

The T2S Opportunity

Unlocking the hidden benefits of TARGET2-Securities

Analysis commissioned to and conducted by



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Executive summary

Regulatory constraints and resulting capital, funding and cost pressures continue to force banks to reengineer their business models. While trading and clearing operations are being actively restructured, banks are missing out on untapped optimisation opportunities in the post-trade area, particularly in the highly fragmented European market.

The European Central Bank's TARGET2-Securities (T2S) initiative is addressing this fragmentation. T2S will trigger fundamental changes in the post-trade landscape, far beyond the initial scope of pan-European settlement in central bank money, and enable cost efficiencies which banks must consider to support their savings agendas and stay competitive with other market players who are acting to reap benefits from T2S. T2S will enable banks which take action to reap significant benefits from consolidating assets, direct access and use of central bank money.

These efficiencies will play an important role in unleashing the wider macroeconomic benefits from integrating European securities markets, building on the creation of the Euro and joint interbank payment system TARGET2.

T2S will go live in 2015 with four major on-boarding phases for the participating central securities depositories (CSDs) from June 2015 to February 2017, with the majority of the volume being migrated in 2016, bringing benefits soon for early adopters. Institutions which delay a proactive T2S strategy risk being hindered by their current providers and losing their competitive edge as savings accrue to first-movers. Banks should act now – or they risk missing out on the T2S opportunity.

This study focuses on the T2S benefits that banks can unlock by consolidating their securities and cash holdings in Europe directly on CSDs and central banks, thereby being able to:

1. delayer settlement-related exposures;
2. pool collateral for settlement but also triparty purposes;
3. net more cash settlements;
4. simplify operations.

Quantitative case studies show that banks can realise significant capital, funding and operating cost savings by delayering and consolidating assets. Based on conservative assumptions, the study estimates the savings potential in three high-level case studies:

- A broker-dealer with EUR ~100 bn trading assets & liabilities across major T2S markets could save up to EUR ~70 mn;
- A global custodian with EUR ~400 bn in assets under custody (AuC) across major T2S markets could save up to EUR ~50 mn;
- A regional bank with EUR ~140 bn in securities deposits across major T2S markets with a home market bias could save up to EUR ~30 mn.

The case studies have been validated in interviews with market participants. Nevertheless, sizing the actual savings potential for any given institution requires a detailed analysis of the specific settlement portfolio and operating model. In addition to cost efficiencies, a more consolidated T2S model can provide further benefits to banks, increasing stability and reliability of post-trade operations, reducing operational complexity and risks.

The potential savings arise when comparing a starting point with no direct infrastructure accounts, no central bank access for settlement and fragmentation of cash and securities across the EUR markets with a target state that makes full use of T2S with centralised access to the infrastructure and central bank money for settlement. Savings numbers are to a significant extent savings over future costs that will arise because of regulatory pressure shaping the industry.

As a prerequisite for achieving the full benefits, banks need to fundamentally rethink and change their current operating models in the post-trade area, particularly around settlements. Given planning, budget and implementation cycles, banks need to take action now to unlock the potential in time for T2S going live and the regulations fully kicking in. As T2S will impose adaptation costs on market participants in any case, there is a window of opportunity to leverage the change to achieve the full savings potential of consolidating assets.

This study was commissioned to and supported by Oliver Wyman. The underlying market analysis and expert interviews were conducted between March and August 2014. The study summarises the findings as a basis for further discussion.

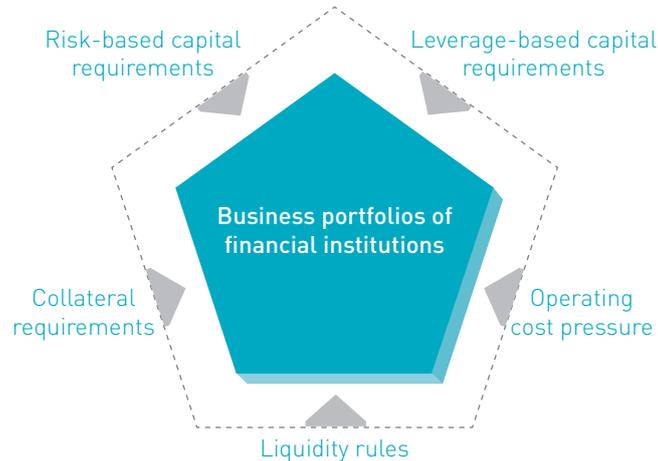
Introduction

The aftermath of the financial crisis has brought with it an unprecedented wave of regulation. A clear agenda was agreed for a coordinated global approach to financial regulation at the G20 meeting in Pittsburgh in September 2009, with a focus on strengthening the international financial regulatory system, increasing transparency and stability, and lowering systemic risks. An ambitious programme was launched to address major deficiencies in the global financial system.

The global regulatory agenda is putting pressure on the economics of banks of all sizes. Regulations such as Basel III (CRD IV), EMIR, AIFMD and UCITS V

in Europe are adding substantial new requirements¹. The stream of incoming regulations increases risk- and leverage-based capital requirements, demands significant liquidity buffers and stable funding sources, introduces substantial collateral requirements and creates additional operating costs associated with regulatory compliance (see Exhibit 1 for illustration). Furthermore, perceptions of risks have shifted due to the failures of large financial institutions and instabilities in the interbank market. As a result, banks are being forced to fundamentally rethink and restructure their business portfolios and operating models.

Exhibit 1: Overview of key constraints and regulations affecting financial institutions



Banks have kicked off a series of initiatives in response. The initial focus has been placed on front office activities such as trading and capital market portfolios, where some of the largest capital, balance sheet and liquidity efficiency gains can be realised. This study highlights untapped opportunities in the post-trade area which so far have received less

attention from market participants. By reducing complexities and exposures in their settlement, safekeeping, asset servicing and collateral management activities, banks can realise additional cost and risk reductions.

1. Please refer to the Sources section on page 24.



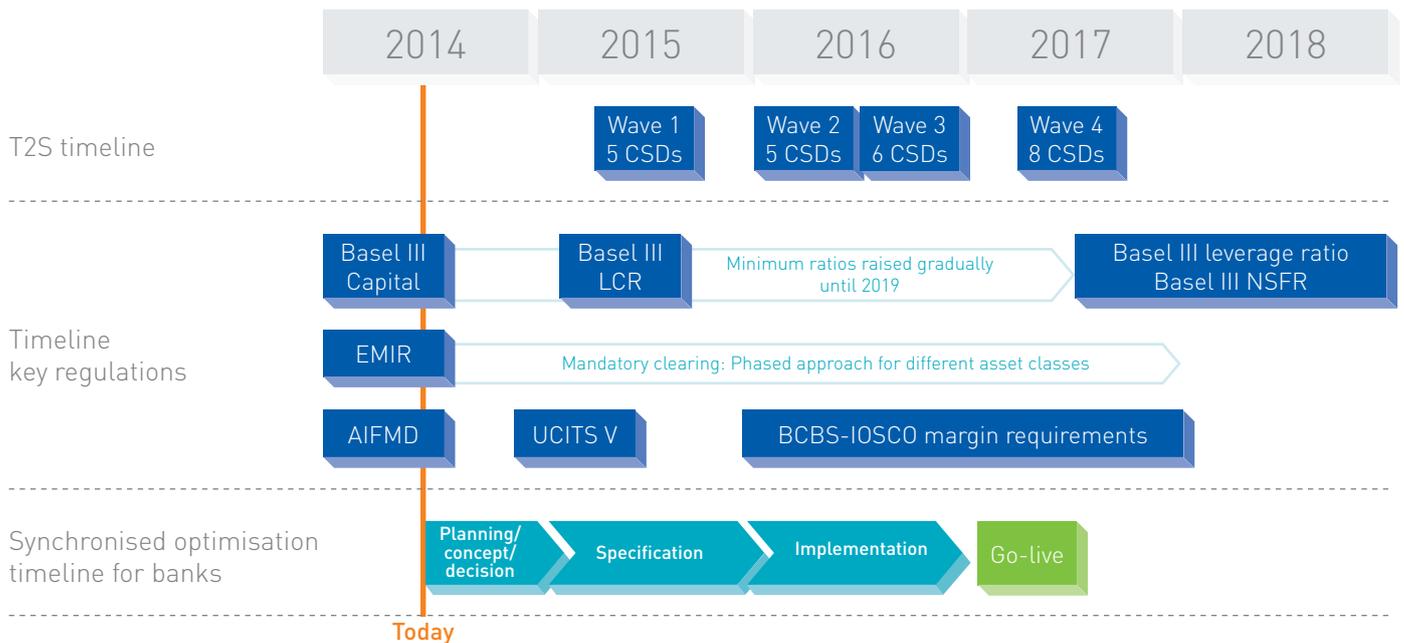
The most significant opportunities to improve post-trade efficiency can come through the transformation of European operations. The European post-trade landscape is currently characterised by high fragmentation and layers of intermediation which create complexities and inefficiencies, as well as associated risks and costs. As a result, market participants can optimise their post-trade economics by pulling four key levers:

1. **Delayer settlement-related exposures:** Holding securities directly at infrastructure level and settling directly in central bank money can reduce credit and operational risk, lower capital requirements, increase safety and stability (particularly in times of market stress), and enable banks to benefit from direct access to central banks and their credit facilities.
2. **Pool settlement collateral:** Consolidating collateral for settlement credit lines reduces the need for buffers across markets and thereby lowers funding and collateral needs as well as capital, balance sheet and liquidity consumption. Additional benefits can be achieved by pooling settlement and triparty collateral pools used for collateralisation of derivatives, securities financing transactions, etc.
3. **Net settlements:** By netting offsetting cash payment flows across markets, participants can further reduce settlement lines, collateral needs and associated funding and capital costs.
4. **Simplify operations:** By accessing the settlement and safekeeping infrastructure through a reduced number of access points, market participants can reduce operational risks, costs and fees.

By creating a harmonised and centralised securities settlement platform which settles in central bank money, TARGET2-Securities (T2S) will enable banks to take action to fully unlock the benefits of consolidating assets at the infrastructure level. T2S will start operations in 2015 with participating CSDs joining over four waves until 2017². In parallel, new regulations are being implemented in stages. Basel III (CRD IV), one of the key pieces of banking regulation, gradually introduces and increases new

requirements over the next five years. Other regulations such as EMIR, BCBS-IOSCO margin requirements, AIMFD and UCITS V are also beginning to be phased in. This creates a unique window of opportunity for banks over the next years to adapt their post-trade models in lockstep with the implementation of T2S and the most stringent regulatory requirements, as visualised by Exhibit 2. In order to fully reap these benefits, banks need to start planning their revised European post-trade approach now.

Exhibit 2: T2S, regulatory and optimisation timeline



This study reviews the key regulations impacting the post-trade area, highlights the efficiency potentials that can be realised by adapting post-trade models and quantifies the savings potential in three illustrative case studies for a broker-dealer, a global custodian and a regional bank. The analysis was commissioned to and supported by Oliver Wyman.

2. For more information on CSDs joining in the four waves, please refer to the About TARGET2-Securities section on page 25.

1

Regulation increasing pressure on post-trade economics

In response to the global financial crisis, regulators have made strong commitments to strengthen the safety and stability of financial markets. A number of new regulations are currently being introduced with far-reaching implications for the economics of banks. While post-trade activities have been less directly affected by the crisis, and as such are not at the core of the global response, post-trade economics are impacted by the shifts in capital, balance sheet, liquidity, collateral and further requirements of a number of key regulations³:

- **Basel III risk-weighted assets (RWA):** Capital eligibility standards and requirements for credit risks are being raised across the board, deepening capital consumption and costs in the settlement process, particularly for exposures to large commercial banking counterparties; among other things, this will create pressure on providers of credit to charge interest, e.g. for intra-day lines which so far are often free of charge;
- **Basel III leverage ratio:** As on- and off-balance sheet positions need to be capitalised on a non-risk-adjusted basis, any excess cash and collateral holdings as well as non-netted securities financing positions entail capital charges;
- **Basel III liquidity rules:** As new regulation like LCR (Liquidity coverage ratio) and NSFR (Net stable funding ratio) mean that the use of high-quality collateral becomes more restricted and intraday liquidity needs to be monitored more closely, pledging collateral and extending credit lines for settlement activities tends to become more costly; in addition, many organisations are reconsidering the current common practise of “uncommitted and unadvised” credit lines for the purpose of securities settlement;
- **EMIR and BCBS-IOSCO margin proposal:** As a result of the clearing and margin requirements for OTC derivatives, collateral in general becomes more scarce and costly;
- **AIMFD and UCITS V:** Depository banks will be liable for the loss of assets under custody, even if the custody mandate is sub-delegated, potentially driving the shortening of the custody supply chain.

Some of these regulations are still in proposal stage and dependent on national implementation. Basel III rules are currently being finalised and translated into national directives (CRD IV in Europe), as the different elements are gradually implemented. EMIR is being actively rolled out while the BCBS-IOSCO margin requirements for non-cleared derivatives will kick in at a later stage. AIFMD and UCITS V are also subject to finalisation and national interpretation, for example clarifying the rules of sub-custody delegation. In parallel to these regulations, T2S is moving from development to testing, with the different participating CSDs migrating in four waves.

While some uncertainty around implementation remains, the impact of the regulations on post-trade economics as well as the benefits from using a more consolidated approach around T2S can already be assessed and gauged. The impact and benefit assessment in the following chapters is based on a mid-term outlook with the majority of the new regulations implemented and CSDs migrated on T2S. Unless the final approach by regulators was to take a more radical turn, the general statements and estimates are valid across final implementation details.

3. Please refer to the Sources section on page 24.

2 Optimising economics on post-trade infrastructures

The European post-trade landscape currently is characterised by high fragmentation and layers of intermediation due to the large number of jurisdictions with different market practices and infrastructures. Banks and custodians that require access to the different local markets typically go through a complex network of intermediaries. There are a number of drawbacks of the current approach which are exacerbated by the new regulations. Due to the increasing capital, balance sheet, liquidity,

collateral and operational requirements, the resulting exposures to a variety of intermediaries, collateral fragmentation, reduced settlement netting potential and operational complexity make the current approach increasingly costly and unsustainable. By harmonising and centralising securities settlements on a common platform in central bank money, T2S creates a unique window of opportunity for market participants to switch to a more consolidated model as visualised by Exhibit 3.

Exhibit 3: Process consolidation under the emerging post-trade model

Historic post-trade model



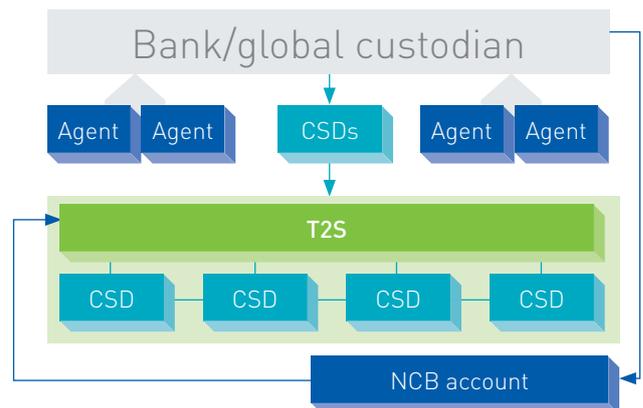
- Exposure to variety of banking counterparties
- Cash account and collateral fragmentation
- Reduced settlement netting potential
- Complex network of operations

T2S will facilitate direct and consolidated access to the participating markets and enable participants to reap the full benefits of such an approach. A bank can use one or more CSDs to settle securities in participating markets in central bank money. While maintaining securities accounts directly on the infrastructure level with CSD(s) acting as access point(s) to T2S, a bank may either source asset servicing directly from the depositories or continue to use agents in selected markets, while consolidating exposures and settlement flows.

With a more consolidated approach, banks can optimise their economics via four key efficiency levers:

1. Delayer settlement-related exposures: Hold securities directly at infrastructure level and settle directly in central bank money;

Emerging post-trade model



- Exposure to CSD & central bank infrastructure
- Consolidation of cash and collateral
- Improved settlement netting
- Single point(s) of access

2. Pool settlement collateral: Consolidate collateral pools for settlement, securities financing and other triparty activities, reducing buffers needed across different markets and locations;

3. Net settlements: Increase offsetting of cash in- and outflows due to settlement activities across markets, reducing settlement credit lines and collateral requirements further;

4. Simplify operations: Reduce number of access points to post-trade infrastructure.

The remainder of the section details the key benefits and requirements of each lever.

Delaying of settlement-related exposures

By choosing to hold securities directly at infrastructure level and cash for settlements directly with central banks, market participants can realise a number of benefits:

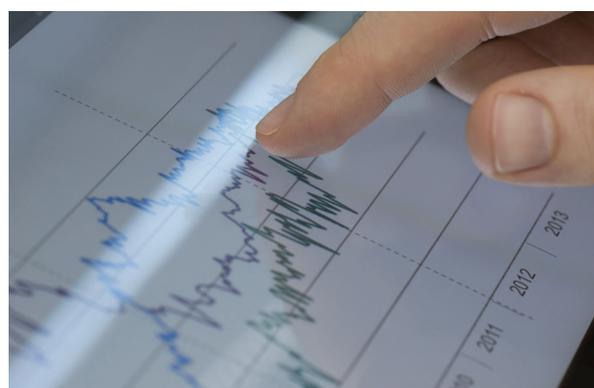
a) Direct exposures to central banks and market infrastructures: Depositing cash for settlement purposes directly at the ECB (as opposed to with commercial banks) reduces credit risk. This is reflected in substantially lower risk weights for central bank exposures under Basel, reducing regulatory capital requirements, driven by the standing, backing, depth of funding and size of operation of the Deutsche Bundesbank, Banque Centrale du Luxembourg and other national central banks. Some institutions may already have achieved this benefit in certain markets through direct participation in CSDs and central banks.

b) Self-collateralisation, reserves and free intraday credit at the central bank: Settling directly in central bank money with the ECB in T2S gives the participant access to the self-collateralisation facilities (using the purchased securities as collateral, subject to a haircut) as well as allowing the use of minimum reserves the participant holds as collateral required overnight. Thus, the need for additional collateral at the peak usage point can be reduced, lowering funding and balance sheet requirements. In addition, the intraday credit facilities of the central bank are free of charge whereas commercial banks may start to charge for these lines in the future. Differing collateralisation requirements of the ECB compared to commercial providers may result in these benefits being reduced depending on the collateral available to individual banks. Furthermore, self-collateralisation is limited to the purchase of securities eligible as collateral at the ECB, and will have reduced benefits for institutions which mainly trade other securities (e.g. equities).

c) Stability of central banks in stressed environments: Liquidity risks are reduced due to the stability of central banks in times of market stress, accommodating, extending credit lines and widening collateral eligibility if needed, in contrast to commercial bank providers.

d) Direct holdings of securities at infrastructure level: Holding securities directly at infrastructure level increases safety, reduces settlement delays and tends to reduce operational depository risks.

As a result, delayering tends to lower capital costs, funding costs and operational costs, as well as increase stability and safety more broadly. In order to delayer, banks need to become direct members of one (or several) CSD(s) able to provide access to all the desired securities settlement venues and to set up the required central bank accounts. This requires changes to the operational set-up. Banks with large cash accounts at commercial banks for settlement purposes and complex securities holdings across a variety of intermediaries benefit most from delayering.



Pooling of settlement collateral

The benefits of pooling collateral (cash and securities) on single venues for settlement and related purposes are:

a) Reduced collateral buffers: By pooling cash and securities used as collateral across different markets, buffers to accommodate settlement peaks and collateralise credit lines can be reduced, freeing up collateral for participants. The released collateral can either be added to the liquidity buffer needed for the liquidity coverage ratio (LCR) under Basel III, or removed from the balance sheet, lowering funding costs and leverage ratio induced capital requirements generated by the excess collateral.

b) Reduced settlement exposures and lines to clients: By pooling client transactions across markets and lowering settlement line needs of clients, participants which settle for clients can reduce their credit line exposures to clients, freeing up risk-weighted assets and associated capital requirements.

c) Optimised collateral management: There are further benefits of collateral pooling and optimisation if participants use the relevant CSD(s) also as triparty collateral agent(s) for other transactions such as derivatives, repo and securities lending, as collateral becomes even more fungible.

Collateral and credit line needs can be reduced as a result of pooling, lowering collateral fragmentation and increasing collateral velocity across products and usages. Banks with cash and securities accounts scattered across markets and with large collateral needs for settlement activities as well as other transactions benefit most from pooling – banks with more localised operations and idle collateral pools may benefit less.

Netting of settlements

By settling transactions on a reduced number of settlement systems, banks can increase netting efficiency, mainly along three dimensions:

a) Netting of own cash payment flows: The need for settlement credit lines and thus collateral is further reduced by the ability to net cash in and outflows due to settlements in different markets when using a single central bank account (i.e. by selling securities in some markets and buying securities in others). Funding costs and capital costs associated with the leverage ratio can be reduced further as a result.

b) Netting of client cash payment flows: As client settlements can also be netted across markets, credit lines to clients and associated risk-weighted assets and capital requirements can be further reduced.

c) Netting of offsetting securities financing trades for balance sheet and capital purposes: One of the conditions to net cash payables and receivables on the balance sheet for leverage ratio capital calculations is that the different legs need to be settled in the same settlement system. By consolidating settlements across markets, participants can increase netting of securities financing transactions, reducing capital requirements associated with the leverage ratio.

Netting of settlements enables participants to further reduce collateral and leverage ratio requirements, lowering funding and capital costs. This benefit will crystallise primarily for banks with payment flows scattered across markets and/or substantial securities financing books. Banks with a strong single-market bias will achieve lower benefits.

Simplifying operations

Reducing the number of access points to T2S markets for settlement purposes, as well as potentially for asset servicing, also brings about operational benefits:

a) Reduced operational costs and risks: By reducing the number of links to the different T2S markets, participants can reduce operational complexity and requirements, enabling them to lower operational costs in the back-office. A reduced number of interfaces also lowers operational risks around settlements. The benefits depend on the individual operational set-ups of banks, and are likely to vary considerably between institutions. There can potentially be some offset of benefits through costs accrued in a transition phase and added complexity when different agents are used in account operator models for asset servicing, if CSDs do not upgrade their services to the levels of existing agent banks.

b) Greater cross-border settlement efficiency and reduced fails: By consolidating settlement activities on T2S, settlement efficiency should increase considerably. Settlements within a market have much lower fail rates (typically far less than 1%) in contrast to cross-border settlements across markets (fail rates of ~3-4% or more). Settlement fails lead to several charges, including foregone interest rates for cash held, overnight cash or securities borrowing rates, fines in certain jurisdictions and reputational damage. Furthermore, upcoming CSD settlement discipline rules are likely to make failing more expensive in the future. As settlement fails can be reduced through consolidation, associated costs can be lowered.

c) Reduced cross-border fees and complexity: More broadly, it is expected that fees for settlements can be reduced on T2S. However, this is dependent on the final pricing strategy of the different CSDs, i.e. whether settlement fees are reduced and not fully offset by higher safekeeping fees, particularly in the short- to mid-term.

In order to realise these benefits, banks need to actively change their back-offices to streamline operations around the single access points. The generated benefits are driven by the inherent business and operational conditions of each individual institution. Operational benefits are sensitive to factors such as the level of internal settlement operations and settlement volumes across markets as well as the ability to change back-office structures in the short- to mid-term. Broker-dealers with large equities lending and borrowing activities across multiple markets, for example, benefit more than regional banks less active in non-domestic markets.

Achieving success in transforming the post-trade infrastructure will require a close collaboration between IT, operations and risk management. Through collaboration, banks will ensure that internal risk guidelines are followed and that any changes to external providers and CSDs effectively reduce costs and risks.

Summary of the cost benefits

By delayering, pooling, netting and simplifying settlement operations, participants can realise cost savings along a number of dimensions:

- **Capital costs** can be reduced by lowering risk-weighted assets and leverage ratio requirements associated with settlement activities;
- **Funding costs** can be reduced by lowering the need for collateral, through reducing required settlement credit lines and buffers more broadly when combining with other activities;
- **Operating costs** can be reduced by reducing interfaces and complexity in the back-office as well as lowering fees to third-party providers.

On top of the cost savings, there are additional benefits generated by reducing exposures, risks and complexity:

- Decreased liquidity risk during stress periods by using central bank settlement credit lines;
- Decreased operational risk through reliance on fewer settlement and payment agents as well as holding securities directly at infrastructure level;
- Potential lowering of depository risk through delegating custody of securities to highly regulated CSDs.

Table 1 summarises the key benefits and impact on post-trade economics and risk profiles across the four levers.

Table 1: Cost and risk reductions achieved after optimisation

| Key potential benefits | | Post-trade cost impact | | | Risk reduction | |
|------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------|---------|-----------|----------------|---|
| | | Capital | Funding | Operating | | |
| 1 | Delayer settlement-related exposures | a. Direct exposures to market infrastructures and central banks | ↓ | | ↓ | |
| | | b. Self-collateralisation facilities, ability to use reserves, and free intraday credit at the central bank | ↘ | ↓ | ↓ | |
| | | c. Stability of central banks in stressed environments | | | | ↓ |
| | | d. Holding securities directly at CSD level | ↘ | | ↘ | ↓ |
| 2 | Pool settlement collateral | a. Reduced collateral buffers against peaks by pooling settlement credit lines across markets | ↘ | ↓ | ↘ | |
| | | b. Reduced settlement exposures and lines to clients from pooling settlements across markets | ↘ | | | ↓ |
| | | c. Optimised collateral management, pooling settlement and triparty activities | ↘ | ↓ | ↘ | ↘ |
| 3 | Net settlements | a. Netting of offsetting cash payment flows across markets on single (central) bank accounts | ↘ | ↓ | ↘ | |
| | | b. Netting of settlement exposures and lines to clients from netting cash payments across markets | ↘ | | | ↓ |
| | | c. Netting of securities financing trades in same settlement system | ↘ | | | ↓ |
| 4 | Simplify operations | a. Reduced interfaces and access points to T2S and related markets | | | ↓ | ↓ |
| | | b. Greater cross-border settlement efficiency | | ↓ | ↓ | ↘ |
| | | c. Reduced cross-border fees and complexity | | | ↘ | |

3

Assessing the opportunity for market participants

To assess and size the benefits of consolidating assets on infrastructure and central bank level across T2S markets for different market participants, this chapter analyses a range of high-level case studies. Three types of market participants are considered:

- Broker-dealer;
- Global custodian;
- Regional bank.

For each type of market participant the potential capital, funding and operating cost savings are estimated, based on representative portfolios. The consolidated approach is compared to a fragmented and layered model of holding assets at different intermediaries across markets, under the assumption that T2S is introduced and the regulations fully ramped up.

- The potential savings arise when comparing a starting point with no direct infrastructure accounts, no central bank access for settlement and fragmentation of cash and securities across the EUR markets;
- With a target state that makes full use of T2S, with centralised access to the infrastructure and central bank money for settlement.

It is worth noting that savings numbers are to a significant extent savings over future costs, that will arise because of regulatory pressure shaping the industry.

To show the range of potential savings and discuss their underlying drivers, sensitivities to the different parameters are taken into account. The quantification focuses on settlement activities, abstracting from asset servicing which could potentially still be sourced from different providers.

Some of the benefits may not accrue in the immediate mid-term, which is taken into account by the ranges around the estimates. The benefits also depend on the commitment of key infrastructure providers, such as CSDs and CCPs, as well as major market participants, to facilitate and synchronise settlement flows around T2S. Uncertainties around the evolving industry dynamics are captured to some extent by the ranges around the estimates, but benefits could be curtailed further by lack of synchronisation in a worst-case scenario.

The case studies model the capital, funding and operating cost savings based on a number of input parameters such as:

- daily settlement volumes and credit line needs;
- collateralisation requirements and self-collateralisation options at commercial versus central banks;
- haircuts;
- split between cash and securities collateral posted;
- counterparty risk weights;
- capital ratios;
- capital and funding cost rates.

Broker-dealer case study

The first case study considers a broker-dealer with substantial trading activities in Europe, generating daily settlement volumes of EUR ~30 bn across 10 key T2S markets. Trading assets and liabilities are assumed to be EUR ~100 bn across these markets (long and short positions). Exhibit 4 shows the potential cost savings from channelling these settlement flows through one CSD, using a single direct cash account (DCA) with the ECB. The dealer can save up to EUR ~70 mn annually by consolidating the settlement setup.

Exhibit 4: Broker-dealer saving potential

| Savings per lever | | | EUR | Key benefit drivers |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|------------------------------------------------------------------------|
| EUR mn | | | mn | |
| 1 | Delaying of exposures | | 3 – 24 | - Direct central bank exposures - Free credit lines |
| 2 | Pooling of collateral | | 15 – 18 | - Reduction of cash and collateral buffers for settlement activities |
| 3 | Netting of settlements | | 14 – 17 | - Netting of payment flows |
| 4 | Simplification of operations | | 5 – 11 | - Reduced IT/Ops costs due to reduced operational complexity |
| Overall | <div style="display: flex; justify-content: space-around;"> <div style="background-color: #76b82a; color: white; padding: 2px 5px;">Capital costs</div> <div style="background-color: #76b82a; color: white; padding: 2px 5px;">Funding costs</div> <div style="background-color: #76b82a; color: white; padding: 2px 5px;">Operating costs</div> </div> | | 37 – 70 | - Savings driven primarily by collateral savings and capital reduction |

1. Delaying of exposures

The savings potential depends on the extent to which central bank money is already used. Typically, international dealers currently access most markets through intermediaries, settling in commercial bank money. By moving cash used to support settlement activities from commercial payment banks to the ECB, capital requirements can be reduced given the lower Basel risk weight associated with central bank exposure (amounting to EUR 2-3 mn capital cost savings on EUR 0.7-1.1 bn calculated cash collateral, due to a 0% risk weight as opposed to a ~20% risk weight). Additional savings can potentially be generated over time as intraday credit from the ECB is free, whereas commercial payment banks may start to charge for settlement lines as regulatory requirements increase (up to EUR ~12 mn cost savings). Finally, the self-collateralisation facility and ability to use reserves to collateralise settlement lines at the ECB can create additional savings for the broker-dealer, in the form of reduced funding and capital cost (EUR 1-8 mn savings in funding costs based on a net funding cost rate of ~1.5% and collateral savings of EUR 100-500 mn at the central bank depending on the original commercial bank set-up, as well as up to EUR ~2 mn leverage ratio-based capital cost savings due to reduced collateral on the balance sheet).

2. Pooling of collateral

An estimated 25-30% reduction in overall collateral, needed to support settlement activities, can be achieved by the dealer through pooling collateral in T2S (against a single ECB account). As settlement line usage peaks occur at different points in times, aggregate peaks can be substantially lowered by pooling as less buffers are needed, reducing collateral needs and associated funding costs as well as potential capital costs by lowering collateral holdings. EUR 12-15 mn of the cost savings are due to lower funding costs (based on a reduction of EUR 0.8-1.0 bn in collateral requirements and the net funding cost rate of ~1.5%). The remaining ~3 mn cost savings are

achieved by the reduction of leverage ratio-based capital requirements (based on capital savings of 3% on reduced collateral on balance sheet and a cost of regulatory capital of 10-12%).

3. Netting of settlements

By being able to net payment flows between different markets, the dealer can reduce the overall settlement credit line by a further estimated 20%-25%. Additional collateral can be freed up, reducing funding costs as well as potentially leverage ratio capital costs from holding the extra collateral. A EUR 0.6-0.8 bn reduction in collateral reduces funding costs by EUR 10-12 mn and leverage ratio-based capital costs by EUR 2-3 mn. Furthermore, the dealer can potentially further reduce the capital requirement for leverage ratio purposes, by being able to net more cash payables and receivables of securities financing transactions using the same settlement system across markets. These savings amount to EUR ~2 mn for the dealer in the case study based on a conservative assumption of netting, reducing the leverage ratio exposure by EUR ~0.5 bn.

4. Simplification of operations

By consolidating settlement activities across 10 T2S markets on one CSD, the global dealer can reduce operational costs by managing connections to different markets. These cost savings depend on the operational set-up and scalability of the dealer. In the case study, operating cost savings of EUR 3-7 mn are achieved due to streamlining back office operations. In addition, settlement efficiency should increase considerably because of internalisation, reducing fail rates and thereby lowering associated costs (estimating another reduction of EUR 2-4 mn in costs).

In sum, substantial cost savings can be achieved by consolidating settlement flows on one CSD in T2S using a single ECB account. Pooling collateral and netting settlement flows are the key drivers with the other savings somewhat dependent on the current payment and operational set-up.

Global custodian case study

The second case study considers a global dealer that consolidates EUR ~400 bn worth of assets under custody (AuC), from account in 10 T2S markets to a single T2S account at a CSD, and the cash needed for settlements at a single direct cash account (DCA) with the ECB. Settlement volumes are assumed to be EUR ~11 bn per day across these markets. Exhibit 5 shows the results for the global custodian across the different levers and types of costs. The global custodian can save up to EUR ~50 mn.

Exhibit 5: Global custodian saving potential

| Savings per lever EUR mn | | EUR mn | Key benefit drivers |
|-----------------------------|------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Delaying of exposures | 0 – 5 | <ul style="list-style-type: none"> - Direct central bank exposures - Muted impact due to stringent collateral requirements at NCB |
| 2 | Pooling of collateral | 15 – 24 | <ul style="list-style-type: none"> - Lower cash and collateral buffers required for settlement credit lines |
| 3 | Netting of settlements | 9 – 18 | <ul style="list-style-type: none"> - Payment flows netted across wide geographic breadth |
| 4 | Simplification of operations | 2 – 4 | <ul style="list-style-type: none"> - Shrinking breadth of network has potential of reducing IT/Ops FTEs considerably |
| Overall | | 26 – 52 | <ul style="list-style-type: none"> - Savings driven by reduction of overall collateral required and operational savings |

Oliver Wyman 2014

1. Delaying of exposures

Savings from delaying are somewhat limited as it is assumed that the global custodian cannot self-collateralise on the ECB using client assets. Depending on the amount of cash transferred from commercial banks to the ECB, capital savings can be realised given the lower risk weight of the ECB compared to payment banks but may be offset by additional leverage ratio-based capital requirements due to the more stringent collateral requirements at the ECB. Depending on whether payment banks charge for settlement lines provided in the future, additional savings can be generated by taking advantage of the free credit lines of the ECB. Again, these savings may be offset by funding costs for the more stringent collateral requirements at the ECB, limiting the net savings potential to EUR ~5 mn in the case study.

2. Pooling of collateral

The reduction in overall collateral needed by pooling collateral in T2S is estimated to be around ~13-20%, somewhat lower than for the broker-dealer. The funding benefits achieved by needing less collateral are still substantial. Capital benefits are dependent on whether the global custodian is constrained by the leverage ratio. Around EUR 11-18 mn can be saved in funding costs (based on a net funding cost rate of ~1% for the global custodian) and EUR 4-6 mn

in leverage ratio-based capital costs (based on 3% capital savings on reduced collateral needs on the balance sheet if the custodian is leverage constrained). Pooling on the client side may reduce the need to extend credit lines to clients, creating additional capital savings of up to EUR ~1 mn due to reduction in risk-weighted assets (RWA).

3. Netting of settlements

Also the netting efficiency is assumed to be lower for the global custodian (at ~8-15%) compared to the global dealer. Netting reduces funding costs by EUR 7-13 mn and leverage ratio-based capital costs by EUR 2-5 mn. Furthermore, the global custodian is assumed to have no securities lending positions to net. Still, the overall potential of netting of settlements is an important driver of cost savings.

4. Simplification of operations

The global custodian is assumed to be able to lower operating costs by reducing access points to the 10 T2S markets and increasing settlement efficiency.

The bulk of the savings is generated by the pooling of collateral and increased netting of payments across markets, with additional savings from delaying and simplifying operations somewhat dependent on the payment and operational set-up of the global custodian.

Regional bank case study

The final case study considers a European regional bank that has EUR ~140 bn of securities deposited from local corporates, SMEs, and retail investors; a majority of assets are assumed to be in the banks' home market, with a small proportion spread over 4-9 other T2S markets. We explore a case where the regional bank consolidates these assets into one T2S CSD, and streamlines its payment agents in all its markets into a single direct cash account (DCA) at the ECB. Exhibit 6 shows the results for the regional bank across the different levers and types of costs. The regional bank can save up to EUR ~30 mn.

Exhibit 6: Regional bank saving potential

| Savings per lever | | | EUR mn | Key benefit drivers |
|-------------------|------------------------------|--|---------|-------------------------------------------------------------------------------------------|
| EUR mn | | | | |
| 1 | Delaying of exposures | | 0 – 14 | - Ability to connect to central bank impacts savings |
| 2 | Pooling of collateral | | 7 – 10 | - High funding costs - Benefits increase with increasing geographic breadth |
| 3 | Netting of settlements | | 3 – 5 | - High funding costs - Netting has benefits based on geographic service breadth |
| 4 | Simplification of operations | | ~1 | - Some reduced costs due to reduced operational complexity |
| Overall | | | 10 – 30 | - High funding costs and cash collateral balances brings high capital and funding savings |

1. Delaying of exposures

As with the global custodian, savings from delaying are limited as it is assumed that the regional bank cannot self-collateralise on T2S using client assets. However, high cash collateral proportions posted by regional banks due to their deposit taking activities can potentially result in a substantial capital cost savings through exposure to central banks (up to EUR ~4 mn based on cash collateral of EUR ~1.5 bn resulting in capital savings of EUR ~35 mn moving the cash to the central bank). Regional banks are further likely to have more minimum reserves at their respective central banks, which can provide settlement liquidity without incurring costs of more stringent collateral requirements at the ECB (and create funding cost savings of up to EUR ~3 mn). Further benefits may arise if payment banks begin to charge for settlement lines (up to EUR ~7 mn).

2. Pooling of collateral

Collateral requirements are estimated to reduce by 10-20% through pooling liquidity in a single place, lower than in the other case studies, primarily due to the smaller geographic footprint and concentration of assets in the home country. Nevertheless, higher funding costs incurred by regional banks lead to substantial savings in funding costs of EUR 6-8 mn (based on a net funding cost rate of ~2%). As European regional banks have indicated that they are likely to be constrained by leverage ratio capital

requirements, this reduction in collateral can result in further capital savings through reducing collateral requirements and thus balance sheet size (around EUR 1 mn in cost of capital savings).

3. Netting of settlements

The smaller geographic footprint of the regional bank further leads to a smaller netting benefit than global custodians and broker dealers of 5-10%. Once again, the higher funding costs of regional banks are likely to still make netting a substantial saving source (EUR 3-5 mn). Leverage ratio-based cost of capital savings would be below EUR 1 mn. Similar to the global custodian, the regional bank is assumed to have no securities lending positions to net.

4. Simplification of operations

Regional banks are assumed to have a large amount of manual requirements in their back office, leading to limited operational savings despite having a consolidated network. Reduced settlement fails may create additional upside, depending on fail rates today.

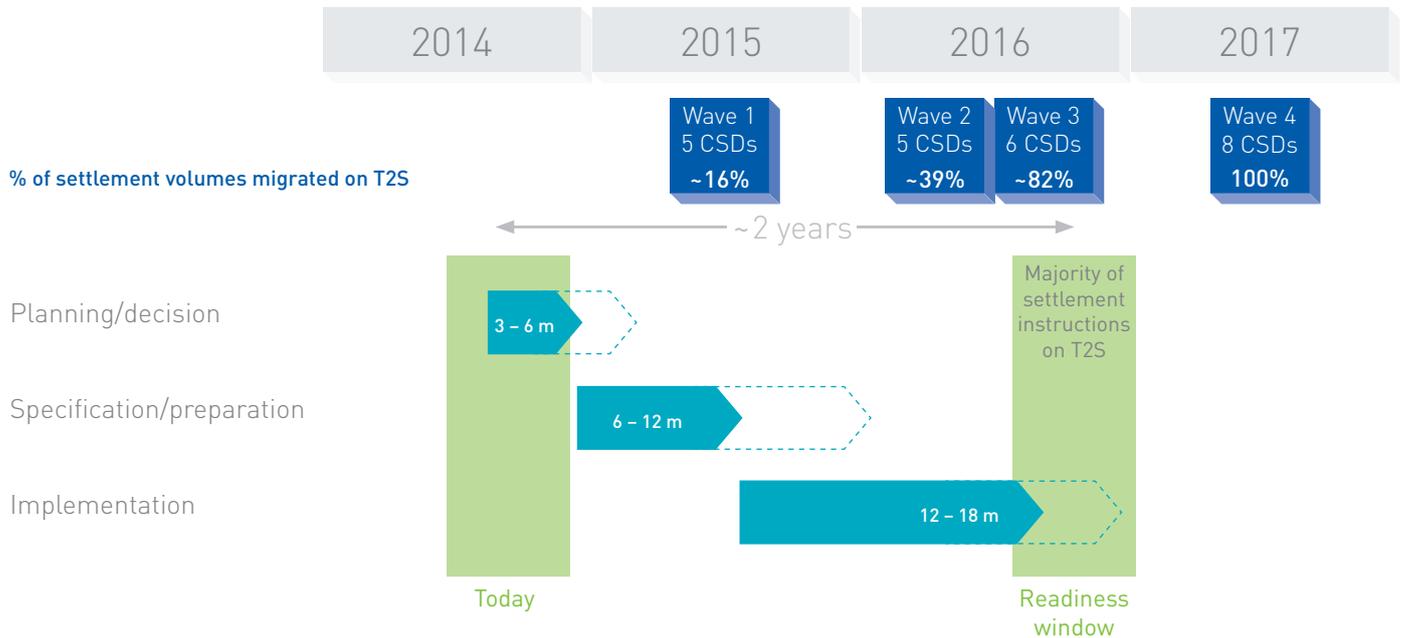
The largest proportion of savings is likely to be generated from the reduction in collateral requirement through netting and pooling. There is considerable savings potential from delaying, assuming that the regional bank does not already have a link to its NCB.

4 Why act now?

The analysis has shown market participants can achieve sustainable cost and risk reductions by consolidating their assets at the infrastructure and central bank level across T2S markets. Nevertheless, switching to an optimised post-trade set-up will require a timely and coordinated approach. Given the time requirements to switch providers, exacerbated by the scale of such a project as well as overall pressure on resources and bandwidth in the industry over the next years, market participants need to start planning their approach now in order to benefit once T2S becomes available for the major markets.

Exhibit 7 shows an expected post-trade optimisation timeline for a larger institution. A two-year window of time opens in the second half of 2014 before the bulk of settlement volumes become available on T2S (in the second half of 2016 with Wave 3). Planning, preparing and implementing such a project may take up a full 24-30 months. As such, market participants will have to start planning over the next months in order to target a go-live date around the back end of the T2S migration phase.

Exhibit 7: Expected post-trade optimisation timeline for banks



Delaying a proactive T2S consolidation strategy comes with risks. Current providers may be unprepared, hindering participants to realise the benefits of T2S, potentially even causing disruptions across the waves. Providers also cannot fully shield participants from changes in the settlement processes, as aspects of the timeline, messaging, collateralisation and other elements are adjusted during the T2S adaptation. Hence, participants may need to invest time and incur costs, upgrading their operations around current providers, without achieving the full benefits of a consolidated approach. Finally, consolidation and M&A activity among providers triggered by the changes may force participants to adapt at a late stage.

Launching a T2S consolidation strategy, changing networks and providers, late in the adaptation cycle may come with additional delays and costs. As OTC derivatives reporting and the introduction of other new obligations have shown in the past, providers might be unable to on-board late arrivals in time due to backlogs.

As a result, institutions which delay a consolidation strategy will risk losing out on savings and efficiencies accrued by first movers. Conversely, banks that proactively pursue such a strategy can build a sustainable competitive advantage.



5 Conclusion

To unlock the full potential of T2S, market participants need to actively consolidate their assets at the infrastructure and central bank level across markets. Delaying exposures, pooling collateral, netting settlements and simplifying operations across T2S markets reduces risks and complexity in post-trade operations. Sustainable capital, funding and operating cost benefits can be achieved as capital requirements, collateral needs and operational complexity are reduced.

Market participants can achieve significant cost savings by consolidating assets across T2S markets

Quantitative case studies show that market participants can achieve significant cost savings by consolidating assets across T2S markets. The savings are dependent on the size, breadth and complexity of settlement activities across T2S markets. Savings are likely to be highest for broker-dealers with substantial settlement volumes across a number of markets. Global custodians with significant portfolios in T2S markets can also achieve substantial savings. Savings of regional banks focused on their domestic market tend to be lower but still attractive relative to their size of securities operations.

In order to unlock the full potential, banks need to take action now given the two year time window until the majority of settlement volumes will have been migrated on T2S. Institutions which delay consolidation will risk being hindered by unprepared providers, incurring unnecessary costs from adapting late in the cycle and losing out on savings accrued by first-movers.

Glossary

| | |
|-------|----------------------------------------------------------------------|
| AIFMD | Alternative Investment Fund Managers Directive |
| AuC | Assets under Custody |
| BCBS | Basel Committee on Banking Supervision |
| CPSS | Committee on Payment and Settlement Systems |
| CRD | Capital Requirements Directive |
| CSD | Central Securities Depository |
| DCA | Direct Cash Account |
| ECB | European Central Bank |
| EMIR | European Market Infrastructure Regulations |
| FMI | Financial Markets Infrastructure |
| G20 | Group of 20 Countries |
| IOSCO | International Organization of Securities Commissions |
| NCB | National Central Bank |
| RWA | Risk-Weighted Assets |
| SME | Small and Medium Enterprises |
| T2S | TARGET2-Securities |
| UCITS | Undertakings for Collective Investment in Transferable Securities |

Sources

Basel III – Current framework

“Basel III: A global regulatory framework for more resilient banks and banking systems” (bcbs189.pdf), Basel Committee on Banking Supervision, Dec 2010 (rev. June 2011)

“Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools” (bcbs238.pdf), Basel Committee on Banking Supervision, January 2013

“Monitoring tools for intraday liquidity management” (bcbs248.pdf), Basel Committee on Banking Supervision, April 2013

Basel III – Consultative documents

Consultative Document, “Revised Basel III leverage ratio framework and disclosure requirements” (bcbs270.pdf), Basel Committee on Banking Supervision, January 2014

Consultative Document, “Basel III: The Net Stable Funding Ratio” (bcbs271.pdf), Basel Committee on Banking Supervision, January 2014

BCBS/ IOSCO

“Margin requirements for non-centrally cleared derivatives” (bcbs261.pdf), Basel Committee on Banking Supervision/Board of the International Organization of Securities Commissions, September 2013

EMIR

Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties (CCPs) and trade repositories (TRs)

AIFMD

Regulation (EU) No 231/2013 of 19 December 2012 supplementing Directive 2011/61/EU of the European Parliament and of the Council with regard to exemptions, general operating conditions, depositaries, leverage, transparency and supervision

UCITS V

Proposal for a Directive of the European Parliament and of the Council amending Directive 2009/65/EC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) as regards depositary functions, remuneration policies and sanctions, July 2012

About TARGET2-Securities (T2S)

T2S is an initiative by the European Central Bank in its agenda to harmonise post-trade processes across Europe. Following on from the TARGET2 (T2) initiative, which was created to streamline cross-border payments, T2S aims to achieve similar efficiencies in the cross-border securities settlement process.

T2S will operate a real-time gross settlement (RTGS) system with the securities leg through participating CSDs and cash leg through TARGET2 cash accounts at participating NCBs. While T2S will take over the settlement function, other activities (e.g. custody, asset servicing, maintaining an accurate register) will still be performed by the respective CSDs.

T2S will be run by the Eurosystem, and will function as a securities settlement system (SSS) for securities brought on by participating CSDs. At the time of writing this report, 24 CSDs have signed the memorandum of understanding with the ECB and will be connected to T2S in four waves, beginning June 2015.

Wave 1 [22 June 2015]

- Bank of Greece Securities Settlement System (Greece)
- Depozitarul Central (Romania)
- Malta Stock Exchange (Malta)
- Monte Titoli (Italy)
- SIX SIS (Switzerland)

Wave 2 [28 March 2016]

- Euroclear Belgium (Belgium)
- Euroclear France (France)
- Euroclear Nederland (Netherlands)
- Interbolsa (Portugal)
- National Bank of Belgium Securities Settlement Systems (Belgium)

Wave 3 [12 September 2016]

- Clearstream Banking (Germany)
- KELER (Hungary)
- LuxCSD (Luxembourg)
- Oesterreichische Kontrollbank (Austria)
- VP Lux (Luxembourg)
- VP Securities (Denmark)

Wave 4 [6 February 2017]

- Centrálny depozitár cenných papierov SR (Slovakia)
- Eesti Väärtpaberikeskus (Estonia)
- Euroclear Finland (Finland)
- Iberclear (Spain)
- Centralna Klirinško Depotna Družba (Slovenia)
- Lietuvos centrinis vertybinių popierių depozitoriumas (Lithuania)
- BNY Mellon CSD (Belgium)
- Latvijas Centralais Depozitarijs (Latvia)

Sources: ECB T2S website (<https://www.ecb.europa.eu/paym/t2s/html/index.en.html>); Clearstream T2S website (<http://www.clearstream.com/clearstream-en/strategy-and-initiatives/target2-securities--1-/t2s-and-clearstream>).

About us & Contacts

About Oliver Wyman

Oliver Wyman is a global leader in management consulting that combines deep industry knowledge with specialised expertise in strategy, operations, risk management, organisational transformation, and leadership development. The firm's 3,000 professionals help clients optimise their business, improve their operations and risk profile, and accelerate their organisational performance to seize the most attractive opportunities.

For more information on the research, please contact: info-FS@oliverwyman.com

www.oliverwyman.com

About Clearstream

Clearstream is a global leader in post-trade securities services and with more than EUR 12 trillion in assets under custody, the company is one of the world's largest settlement and custody firms for domestic and international securities. As an international central securities depository (ICSD), Clearstream provides customers in more than 120 countries with access to 54 domestic markets, the Eurobond market, and the carbon emissions rights market. As a CSD based in Frankfurt, Clearstream also provides the post-trade infrastructure for the German securities industry, offering access to a large number of markets in Europe. Clearstream also offers such services for the Luxembourgish market via LuxCSD, a CSD which is jointly owned by Clearstream and the Banque centrale du Luxembourg (BCL). Clearstream has consistently high credit ratings (AA) which testify to its robustness and reliability.

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