Capital Markets Trends in the Nordics

Harmonising While Retaining Local Expertise

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Executive summary

The Nordic markets have many of the same priorities as their European peers; there's a huge focus on improving efficiency, transitioning away from legacy infrastructure and modernising systems to enable them to support future market requirements. There's also a significant regional focus on environmental, social and governance (ESG) topics, though the transposition and implementation of the revised Shareholder Rights Directive (SRD II) in the Nordic markets has some room for improvement.

- **Coping with market infrastructure changes:** Given the developments across Europe and the rest of the world when it comes to market structure standardisation and modernisation, the Nordic markets are keen to ensure that they keep pace with these changes and retain their competitive edge. This means eventually moving to shorten the settlement cycle to trade date plus one day (T+1) and potentially beyond when it makes sense. It also means connecting to centralised European platforms such as the Target2-Securities (T2S) system as necessary from a cross-border efficiencies point of view.

- **A focus on shareholder engagement:** The ESG agenda has long been a focus in the region's markets, with an emphasis on the 'E' and the 'G' especially. The region's differentiation is very much tied to strength in these areas, and this means a continuing focus on shareholder support and engagement. Furthermore, post-pandemic demand for digital and hybrid meetings in several of the Nordic markets is one step toward a more digitalised issuer-to-investor chain overall.

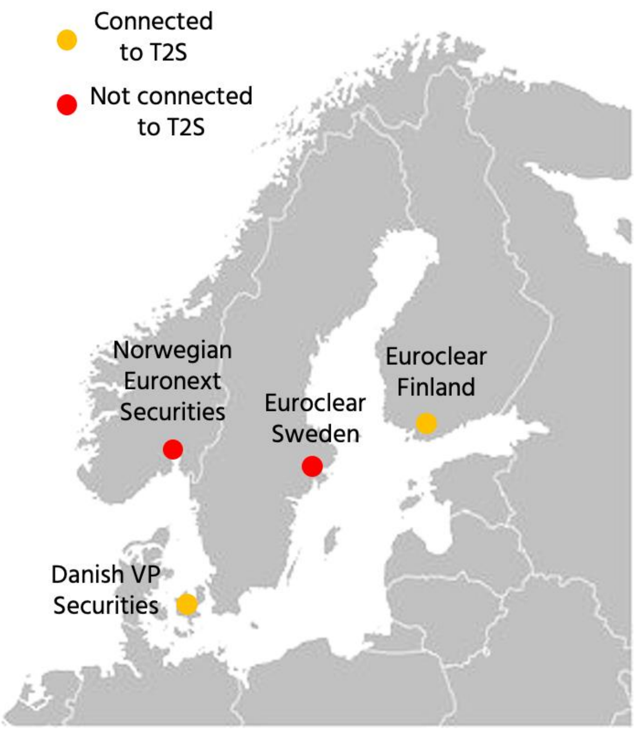
- **Harmonisation where it makes sense:** One of the key goals is to make the region more attractive to foreign investors. The retention of attractive local differentiators from a tax or capital raising perspective remains a focus but greater standardisation and harmonisation with the EU can deliver benefits. One of the benefits of standardisation is the ability to industrialise processes across many markets and automate as many risky manual processes as possible.

- **A focus on improving efficiency:** Financial institutions are increasingly seeking to improve efficiency across their operations to reduce cost and risk. There are numerous areas in which automation can reduce manual process burdens across the trade lifecycle with a view to meeting the requirements of the shortening of the European settlement cycle in the future.

- **Evaluation of next generation technologies:** Financial institutions in the Nordic region have been a little slower to experiment with technologies such as distributed ledger in their home markets than some of their continental European counterparts. However, there is a high degree of interest in the potential of technologies such as artificial intelligence (AI) to generate new revenue streams, reduce inefficiency and modernise the landscape.

Coping with market infrastructure change

The Nordic region is undergoing a similar level of market infrastructure change to the rest of Europe, albeit at a slightly different pace and with a different nuance in each market. Certain Nordic markets have aligned their market infrastructure environments much more closely with the rest of Europe than others. Both Denmark and Finland have connected to the T2S system, for example, while Sweden and Norway have yet to make that same move. However, all four markets are facing pressure to improve efficiency and automation with a view to supporting the move to shorten their settlement cycle in the coming years.



The graphic highlights the central securities depositories in each of the Nordic markets and their status with regard to T2S. The Nordic CSDs have gradually been acquired by European market infrastructure providers over the last two decades. Euronext owns both the Norwegian CSD, which it bought in 2019, and a majority stake in the Danish VP Securities, which it acquired in 2020, while Euroclear owns both the Swedish and the Finnish CSDs, which it acquired in 2008. Nasdaq is another major market infrastructure provider in the region due to its acquisition of the Nordic exchange and clearing provider OMX in 2007, which then became Nasdaq Nordic, which currently operates in Finland, Sweden and Denmark.

The T2S experience

The rollout of T2S across the major European markets was a gradual and relatively lengthy process and each wave involved significant testing and investment for connected market participants. At the country level, it took Finland a decade to finally complete the transition to connect to the pan-European platform, starting back in June 2012 when it initially made the decision. However, although the transition took a while, it was a much smoother process than the one experienced by Danish market participants when Denmark made the same move over a 12-year time period. Denmark was the first market with a non-euro currency to join T2S and therefore experienced more headwinds in its transition for its local market participants, including some implementation challenges.

While Denmark implemented a layered transition in October 2018 where the market retained its end-investor account structure on top of the omnibus account model of T2S, Finland fully transitioned straight to the latter model. The Finnish CSD also conducted extensive testing and migration rehearsals in preparation for the move, bearing in mind the lessons learned by its Danish peer. To this end, the Danish CSD was hindered by operational stability issues and insufficient processing capacity during the implementation phase, which initially caused settlement delays during October and November 2018, before its subsequent successful go-live.

Another area of note that proved challenging for the Danish CSD and that should be highlighted for future transitions in the region was the high number of unmatched instructions in the month following the migration to T2S. The Danish CSD noted at the time that there were around 39,000 unmatched instructions and settlement failures increased from under 3% before the implementation to around 10% during November 2018.

The CSD and large local market participants were compelled to establish a taskforce to tackle all of the underlying problems causing the unmatched trades, which included differences in the implementation of new match criteria and incorrectly linked transactions. A key lesson learned was therefore the need to establish such a group before the implementation to discuss all of the potential issues, to engage in testing to highlight any others and to resolve them ahead of time. Post-implementation in both Denmark and Finland, some market participants have noted a need to further harmonise market practices with the EU in order to fully benefit from the potential efficiencies of T2S such as communication protocols and corporate actions.

To this end, Euroclear Finland has indicated there may be a significant delay before full implementation of market claims and corporate actions standards can be achieved because of the necessary related technical and legal changes. A major area for change is dividend payments, which are currently paid in commercial bank money and will likely take until the end of 2029 to be fully addressed. These market practice changes are currently being driven by the Bank of Finland with the major issuers in the country. Legislation will also need to be introduced to allow full compliance with T2S restrictions on omnibus accounts because current rules oblige account service providers to maintain the securities holdings of Finnish investors in segregated accounts.

The CSD is hopeful that the Finnish market will benefit from greater dual-listing of European stocks as a result of the move to T2S and that it will foster more competition within the broker community for retail market share. Currently, there are no retail brokers in the local Finnish market offering direct access to the wider Nordic markets even though they all now run on the same technical platform via Nasdaq.

Overall, proponents of T2S in the region indicate that now the platform has been introduced and represents a fixed cost for the industry, the benefits of lower costs can be achieved via scale. The more volume that goes through the platform, the lower the annual costs. The operational resilience and stability of a shared platform is also cited as a benefit in light of the industry focus on cybersecurity and a desire to move away from legacy infrastructure in recent years. However, not every local market participant is convinced about the benefits of T2S and this also remains the case in Sweden and Norway, where the plan to connect to the platform has yet to be confirmed.

The Swedish Riksbank indicated in September 2021 that its preferred direction is to connect to T2S, but its consultations with local market participants have yielded mixed views. The upfront costs and complexities are not always perceived by domestic participants to be compelling, given the current low volumes of activity from the connected markets in the region overall. Swedish market participants have also raised concerns about ceding control to the European Central Bank on matters that may impact domestic investor protection. The collateral and liquidity benefits of T2S for the Swedish market are thought by some to be lower because of the limited exposure of investments to the euro versus the Swedish krona.[1]

Settlement efficiency in focus

The implementation of the Central Securities Depositories Regulation (CSDR) and its settlement discipline regime has resulted in improved market efficiency in the Nordic region, with Sweden as a particular standout market. An Association for Financial Markets in Europe (AFME) report published in October 2023[2] notes that the introduction of a new penalty regime to replace the country's existing flat fee penalty and a CSD-led push to increase domestic use of partial settlement resulted in an improvement of the settlement efficiency rate from 84.93% in the first quarter of 2021 to 96.38% in the third quarter of 2023.

Euroclear built out its partial settlement functionality in 2021, including simultaneous partial settlement of multiple instructions from linked transactions, but take-up of the service was relatively low until the introduction of CSDR settlement penalties in February 2023. According to Euroclear Sweden, the portion of value settled via partial settlement increased over the last three years from below 1% in 2020 to around 9% of total value settled in 2023. The CSD also extended its delivery versus payment (DVP) settlement window by an hour and a half in 2022 to allow additional time for participants to book

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[1] Summary of responses to the consultation Use of T2S for securities settlement in central bank money, Swedish Riksbank, May 2021.

[2] Improving the Settlement Efficiency Landscape in Europe, AFME, October 2023.

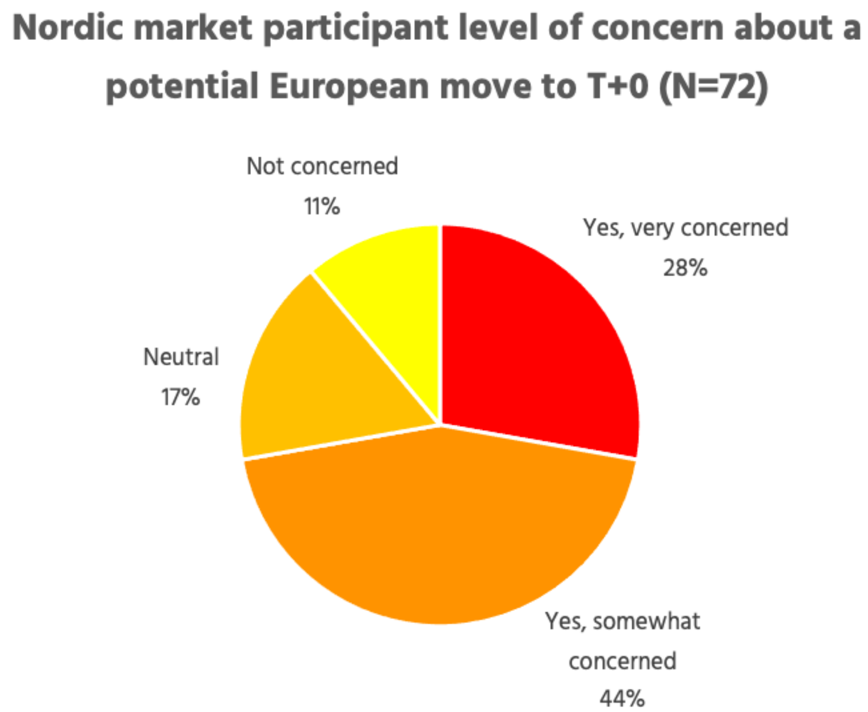
and settle securities lending transactions with a view to improving settlement rates further.

Settlement efficiency in Denmark, on the other hand, has an opportunity for further improvement, as highlighted by the cash penalties levied in T2S for late matching and settlement failures. According to the ECB, the monthly value of cash penalties for settlement in Danish kroner averaged €1.74 million in 2022, fluctuating between €1.31 million in February and €2.12 million in March, in line with minimum and maximum volumes[3].

Shortening the settlement cycle

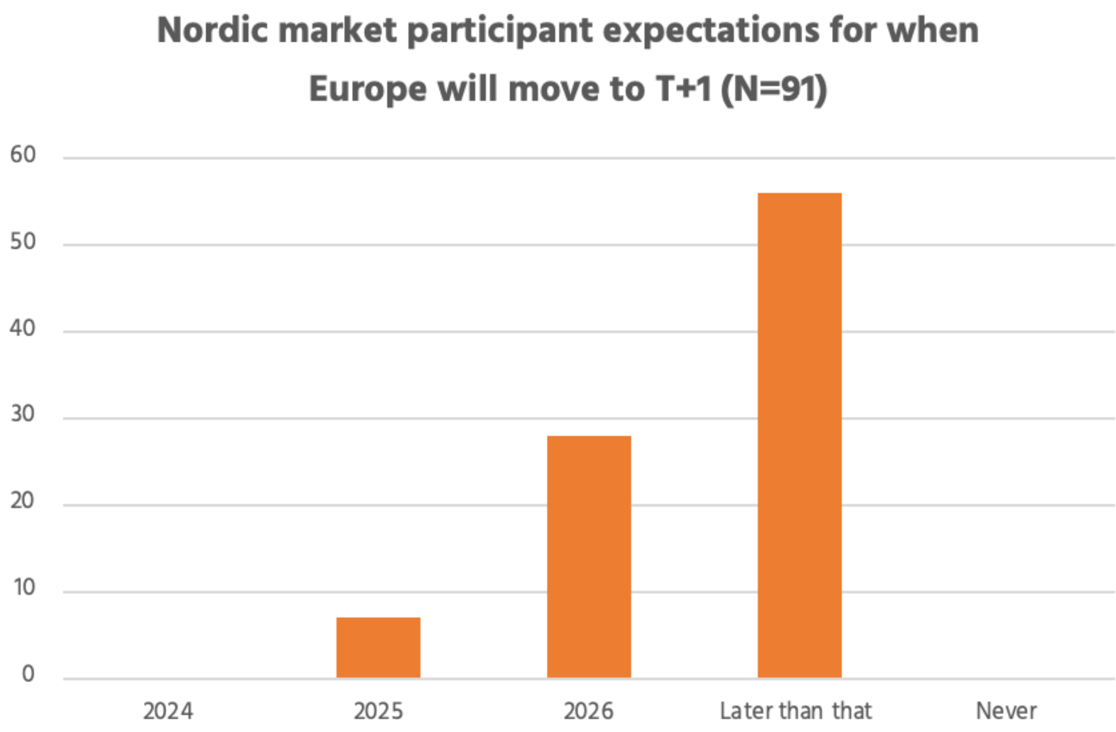
There is a significant amount of apprehension in the Nordic markets about the potential move to shorten the settlement cycle, as highlighted by the responses to a poll conducted at the PostTrade360° conference in Copenhagen in October 2023 (see below). The majority of respondents (72%) indicated concern about the inclusion of T+0 in the European Securities and Markets Authority (ESMA) consultation regarding the proposed shortening of the settlement cycle in the region. The potentially negative impact of moving to an even shorter settlement cycle than the North American markets, under which securities lending could be significantly impacted and liquidity risk could be exacerbated, was noted by speakers and attendees alike.

[3] T2S Annual Report 2022, ECB, March 2023.



The move to a T+1 cycle is anticipated to be significantly challenging because of the need for all market participants to change their market practices to a more real-time model and in light of the CSDR penalty regime, which could mean greater costs if settlement failures increase. Speakers at the Copenhagen event in October noted that there are benefits to the move on the collateral management side. Tobias Bergholdt, head of derivatives and collateral at Nykredit Portefølje Administration, noted that it could be an incentive for the market to embrace more automation and modernise systems that are “old-fashioned” in favour of those that can scale for future market developments.

However, the timing of the move to T+1 is still a big question mark for those in the Nordics, with most expecting the decision to be made in late 2024 but not implemented until after 2026 (see chart below). Market participants are concerned about the challenges the mismatch in settlement cycles between the North American markets and the Nordic markets will cause, but they are keen for the domestic markets to take a measured and gradual approach to the move. Rushing to catch up with the US, Canada and Mexico is not considered to be in the best interests of the local markets.



Market infrastructure change: Key takeaways

The region's challenges in this area reflect the larger global themes of transitioning away from legacy systems and modernising for a more digital future.

- **The risks and opportunities of change need to be carefully balanced:** When it comes to joining T2S or changing settlement timeframes, the impact on the domestic investor and intermediary community needs to be carefully considered. Nordic market participants are keen for a measured and sensible approach to market structure change rather than rushing to catch up with other markets.
- **Efficiencies have been achieved but there are more to come:** The introduction of new market practices around settlement such as partialling has proved beneficial in reducing settlement failures in markets such as Sweden. There is however further room for improvement across the region - market practices in

the wider asset servicing space such as corporate actions processing being one such area.

- **T+1 isn't likely before 2026:** Nordic market participants believe the move to shorten the settlement cycle is unlikely to happen within the next two years as the groundwork for the move will take time.

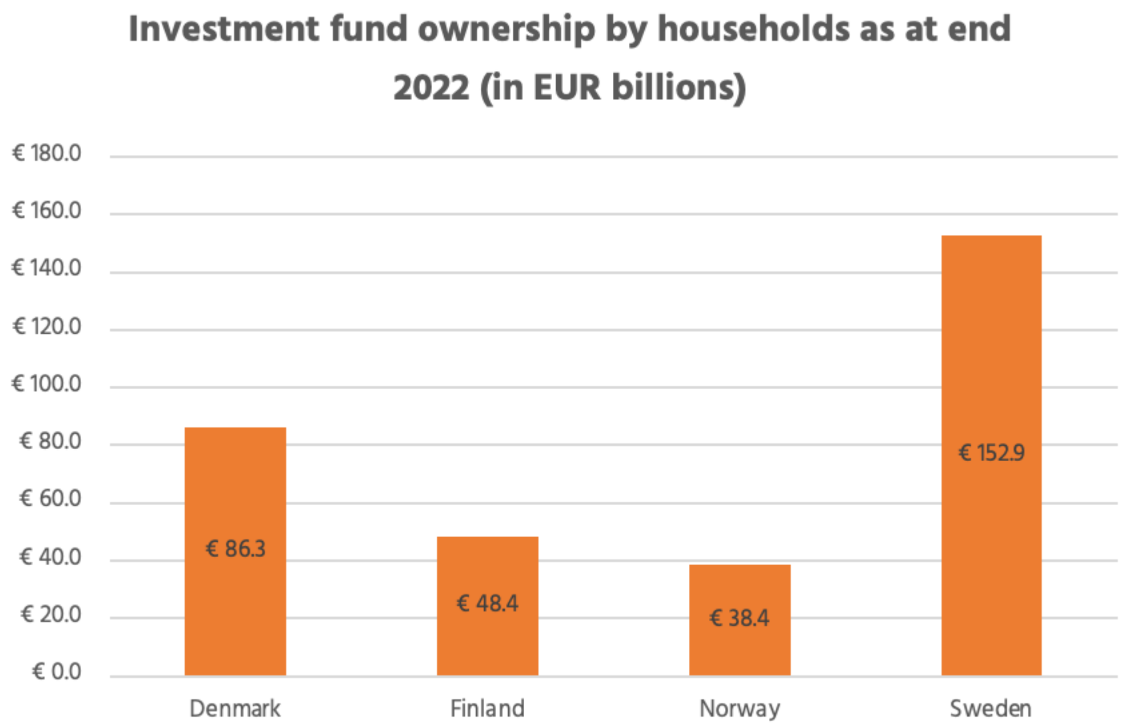
A focus on shareholder engagement

The Nordic region is a relatively significant region within Europe when it comes to its contribution to capital markets growth. In 2022, the Nordic stock market capitalisation accounted for 15% of the total European market cap and though the region represents only around 5% of the total population of the EU, it delivers almost 10% of the total gross domestic product (GDP) in the wider region. Moreover, between 1996 to 2022, the Nordic region outperformed the EU in terms of average annual growth in real GDP with a growth rate of 2.1% versus the average EU country rate of 1.7%.

When it comes to purchasing power, the Nordic region has the highest consumer spend per capita in the EU, with a spend that is 78% higher than the EU average[4]. In spite of this purchasing power, there is room to grow when it comes to retail fund investment in some of the markets - see chart below based on statistics[5] from the European Fund and Asset Management Association (EFAMA) 2023 Factbook.

[4] The Nordic Market, Nordic Embassy, November 2023.

[5] EFAMA 2023 Factbook, EFAMA, June 2023.



The fostering of greater retail investment activity is part of the wider European Capital Markets Union (CMU) plan and the Nordic region could certainly benefit from some of the related initiatives, such as a simplification of the various fund regulations, eg. UCITS and AIFMD. The engagement of more retail investors requires a greater pool of retail brokers within the markets and a more joined up approach to the region overall with cross-border offerings and support.

Another key aspect of the CMU is improving transparency for investors across the issuer to shareholder communication chain, especially when it comes to proxy voting and general meetings. The ongoing review of the revised Shareholder Rights Directive (SRD II) is part of this push and it indicates that there is some room for improvement in terms of rule implementation and standards adoption across all European countries, the Nordics included. However, the Danish market has historically granted extensive rights to shareholders in relation to general meetings that go above and beyond the requirements of SRD II. For example, shareholders can ask any questions concerning the company at the general meeting and not only questions relating to the agenda, as per their rights under the Danish Companies Act.

The Nordic markets are focused on keeping pace with the EU markets when it comes to SRD II adoption and have been pushing ahead with the implementation of the applicable ISO 20022 messaging standards and market practices. For example, Denmark now has full ISO 20022 support and connectivity and has also removed the need for power of attorney (POA) forms, which has made it much easier for investors in the region to engage in proxy voting.

Individual countries in the region are also introducing or have already introduced requirements to improve transparency around topics such as sustainable investing. For example, Sweden's Annual Accounts Act already requires firms in the country to provide an annual report that sets out information on sustainability and governance that is necessary to understanding the company's development, financial position and results. Large companies with more than 250 employees, a balance sheet total exceeding SEK175 million and a net turnover exceeding SEK350 million must also provide details of policies related to environmental protection, social responsibility and the treatment of employees, respect for human rights and anti-corruption, and their material risks related to these issues.

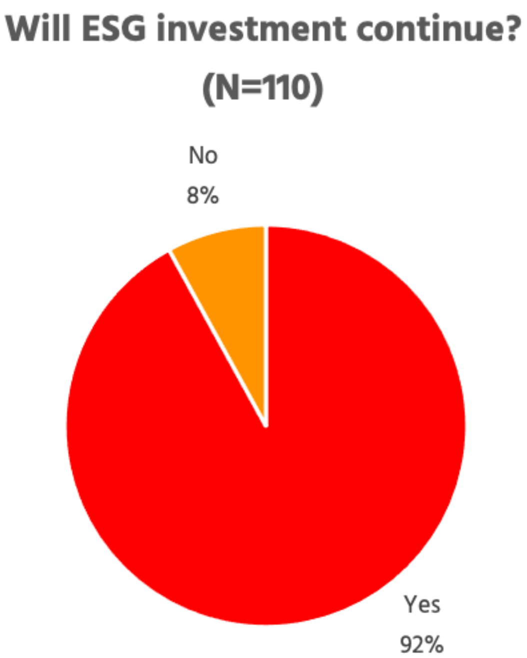
The Annual Accounts Act also requires listed companies in the Swedish market to prepare a specific corporate governance report to highlight their principles of corporate governance, including the upholding of shareholders' rights. The country's Corporate Governance Code already requires listed firms to provide board composition and remuneration information with a view to improving gender balance, reflecting the country's longstanding focus on the G in ESG. Moreover, since 2007, Sweden has required state-owned companies to provide ESG data in compliance with the Global Reporting Initiative (GRI) standards. GRI compliant reporting is also common in the Finnish market.

Sustainability leadership

One of the defining characteristics of the Nordic markets from an ESG perspective is their high ranking on the United Nations' (UN's) Sustainable Development Goals (SDG) progress scores. According to the 2023 Sustainable Development Report[6], Finland is top of the 193 UN member states when it comes to its total progress toward achieving the 17 SDGs, with a score of 86.76 out of a total score of 100. Sweden ranks second on the list with a score of 85.98, Denmark is third with a score of 85.68 and Norway is seventh with a score of 82.00. The countries have been at the top of the rankings for multiple years and the 17 SDGs form the basis for many of the elements of the ESG taxonomies and regulatory frameworks across the globe.

The high ranking of the Nordic countries in the SDG assessment represents their governments' commitment to goals such as achieving net zero and developing sustainable industries. Corporate governance standards are where many of these efforts come into practice, with end investor transparency and accountability around meeting the various established goals. ESG will also continue to be a big focus for market participants, who believe these investments have a long-term future in the region. Polling from PostTrade360°'s Stockholm event in March 2023 indicates that the majority of respondents believe ESG has a future (see chart below).

[6] Sustainable Development Report 2023, UN, July 2023.



Industry initiatives around governance

There are numerous industry initiatives related to governance in each country, and market infrastructures are also upgrading their services and capabilities to deliver a more digitalised issuer to investor communication chain. On the industry initiatives front, the self-regulatory body in Sweden for corporate governance has revised its Corporate Governance Code to include a goal of 40% share for the least represented gender on the boards of listed companies on an overall basis, for example. The Norwegian Corporate Code of Practice also requires board composition of at least 40% for both genders. The Danish Committee on Corporate Governance updated its recommendations in 2020 to include more ESG components, including disclosure of sustainability and social responsibility policies in annual reports.

Euroclear Finland has been working on its general meeting service post-pandemic with a view to improving the digital support to allow issuers to hold general meetings in hybrid or online formats. The service includes the provision of a studio on the CSD's premises for broadcasting and support for the delivery of digitalised reports. The new service was enabled by the regulatory amendments to the Finnish Limited Liability Companies Act by the Finnish Financial Supervisory Authority (FIN-FSA) driven by domestic issuer demand. The Norwegian regulator also permits digital-only general meetings and they have proved popular within the market, with the majority of issuers holding meetings virtually in 2022.

The Euronext CSDs have also focused on improving cross-border support for proxy voting across the region by providing a common solution for proxy voting and a consolidated share register.

Shareholder engagement: Key takeaways

The region is a leader in the ESG space and has a keen focus on encouraging greater shareholder engagement as a result.

- **ESG is front and centre:** The position of the Nordic markets at the top of the UN SDG rankings reflects the longstanding focus on sustainability, accountability and governance within these markets. Given the EU's focus on sustainability and the continuing global push to increase green financing, this focus is unlikely to change significantly in the coming years.
- **Encouraging greater retail investment is important for growth:** Much like the goals of the CMU, regulators and governments in these markets are keen to build a larger pool of retail investors. Growth in this market segment could increase domestic wealth and improve economic health, which means a lot can be learned from the progress toward achieving the CMU in the wider region and the initiatives to this end in other markets.
- **The industry needs greater digitalisation:** Post-pandemic demand for digital and hybrid meetings in several of the Nordic markets is one step toward a more digitalised issuer to investor chain overall. At a broader level, common platforms across markets will deliver the benefits of greater scale and investor transparency to encourage more international investment into the region.

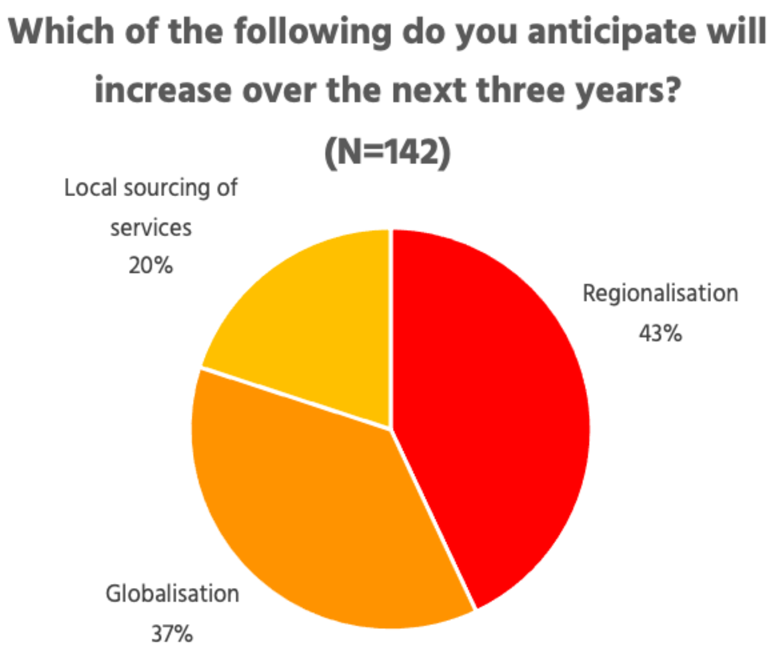
Harmonisation where it makes sense

The benefits of maintaining national cultural diversity where it matters are well-understood in the Nordic markets. The nuances of capital raising processes within each market, for example, allow for these markets to retain their appeal for domestic and international issuers. The local expertise of domestic market participants also allows these intermediaries and service providers to remain competitive in the face of new market entrants and large, global providers. The benefits of standardisation with the rest of the European region are, however, increasingly appreciated within the Nordic markets as industry participants focus on mobilising trapped liquidity and attracting greater international investment.

Nordic market participants have noted that there is some room for improvement when it comes to standards adoption in the region, particularly around ISO 20022 in the corporate actions realm. For example, the 2023 T2S progress reports indicate that these aspects remain outstanding from an implementation perspective in Denmark and Finland, which means that though some CSDs may have ISO 20022 capabilities, many custodians in the region are still using ISO 15022. This can result in numerous translation issues if not managed properly, which can cause matching problems and increased operational risk.

Globalisation versus regionalisation

However, the balance between harmonisation and differentiation is challenging to maintain and Nordic market participants are split about whether the next three years will see greater regionalisation or globalisation of the markets. The nuances of the market can facilitate faster access to capital from local market participants, but cross-border barriers can slow down non-domestic capital flows into the region. A poll conducted at PostTrade360° in Stockholm in March 2023 (see below) indicated that the majority of respondents believe that the local flavour of the markets will remain in the short to medium term.



Consolidation and continued standardisation

The M&A activity within the market infrastructure space in the region has delivered some benefits to the various markets involved via the introduction of better connectivity to other markets and greater scale, with more to come in the future. For example, Euronext is working on a common platform for corporate actions processing for all of its markets with a view to supporting growth via scale efficiencies, which builds on its common platform for proxy support in the Nordic region. The clearing space in the region has also embraced interoperability over the preferred clearing model that is present in many of the continental European markets. This interoperability allows for greater standardisation of connectivity and processes overall.

A lack of scale has been a detriment to some sectors within the region, as demonstrated by the exit of a number of subcustodians from the Nordic markets. The cost of operations needs to be offset by a certain level of revenue and when sufficient scale isn't achievable, banks are faced with a decision to close or sell these operations. The more localised and complex the markets, the harder it is for banks to scale across the region. This is why the increased consolidation, interoperability and standardisation of market infrastructures is beneficial for local market participants.

On the buy-side, the industry is keen to see greater diversification and competition, which means a better competitive landscape on the outsourcing service provider side. Concentration of providers also means greater operational risk overall in light of the wider industry focus on critical third party providers and operational resilience. The standardisation of certain aspects of the post-trade process can enable a more level playing field for both new entrants and incumbent sell-side firms as they will be able to use a wider range of vendors and technologies to operate in the markets.

Harmonisation: Key takeaways

There are pockets of standardisation and harmonisation with the rest of Europe within the Nordic region, but more work is necessary.

- **Standardisation delivers opportunities for scale**: One of the benefits of standardisation is the ability to industrialise processes across many markets and automate as many risky manual processes as possible.
- **A more competitive market is desirable**: The buy-side is keen to see a more competitive playing field with more market sell-side participants and a greater variety of services in the long term. Standardisation is key to enabling a level playing field for new entrants and incumbent providers.
- **But there is still a place for local differentiation**: Not every market practice needs to be standardised to deliver benefits. By retaining a local flavour in the markets, they can retain their unique profiles for local issuers and remain attractive to both domestic and cross-border investors.

A push toward improving efficiency

The next few years will see the industry as a whole faced with major market structure changes such as the shortening of the settlement cycle in Europe and the continued rise of new digital-only asset classes. One of the main impacts of these changes is the need for firms to update and upgrade their legacy technology stacks to accommodate real-time processes and to support digital assets of various kinds. Nordic firms are facing the exact same pressures as their peers across the globe in this regard and when it comes to improving efficiency, a lot can be learned by observing other markets.

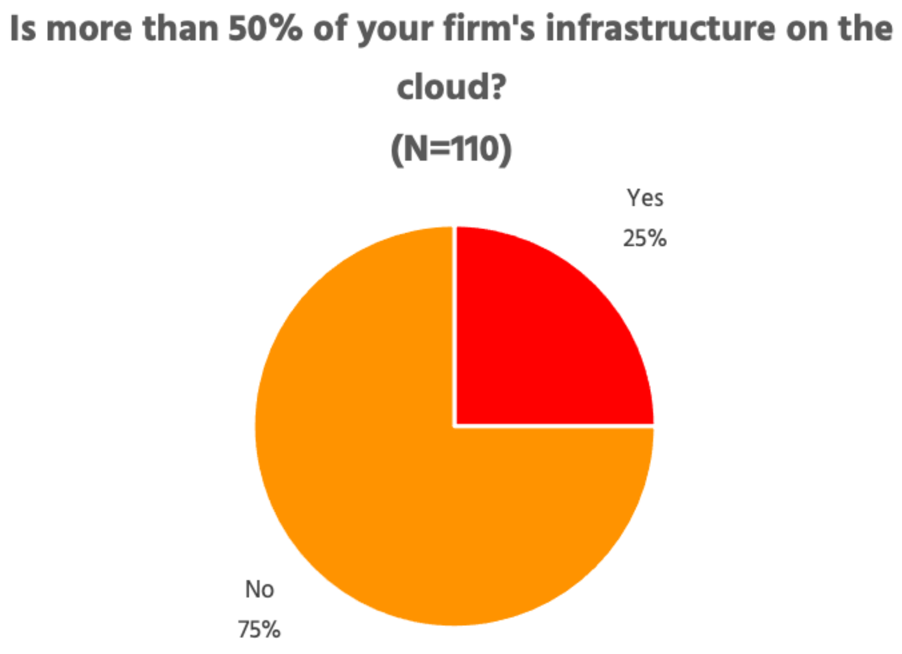
The move of the North American markets to T+1 and the local market infrastructure push to confirm trade settlement details as soon as possible on trade date is one such example. From a trade lifecycle point of view, confirming data and dealing with exceptions in a timely manner enables firms to minimise their settlement failures and reduce costs. However, this requires automation and upfront investment to deal with as many problems upstream as possible by using common communication platforms where feasible and moving to exception-based processes.

However, efficiency drivers aren't all related to market structure change and many are being driven by a desire to reduce friction – both internally throughout the front to back office lifecycle and also between intermediaries in the post-trade landscape. For example, the increased adoption of application programming interfaces (API) to facilitate faster and more efficient data delivery is on the roadmap for many Nordic market participants. For example, Euroclear Finland has developed a holdings and transactions API for individual investors to provide consent for third party applications to access their data for various administrative purposes. This means investors can permission access to their data once without having to send the information multiple times to the same third party.

Moving away from legacy technologies, modernising systems and automating repetitive manual tasks are all at the heart of these efficiency initiatives across the region.

Modernisation and cloud

The journey toward cloud hosting has accelerated post-pandemic in light of the need to access systems from anywhere and the increase in hybrid working across the Nordic region. However, very few firms in the region have a majority of their systems in the cloud, as highlighted by the responses to a poll at Posttrade360° in March 2023 in Stockholm below. Moreover, respondents that do have more than 50% of their firm's infrastructure on the cloud tend to hail from the vendor community rather than banks or market infrastructures.



There may be some way to go before the majority of applications are cloud hosted, but the benefits are already clear to local market participants. Speaking at PostTrade360° in

Helsinki in November 2023, SEB's head of research and development noted that the move to the cloud has allowed the bank to scale and experiment with new technologies and to automate some of the previously manual tasks such as using natural language processing (NLP) for intelligent document reading. The bank's alternative investments team has been able to reduce its time handling documentation related to these investments and instead focus on structuring the data provided by the NLP tool to offer additional services and support to clients.

Cybersecurity and resilience

The system modernisation and digitalisation journey isn't without its risks and one such risk relates to an area of increased regulatory focus: cybersecurity and operational resilience. The transition from a manual to a digital process reduces operational risk but if implemented poorly, it can result in increased cyber-risk. The geographic proximity of the Nordic region to the Russian border during the Ukraine war has also exacerbated concerns about cybercrime within the region. Moreover, governments and regulators across the Nordic markets have focused on improving digital security within their markets over recent years. For example, the Danish government launched a Cyber and Information Strategy back in 2018 that it has continued to bolster over recent years.

Much like the wider European markets, Nordic countries have also cracked down on cybercrime related to terrorist financing. In 2020, the Swedish police launched the Swedish Anti-Money Laundering Intelligence Task Force (SAMLIT) and began sharing related information with the largest banks in Sweden. The focus of these efforts is on improving industry awareness of cyber-threats, encouraging investment in cybersecurity and reducing money laundering overall.

The Swedish Bankers' Association has indicated that much more attention and resources need to be directed at cybersecurity within the market and has publicly praised the EU's Digital Operational Resilience Act (DORA) as a step in the right direction[7]. The incoming

[7] How can DORA help secure financial digital services in the Nordics?, EY, March 2023.

regulation is seen as a means of compelling more firms to work with their critical third party services providers to improve their threat assessments, cyber-incident management and overall resilience.

Efficiency improvements: Key takeaways

The path towards greater efficiency lies in the intelligent application of technology to automate risky manual processes, but cybersecurity remains a work in progress.

- **Efficiency can be improved in post-trade in particular:** There are numerous areas in which automation can reduce manual process burdens across the trade lifecycle with a view to meeting the requirements of the shortening of the European settlement cycle in the future.
- **Cloud is part of the journey but it is still early days:** The Nordic region has been a little slower than some other markets across the globe to embrace the cloud but it is certainly the direction of travel for the future.
- **Cybersecurity remains a key focus:** The geopolitical outlook for the region and the industry's increasing digitalisation mean that Nordic financial institutions must work with their critical third party providers to address any cybersecurity weaknesses. DORA will place further pressure on firms to focus on this area over the next few years.

Next generation technology adoption

Financial institutions in the Nordic region have been a little slower to experiment with technologies such as DLT in their home markets than some of their continental European counterparts. The Swedish Securities Dealers Association indicated in 2023 feedback to a European Commission consultation that it feels the regulatory gaps around new market activities such as tokenisation have held back domestic firms from engaging in these activities in their domestic region[8]. It noted that regulators in the region are struggling to keep up with the pace of technology innovation and as a result, are creating unintended barriers to entry for new business models in areas including crypto-assets.

The regulatory challenge of keeping up with industry innovation has increased over time as the pace of technology change has accelerated. The task of a regulator is to ensure end investor protection and market stability, but this must be carefully balanced with encouraging economic growth and new product creation. This has meant that when Nordic banks have engaged in such projects, they have sometimes done so in other jurisdictions.

Some experimentation with DLT

Banks in the Nordic region have experimented with the tokenisation of various assets on blockchain-based systems. Due to the lack of established digital asset laws within most markets in the region, these banks have tended to experiment in other EU jurisdictions such as Luxembourg, where the regulatory framework is relatively well established for these assets. One such experiment was conducted by SEB in Sweden in partnership with its issuer client and Credit Agricole[9] focused on improving market

[8] Consultation on a new digital finance strategy for Europe/FinTech action plan, European Commission, September 2023.

[9] SEB and Crédit Agricole CIB launch digital bond platform built on blockchain technology, SEB, April 2023.

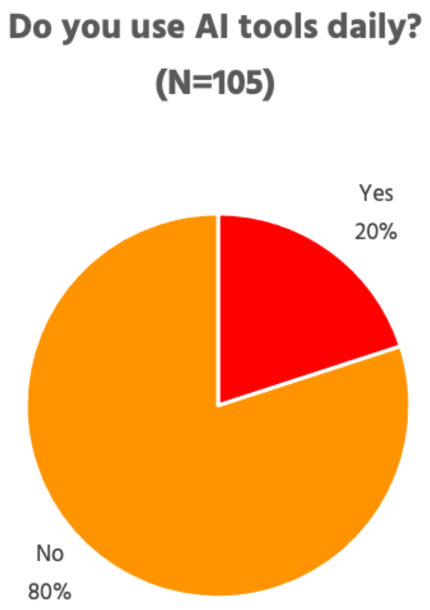
efficiency for the settlement of bonds and focusing on a low carbon footprint for the overall solution.

The SEB project was one of the first to use a new validation protocol focused on creating a more sustainable blockchain environment, "proof of climate awareness". One of the common industry criticisms of blockchain technology has been its lack of ESG and sustainability credentials. The proof of work protocol on which the bitcoin blockchain runs has been particularly criticised for its high energy usage and even the less energy-intensive proof of stake protocols have come under ESG scrutiny. This new protocol incentivises node operators to continually improve their environmental footprint via remuneration based on a specific climate impact formula.

This experiment reflects the Nordic region's focus on ESG investment and is in keeping with the local markets' push toward improving sustainability. The DLT experimentation in the region may not always be taking place in country, but it certainly has a Nordic flavour.

The potential of AI

There is growing interest in the potential of AI to create new data services, improve efficiency and reduce risk within the Nordic region. Although the majority of firms aren't using AI in their day-to-day post-trade operations, as highlighted by the responses to a poll at Posttrade360° in Stockholm in March 2023 (see below), there is real attention being paid to how other firms are experimenting in this area. There are also AI use cases in a range of areas within the large banks in the region such as Danske Bank and SEB that are amongst those leading the charge.



In 2019, Danske Bank announced its partnership with IBM to begin to integrate cognitive technology into its IT resolution framework[10]. The focus of the initiative is on using machine learning technology to support the bank's IT team in predicting and resolving operational and IT issues. The bank's IT head noted at the launch of the project that it would take time and human effort to train the models to deliver on the promise of the technology.

SEB's innovation hub SEBx is also keeping a close eye on AI's development within the financial services sphere, especially in predictive analytics and synthetic data creation. The potential benefit of using generative AI to create synthetic data sets on which predictive models could be trained was highlighted by one of SEBx's research leads at PostTrade360° in Copenhagen in October 2023[11]. The Swedish bank has also launched its

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[10] Smart human brains enables Danske's AI technology to predict IT breakdown, Danske Bank, February 2019.
[11] Predictive modelling and synthetic data are keys to AI adoption in finance, Posttrade360°, October 2023.

own thematic investment fund focused on AI[12] to benefit from the future boom in development in this area.

Next gen technology: Key takeaways

There is a lot of interest in the potential of next generation technology within the Nordic markets but there is a high degree of caution in some areas due to regulatory uncertainty.

- **There is a lot of interest in next generation technology:** Experimentation may be slower than in some other regions but there is a lot of interest in observing how other firms and markets are approaching technologies such as DLT and AI.
- **Regulatory uncertainty is holding back experimentation:** The Nordic region's lack of regulatory framework for areas such as tokenised assets has deterred some market participants from engaging in experiments on their home turf. However, once EU-level regulations are rolled out across the region, this may change.
- **Firms are likely to rely on their vendor partners for support:** Given their hesitance to experiment directly, many financial institutions in the region are likely to rely on their technology and services partners to enable them to benefit from next generation technology developments.

[12] SEB to launch fund with focus on artificial intelligence, SEB, June 2023.

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