+0	Zero business days after trade execution
T+1	One business day after trade execution
T+2	Two business days after trade execution
T2	TARGET2, the real-time gross settlement (RTGS) system owned and operated by the Eurosystem
T2S	TARGET2-Securities, the Pan-European securities settlement platform enabling cross-border and domestic settlement of securities against central bank money
UCITS V	The Undertakings for Collective Investment in Transferable Securities
US	The United States
VPC	Värdepapperscentralen AB, the Swedish Central Securities Depository that became Euroclear Sweden in February 2009

APPENDIX A
INTERVIEW PARTICIPANTS & EDITORIAL BOARD

Participant type	Participant		Editorial board
Exchanges	1	Nasdaq	
CCPs	2	EuroCCP	
CSD Participants	3	SEB	●
	4	Swedbank	●
	5	Handelsbanken	●
	6	Nordnet	
	7	Nordea	
	8	Avanza	
	9	Carnegie	
	10	Citi	
	11	Danske Bank	
Issuers	12	Swedish Debt Office	
	13	Nordic Trustee	
Industry organisations	14	SSMA	
	15	Swedish Bankers' Association	

Source: Interview and workshops with participants

APPENDIX B

OBJECTIVES AND RESULTS OF T2S AND HARMONISATION

	Objective		Example benefits/ barriers (non-exhaustive)
1	Harmonise European settlement infrastructure	🟢	Single harmonised solution to meet regulatory requirements facilitates processes and reduces costs for T2S participants
		🔴	Handling of corporate actions is not yet harmonised among EU countries and thus remains as a barrier to cross-border settlement
2	Stimulate cross country flows & facilitating cross-border securities trading	🔴	Cross-CSD settlements account for less than 1% of total T2S transactions
		🔴	T2S is although thought to be able to deliver on its objective of making it easier for investors to buy securities in other EU countries via a common platform and harmonised rules and practices
3	Increase efficiency in securities settlement	🔴	Number of links between CSDs has not increased, likely due to high cost associated with managing corporate actions in securities even in linked CSDs, and due to e.g. tax which is put on the CSD
4	Lower cost of securities settlement	🟢	T2S participants have noted decline in their need for collateral, as a result of the opportunity to create a pool of collateral
		🔴	Effect on collateral need N/A for non-Euro markets as there is no netting to be done
		🔴	Participants have generally experienced increased costs of settlements; CSDs have not been able to reduce internal running costs and the T2S cost is now added
5	Ensure regulatory compliance & manage risk	🟢	T2S introduces single harmonised solutions for 20 markets (instead of 20 separate solutions) to meet new regulatory demands such as the CSDR requirement for late payment penalties
		🟢	Functional and organisational efficiency optimisation also minimises risk

Source: ECB: TARGET2-Securities Annual Report 2020, Riksbank: What should Swedish securities look like in the future (2019), Oliver Wyman analysis, Workshops and interviews with participants

APPENDIX C
CASE STUDIES FROM NORWAY AND ICELAND

NORWAY

Euronext VPS operates the Norwegian central securities depository. There is a joint settlement system for equity instruments, bonds and short-term paper, referred to as the securities settlement system (VPO).

Securities brokers, banks and the national central bank, Norges Bank, participate in the securities settlement system.

In 2009, Norges Bank sent a letter to the European Central Bank saying that they are prepared to start negotiations with the Eurosystem, aiming at reaching an agreement by which Norges Bank outsources the technical management of Norges Bank's accounts for settlement of securities transactions denominated in Norwegian kroner to the Eurosystem.

According to a report published by Norges bank, Norway might migrate at a later date if there is sufficient interest among market participants and if Norges Bank can reach a satisfactory agreement with the ECB.

The outsourcing of Norges Bank's accounts is dependent on demand from the market for settlement of securities transactions denominated in Norwegian kroner in T2S.

ICELAND

The central bank of Iceland decided in 2012 to refrain from committing to joining T2S, but announced that they were considering doing so at a later stage.

In 2020, Nasdaq CSD Iceland merged with Nasdaq CSD, the single legal entity operating the CSDs of Estonia, Latvia and Lithuania.

Following the merger, Nasdaq CSD has however integrated Nasdaq CSD Iceland into its harmonised CSDR compliant governance and operational model, ensuring safer and more efficient post-trade services in the Icelandic market in accordance with internationally recognised standards.

Source: Norges bank: Regarding Norwegian kroner in TARGET2-Securities — Norges Bank's letter of 10 September 2009 to the European Central Bank, Norges bank: NORWAY'S FINANCIAL SYSTEM AN OVERVIEW (2021); ECB: T2S in 2012, Nasdaq CSD: About Nasdaq CSD — history

APPENDIX D

OVERVIEW OF SWEDISH MARKET SPECIFICITIES COMPARED TO EUROPEAN STANDARDS AND T2S

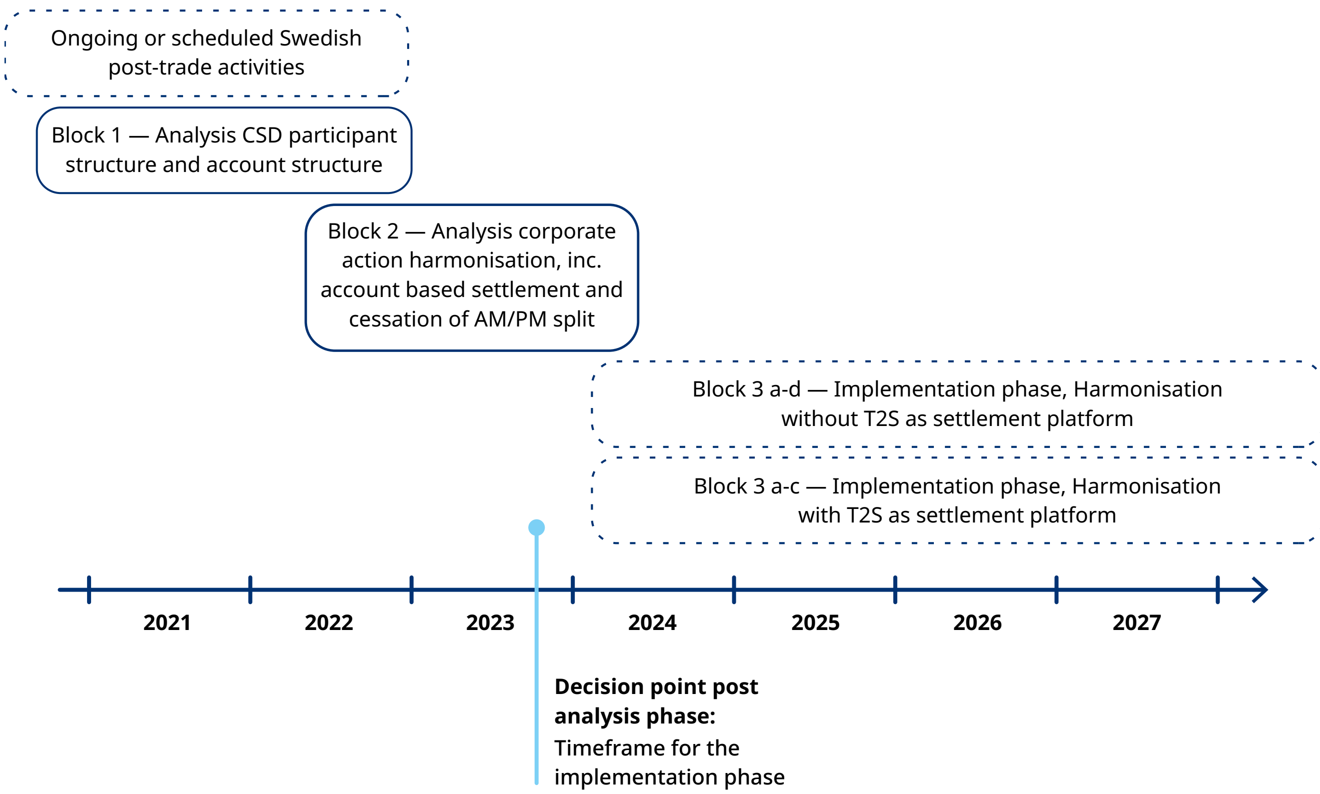
Area	Sweden	T2S	Next steps to harmonisations
Account & participant structure	Current account model in Sweden includes both owner accounts, held by end-investors, and nominee (omnibus or segregated) accounts	T2s model was designed around continental model of omnibus accounts	Current legal account types to remain but the linked services to be harmonised
Split between AM and PM sub-markets	Swedish settlement process distinguishes between settlement of equities and settlement of bonds/ money market instruments — the AM and PM segments of Euroclear Sweden's system AM and PM were created at different times (PM later), and for different business needs (PM was never for retail customers, or for account servicers focusing on retail) Both sub-markets have differences in securities accounts, matching/ settlement, and corporate action payments, driving complexity and cost	No split between AM and PM sub-markets	Cessation of the split is necessary for both migration to T2S and for creating efficient post-trade services, but would require significant investment More complex migration expected due to data from two systems
Issuer agent model	Swedish Act on share accounts and market practice (SFS 1989:827, however replaced by the Swedish CSD and Financial Instruments Accounts Act) sets structure for current Swedish issuer agent model; structure does not align with European standards Swedish issuer agents only provide services for elective corporate action events; issuer payments cover all movements, including securities, and any CA instructions sent by investors via intermediaries to the issuer/ agent	European standards require all issuer payments to be processed by the CSD settlement system Issuer agents or other CSD members such as settlement banks need to provide services for both elective events and other corporate action events	Review of current Swedish corporate action processes and structure, including issuer agent model, is required to implement T2S corporate action standards Current issuer agent model makes it more difficult for the market to follow standards (regardless of T2S) Change of the current model is a pre-requisite for the business process harmonisation

Area	Sweden	T2S	Next steps to harmonisations
Corporate actions	Sweden agreed to implement the Corporate Actions Joint Working Group (CAJWG) corporate actions standards in 2009, but fulfil a lower degree of standards Due to the two account types within the Swedish CSD, there are two different sets of processes for management of corporate actions	European standards for corporate actions include SCoRE corporate actions standards and the Corporate Actions Joint Working Group (CAJWG) that develops harmonised rules for the settlement of corporate action entitlements in European markets	Meeting standards (although not done by all T2S markets) would be complex for Sweden due to process differences such as above 3 factors, and changes to the market Implementation of T2S corporate actions standards calls for review of current Swedish corporate action processes
Collateral management	Currently Sweden does not offer Triparty Collateral Management (TCM), i.e. services provided by triparty agents that allow counterparties to optimise the use of their portfolios of securities when collateralising credit and other exposures across different products and instruments	The Single Collateral Management Rulebook for Europe specifies 10 collateral management harmonisation activities for areas deemed necessary to harmonise, one of which is Triparty Collateral Management	Triparty Collateral Management is currently excluded from the harmonisation roadmap
Messaging standards	Swedish CSD does not offer ISO 20022 messaging with the exception of general meetings and shareholder identification disclosure (ISO 15022 messaging standard is prominent)	Central banks in the Eurosystem are moving to ISO 20022, starting with the consolidation of TARGET2 and T2S to be implemented end of 2022 Compared to the ISO 15022 standard, ISO 20022 could in theory offer a richer format with more variability	This is not viewed as misalignment with European standards as there is no fixed timeline for implementation of ISO 20022 (for securities); SCoRE standards will likely require all intermediaries in AMI-SeCo markets to implement support for ISO 20022 corporate action messages (and billing) by November 2025 The five-year target for Swedish CSD ought to be adopting ISO 20022, in particular if Sweden migrates to T2S
Operating hours	The current Swedish system runs six daily settlement batches and the CSD settlement closes at 17:00 CET (however, CSD system in effect uses continuous settlement)	The settlement day in T2S starts on the evening preceding the Intended Settlement Day at 19:00 CET and is then followed by a night-time batch settlement catering to around 90% of all transactions After the night-time batch, the system closes for maintenance for a few hours, and is open 07:00-18:00 CET for real-time gross settlements	Harmonisation of operating hours with European standards would require all Swedish market participants to extend their working shifts, not only in terms of pro-longed opening hours but also new working days (e.g. Midsummer and Christmas Eve)
Account numbers	Swedish account numbers for securities and corresponding cash accounts do not follow T2S-standards	T2S has its own rules for securities account numbers	If a CSD participant connects to T2S via the CSD, the CSD can continue to use existing account numbers — as is done by the Danish CSD

Source: ECB: TARGET2-Securities Annual Report 2020, Riksbank: What should Swedish securities look like in the future (2019), Oliver Wyman analysis, Workshops and interviews with participants

APPENDIX E

RIKSBANK HARMONISATION ROADMAP



Source: Riksbank: Harmonisation road map for the Swedish post-trade securities market (DNR: 2020-00065)

APPENDIX F

T2S IMPACT ON DIFFERENT MARKET PARTICIPANTS

Actor/dimension	Run-rate benefits	Run-rate costs	Migration costs	Other considerations
Users/ CSD participants (incl. non-participants settling indirectly)	Reduced complexity of cross-border settlement (for int'l. players) Potential efficiency gains from staff, IT, development etc. Positive impact on business from change of opening hours Ability to use single liquidity account (for Euro liquidity)	Increased settlement/ transaction costs Potential costs related to change of operating days and hours	Upfront testing costs Costs for new system, lifecycle management etc. • Change of account numbers & reconciliation process • Change of contracting, aligning settlement instructions etc.	Large and international participants benefit most — risk of smaller domestic players forced to reshape business model and act through larger players Potential revenue loss if int'l. players go directly to the CSD Increased risk since T2S assumes no liability
CSDs	More CSDs could offer settlement in central bank SEK Expected increased in cross-border settlement & CSD links (according to ECB) • Cross-border transactions however <1% to-date • T2S not necessarily providing incentive to create links • Global custodians can fulfil same function as CSD links Improved settlement ratio from increased opening hours	ECB initially expected a decrease in operating costs (IT/system) due to decommissioning of the CSD's own platform — has although not been observed	Increased investment costs — project costs, migration costs, IT costs etc.	Lower influence over system development/ infrastructure Large CSDs could position as aggregators, and potential business risk of Swedish securities being transferred to other CSDs, and that issuers move to other CSDs Higher demand on CDS's ability to manage suppliers Risk of losing participants due to high migration costs (leading to increased concentration)

Actor/dimension	Run-rate benefits	Run-rate costs	Migration costs	Other considerations
Issuers	Enlarged market — opportunities to enter/expand in other markets Increased attractiveness of local debt instruments	Not covered	Not covered	No single EU capital market yet — issuing continued in known markets Would also be affected from change in start of settlement day
Investors	Reduced complexity for securities settlement in SEK (reduced chain of custodian banks) for international investors (assumes international players becoming direct members of current CSDs or CSD offering settlement in SEK) Possible savings achieved at infrastructure level could potentially be passed on to final investor	Potential increased costs, due to increased settlement/transaction costs (on top of current costs)	Not covered	Not covered

Source: Riksbank: Summary of responses to the consultation Use of T2S for securities settlement in central bank money (Dnr 2020-01330), ECB: TARGET2-SECURITIES — ECONOMIC FEASIBILITY (2007), Riksbank: Decision guidance — Future securities settlement — renewed position on T2S (DNR 2020-00780), Oliver Wyman analysis, Workshops and interviews with participants

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