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THE EUROPEAN POST-TRADE ECOSYSTEM UNDER T2S

DEALING WITH COMPLEXITY

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CONTENTS

EXECUTIVE SUMMARY

The European post-trade infrastructure is going through a sea change with the implementation of the T2S platform by the ECB and the proposed CSD regulation (CSDR) by the European Commission. This evolution will push market participants to reconsider their post-trade arrangements and review their current back office system capabilities.

Financial intermediaries (custodians, agent banks, and broker-dealers) have numerous options to consider to leverage T2S: from keeping their existing post-trade arrangements to becoming DiCoAs and consolidating their post-trade arrangements on a pan-European basis.

The 23 CSDs that have decided to join T2S, especially the smaller ones, are in a more challenging situation. The combination of T2S and CSDR puts at risk their various sources of revenues (settlement, asset servicing, issuer relation, etc.) while requiring some significant investment to adapt their current back office system to the future environment.

The level of investment required to adapt one's back office to the T2S ecosystem varies depending on the number of markets accessed, the settlement volume, the current market practices, and the approach being implemented. We found that, for a market player that decides to adapt its current back office system to operate under T2S by using a combination of communication hub and T2S adaptation middle layers, the investment would be in the range of €7 million. On the other hand, for market participants that decide to revamp their back office systems, the investment would be between €12 million for the settlement function only and €27 million if custody is added on top of it. The level of investment is quite significant, and even the less expensive approach would need to handle around 1 million settlements per annum to reach a breakeven point in a timely manner.

In addition to adapting to T2S workflow and business processes, a significant portion of IT investment will be driven by the communication complexity. Market participants will have to operate in an ecosystem that relies on disparate messaging formats, and where many local specificities remain. This situation not only generates additional cost but also raises some concerns about the operational risk incurred by market participants in case of communication failure and mismanagement. Regarding the connectivity to T2S, we found that the vast majority of market players have discounted using a dedicated link and will rely on the value added network services provided by SWIFT and SIA/COLT.

The additional sources of revenue that could be captured by CSDs to compensate for their declining settlement revenue are likely to be restricted to only a handful of players. In fact, tension and competition between iCSDs and Tier I custodians are likely to increase in the future around liquidity and collateral management as both types of market participants ramp up their offerings. While iCSDs are developing industrywide collateral management solutions, Tier I custodians are reconsidering the possibility of expanding into CSD activity, especially with the implementation of the interoperability element under CSDR and the development by BNY Mellon of its own CSD.

As we have outlined in Table 1, we believe that Tier I custodians and regional iCSDs are the most likely to benefit from the changes that are currently reshaping the European post-trade infrastructure. For local players and notably local agent banks, the future does not hold a lot of promise; their key added value until now has been their access to local markets and understanding of national specificities. With harmonization along the way, their business model could be jeopardized. In the longer run, the same is true for local CSDs with the combination of T2S and CSDR. This forecast should not be a surprise to anyone, because the clear objective of the European Commission and the ECB is to drive competition and consolidation in the European post-trade infrastructure.

Table 1: Strategies Pursued by Market Participants to Adapt to the Future European Post-trade Infrastructure

MARKET PARTICIPANTS	BUSINESS STRATEGY	IT STRATEGY	CONNECTIVITY TO THIRD PARTY
GLOBAL AND REGIONAL CUSTODIANS	• Leverage T2S to consolidate disparate settlement systems across markets • Decommission local providers • Improve collateral and liquidity management services • Develop CSD activity?	• Big Bang revamping : settlement and custody platform • Investment in collateral optimization solutions • Investment in CSDs' capabilities?	• DiCoAs in T2S (VAN) • NCSDs • NCBs • Local service providers
REGIONAL CSDs	• Consolidate across markets • Generate economies of scale • Protect existing revenue streams • Improve collateral and liquidity management services	• Big Bang revamping : settlement and custody platform • Investment in collateral and liquidity management solutions	• DiCoAS in T2S (VAN) • Foreign CSDs and NCBs • Access to new trading feeds
LOCAL CSDs	• Protect local specificities: notary, asset servicing, safekeeping • Outsource settlement function to T2S • Reconsider banking activities if currently provided • Extend services to other markets – gain CA expertise	• Improve existing back office systems: mapping and adaptation of current workflow • Focus on core services • Join collateral management joint initiatives	• DiCoAS in T2S (VAN) • Foreign CSDs when relevant (based on local market cross-border activity)
LOCAL AGENT BANKS	• Protect national specificities • Focus on serving local market • Keep T2S adaption cost to a minimum	• Improve existing back office systems: mapping and adaptation of current workflow	• Local CSD

Source: Celent

INTRODUCTION

The impact of the Target 2 Securities platform developed by the European Central Bank will be manifold. While the clear goal of the project is to decrease the cost of settlement in the T2S markets, it will also foster competition in the post-trade arena, with CSDs evolving along the value chain to compensate for the forecasted decline in revenue from settlement operations. By doing so, CSDs will compete more directly with subcustodians in the asset servicing business, and that will increase the number and type of providers available to financial intermediaries.

The implementation of T2S is clearly creating friction among market participants, which are facing numerous challenges from the weak economic environment to increased regulatory pressure (e.g., MiFID, EMIR, Basel III, etc.) and the ECB. The ECB is clearly in its role of providing an infrastructure that will improve the efficiency of the European capital market industry, foster harmonization of market practices, and eventually increase integration. The long-term benefits of such an initiative are evident if one compares the overall trading cost in the US with the one in Europe, especially for “cross-border” transactions. The fact that we are still mentioning cross-border transactions within Europe despite the liberalization of capital flow with the European Monetary Union, and the disappearance of “borders” for citizens traveling within the Shengen area, demonstrates the progress that has to be made to achieve a real integration of the European capital markets. However, this is a long-term vision, and banks, CSDs, and custodians have many short-term challenges to handle before they can fully accept the idea that it will get worse before it gets better.

Adapting one’s post-trade infrastructure to directly connect to T2S and potentially to in-house the asset servicing function will require some significant investment. There are numerous cost components to consider from the upfront investment in systems to the evolution of running cost and the possible impact on liquidity cost. Since T2S will not solve all the issues of lack of harmonization in the Europe post-trade arena, numerous customizations and local connectivity will be required from FIs’ post-trade infrastructure to cater to the numerous national specificities. In addition, the coexistence of various messaging formats (e.g., 15022, 20022, SWIFT, proprietary) within the European post-trade ecosystem is increasing complexity that the back offices of financial intermediaries will have to deal with.

To provide a clear understanding of the challenges ahead of the European post-trade market, SWIFT has agreed to sponsor Celent’s research in this space, while leaving full editorial control of the report to Celent.

This research is the result of the analysis of a detailed survey and follow-up interviews of 13 major participants of the European post-trade environment, representing the different main categories of providers and customers of post-trade services in Europe:

- Four subcustodians
- Two Tier I broker-dealers
- Two global custodians
- Seven local CSDs

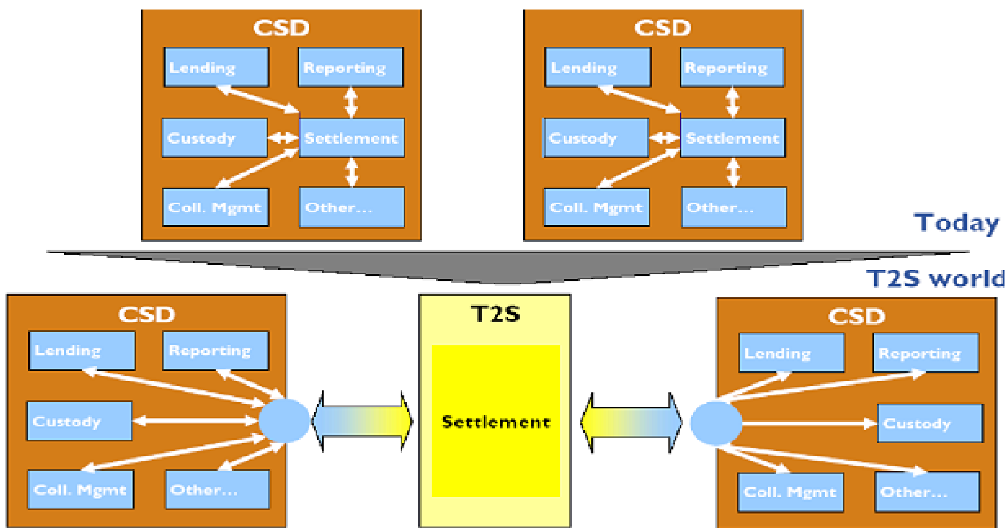
The figures and estimates provided in this research are calculated by averaging the results/values provided by survey participants. Please note that when the spending figures provided were out of range (either too high or too small) with no specific rationale to explain the situation, we have replaced the number provided by the closest response.

HARMONIZATION WITHIN THE EUROPEAN POST-TRADE ECOSYSTEM

TARGET 2 SECURITIES

T2S is the initiative launched by the ECB to the CSDs to transfer their settlement function to a common technical platform. The main benefits of this platform would be the reduction of settlement engines and therefore the reduction of costs for CSD infrastructure and custodians' back offices. However, this evolution driven by T2S is also providing different options for market participants to change/adapt their post-trade arrangement and infrastructure. In the current environment, financial intermediaries (FIs) have contracts with external providers, usually CSDs, global or subcustodians, to handle their post-trade activities, from settlement to custody, when trading outside their home market. In the post-T2S environment, they will be able to conduct some of these activities themselves or employ a different set of providers to conduct them.

Figure 1: T2S Insources the Settlement Function from CSDs



Source: BNY, Celent

The Main Scenarios Available to Financial Intermediaries for T2S Settlement

While there are many options available to financial intermediaries (FIs), we estimate that they can be grouped into three main scenarios.

1. Indirect connectivity to T2S.
2. Direct connectivity to T2S for settlement but using an external provider for asset servicing.
3. Implementing a full self-settlement approach and custody activity.

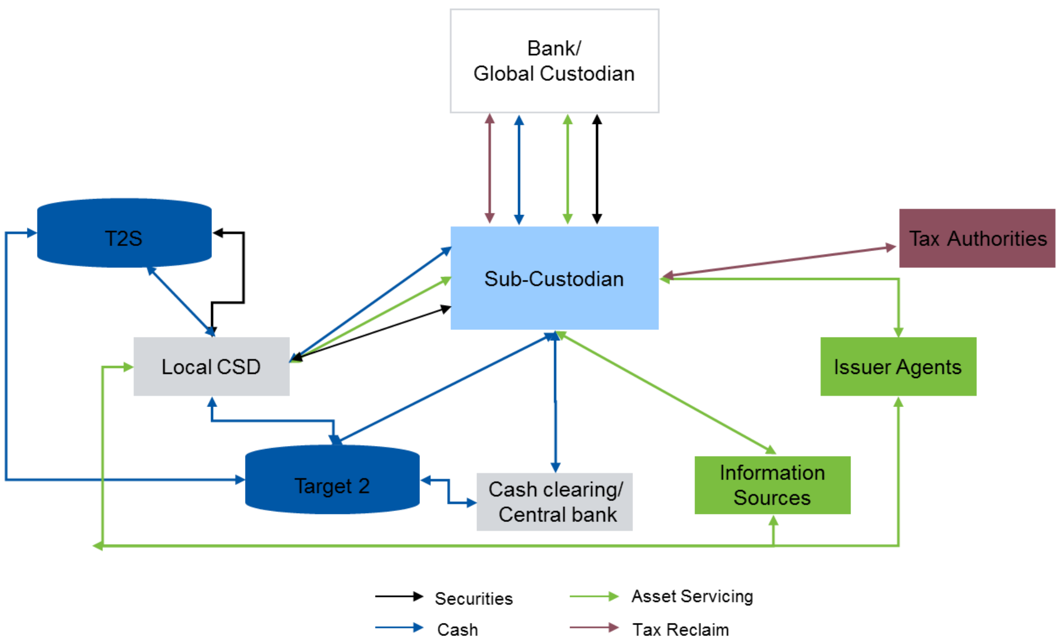
Market participants that are implementing scenario 2 and 3 are labeled by T2S as Direct Connectivity Actors (DiCoAs). It is important to note that these options are not exclusive from one another, and that a mix of them is very likely to be implemented by FIs. For example, while this is extreme, a bank could decide to implement option 3 for its home market, option 2 in markets where it has a significant transaction volume, and finally option 1 in markets where it conducts transactions on an irregular basis.

Scenario 1: Indirect Connectivity to T2S

In this option, the financial institution still relies on external providers to conduct the various post-trade activities. However, with the prospect of T2S implementation, CSDs that are concerned about the reduction of their settlement revenues are moving along the value chain and developing services to act as investor CSDs and compete to a certain extent with custodians. Although many additional services are still in a development phase, we assume that it will foster increased competition and that financial institutions will have greater choices of external providers. Hence, under this scenario, the financial intermediary has two main options. It can either decide not to change its current post-trade arrangements or switch to different types of providers.

- Relying on agent bank-bundled services.
- Using an investor CSD gamut of services (existing and future).

Figure 2: Scenario 1: The Subcustodians/(i)CSDs Remain Central to Access Local Markets and Deal with Post-Trade Operations



Source: BNY, Celent

Under this scenario, the external provider is central to access local markets and deal with post-trade operations. It is responsible for the transfer of securities and cash related to the transaction; it also handles the asset servicing component (e.g., corporate action), manages the income cash related to dividend payment, and finally deals with local tax authorities. It requires from this provider not only a **strong expertise and capabilities in the post-trade processes** but also a deep understanding of local specificities.

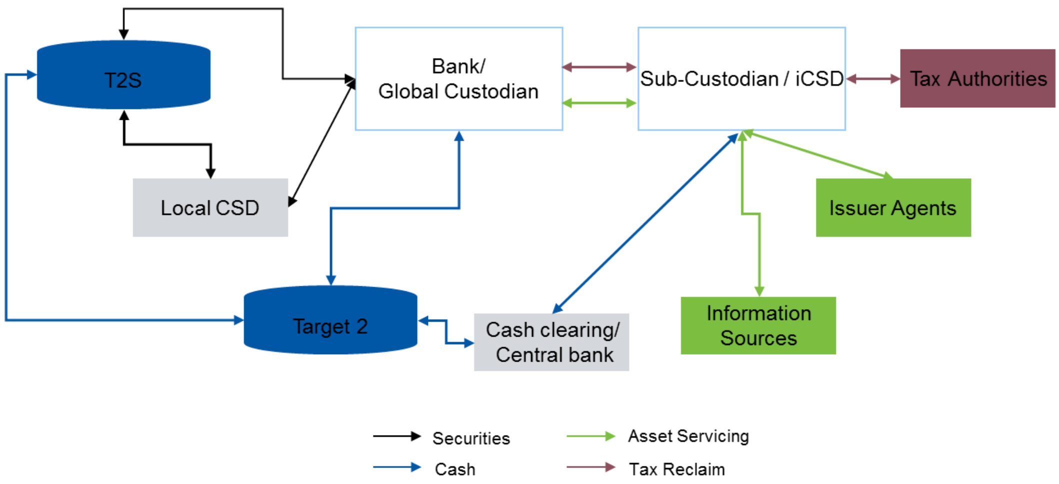
Scenario 2: Direct Connectivity to T2S for Settlement, But an External Provider for Asset Servicing

Under this scenario, the financial intermediary is leveraging T2S by setting up a direct connectivity to the platform to conduct self-settlement. The financial intermediary operates as DiCoA. However, the custody/asset servicing element is still being handled by an external provider (see Figure 2). In this case again, the financial institution is likely to have a greater choice of external provider to work with because CSDs are ramping up their asset servicing capabilities. Hence, while implementing a direct connectivity to T2S to self-settle, the intermediary will have two options:

- Using an agent bank for asset servicing.

- Using an investor CSD for asset servicing.

Figure 3: Scenario 2: Responsibilities Shared Between the Bank and the Subcustodian, the Former Managing Settlement Operations While the Latter Focuses on Asset Servicing Activities



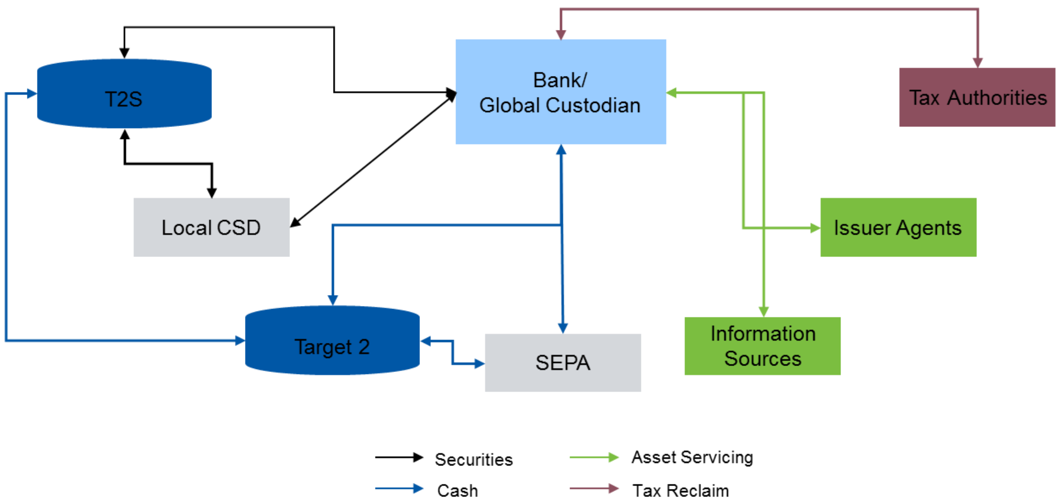
Source: BNY, Celent

In this case, there is clear sharing of responsibilities between the financial intermediaries and the external provider; the former managing the settlement operations, while the latter handles the asset servicing activities. As we will detail later in this report, this evolution will require the financial institution to implement new connectivity not only to manage the settlement function but also to ensure that relevant information about the transactions that are settled is distributed efficiently to the external party that handles the custody/asset servicing function.

Scenario 3: Implementing a Full Self-Settlement Approach and Custody Activity

This approach is the most ambitious one because the financial intermediary revamps its post-trade infrastructure to handle the settlement and asset servicing function on its own. This strategy will require some significant adaptation of the post-trade infrastructure of the financial institutions and the development of new connectivity links to the various infrastructure (e.g., SEPA, Target 2, etc.) if not already in place and local providers (e.g., tax agent, issuer agents, etc.) that may use different standards of messaging (e.g., 15022, prop, and 20022 for T2S) due to uneven adoption of new standards.

Figure 4: Scenario 3: With the Disintermediation of the Subcustodians and the ICSD, the Bank/Global Custodian Takes Full Ownership of the Post-Trade Operations



Source: BNY, Celent

It is important to note that, while one goal of the ECB with the development of T2S is to foster greater harmonization between the various local markets, some local specificities, notably around asset servicing are unlikely to be removed in the short to middle term (we will detail these elements later in the report), and hence the post-trade infrastructure of financial intermediaries that implement a full self-settlement and custody approach will require some specific development in certain markets (e.g., Spain, Austria, certain Nordic countries). Therefore a full standardization of processes across all T2S markets will not be possible, which will reduce the economies of scale that one could expect to generate through this approach. The more markets that a financial institution serves through this strategy, the greater the complexity of its post-trade infrastructure could be.

The Proposed CSD Regulation (CSDR)

While the development of the T2S infrastructure is a major step by Eurosystem to decrease settlement cost for cross-border operations, policymakers have realized that the ECB settlement platform will not be sufficient in itself to turn the fragmented European post-trade ecosystem into a consolidated one closer to the US model. The existence of many disparate market practices and regulations in EU markets and among the CSDs that have joined the T2S are clear obstacles to the consolidation trend that has been envisioned. One major step in fostering harmonization in the European post-trade industry is the adoption by the European Commission (EC) of a proposal to regulate the CSDs' activity within European markets. As usual with the EC, the objective of the future regulation is to create a "level playing field" for all European CSDs and increase the level of competition. Although the regulation does not make any mention of T2S at this point, the targeted date of implementation is 2015; quite timely.

Some of the major points within the draft proposal are:

- Harmonization of settlement period to T+2. In many European markets settlement occurs three days after the trading days. The adoption of common practice across European CSDs will definitely facilitate the development of cross-border transactions by notably reducing operational risks and funding costs for investors trading cross border. However, it will require some significant adaptation of CSDs' settlement engines, and for those that operate with a 15-year-old legacy system, the evolution could be quite challenging.

- Interoperability and access to trading venues: CSDs operating in Europe will have access to any other CSD, trading venue, and CCP.
- Establishment of European passport for CSD operations: CSDs would be granted an EU license, which would allow them to "passport" their services freely to other Member States without a need for duplication of authorization and supervision. This element is supposed to foster competition among CSDs and eventually drive consolidation in the market, because CSDs will be able to offer their services and get access to trading feeds outside their home market. However, in the short term there is a risk of greater fragmentation and higher cost for market participants, a scenario clearly identified by the EC.
- Chinese wall between CSDs' core activity and banking services: CSDs will have to segregate their banking activity (e.g., securities lending) from their core functions. This means that CSDs that are currently providing these services to their clients under one entity, or wish to develop these services, will have to set up a separate entity and apply for a banking/credit institution license. In addition to the legal and development cost required to adapt to this new environment, one has to factor in the cost of complying with banking regulation such of Basel III for the new banking entity. Hence, the profitability of these "banking" services may well be jeopardized, closing down an opportunity for CSDs to develop additional services to their customers to compensate for their declining settlement revenue due to T2S.
- Implementation of common practices related to market participants that fail to deliver their securities on the agreed settlement date. In order to avoid investors moving to CSDs that offer the most favorable treatment in this situation, the EC wishes to implement common rules and penalties for all European CSDs. Currently buy-in procedures differ widely between markets in terms of timing of the buy-in obligation, which varies from Initial Settlement Date+3 (Austria) to ISD+7 (Belgium, France, Nordic markets) or later (UK), and buy-in penalties, which vary from 20% of the counter value or closing price (Belgium, France) to 100% (Germany).
- Common prudential and organizational rules that reflect their systemic role for the market. Importantly, these rules would also address the way CSDs conduct their business and carry out their functions. This piece of the regulation would facilitate the implementation of interoperability across CSDs.
- Removal of barriers of access between issuers and CSDs: This will allow issuers to issue securities into any CSD and the obligation to have securities represented in book entry form. Competition among CSDs for issuers' relationship and issuance business could become a reality.

Although the proposal has to pass to the European Parliament and the Council of the European Union for negotiation and adoption under the co-decision procedure, it seems obvious that there is no way back in the European post-trade environment and that market participants need to be ready for it. For incumbent CSDs, there is no alternative to revamping their existing back office systems.

However, CDSR will not solve all the barriers to harmonization of the European post-trade landscape.

A Challenging Environment for CSDs

The ECB and the European Commission are very clear in their objectives: greater harmonization among European post-trade infrastructure and practices should drive greater competition among market participants, better services, reduced transaction costs, and eventually consolidation and fewer market providers. The combination of T2S and the proposed CSDR is clearly increasing the pressure on local CSDs.

Table 2: CSDs' Source of Revenue Will Start to Dry Up in 2015

	FUNCTIONS	DRIVER OF CHANGES	IMPACT	TIMING
CORE	Notary	CSD regulation	Harmonization of market practices; competition from foreign CSDs on the issuance business	Post 2020
	Asset Servicing	CSD regulation T2S corporate action format	New market practices Competition from entrants and foreign CSDs	2020
	Settlement	T2S CSD regulation	Outsourcing of settlement to T2S platform Implementation of new market practices (T+2) Interoperability	2018
ANCILLARY	Banking Services	CSD regulation	Creation of a separate banking entity Compliance to banking regulation such as Basel III, CRD, etc.	2015

Source: Celent

CSDs are facing a storm of regulations and change in market infrastructure that are significantly increasingly the level of uncertainty about their future business model and the investment they are willing to commit to adapt to the future market structure.

Barriers to Harmonization in the European Post-Trade Infrastructure

There are still some local pieces of regulations and market practices that are not yet being addressed by any of the initiatives launched by the EC and the Eurosystem and that can buy some time for local incumbents before they see competition eroding their share in their home markets.

- Inadequate IT system / market practices: While the EC and the Eurosystem are steering the industry towards standardized market practices, there are still some local specificities that would prevent competition to challenge local incumbents. A good example of that situation is the inability of certain European CSDs (currently nine) to provide omnibus accounts to foreign CSDs that wish to implement a link with them. The absence of omnibus account structure is a clear barrier to cross-border CSD transactions, even once T2S is up and running.
- Competition around issuance may be limited due to different national corporate laws that may require CSDs to operate local branches if they wish to provide notary functions and related services.
- Tax regime: in certain jurisdictions, there are some clear advantages for investors from a tax perspective to operate with local entities.
- Ownership structure: The ownership structure of CSDs and their relationships with national central banks could be a strong limitation to competition among them. In addition, it could create some significant national political resistance to prevent local market structures from being absorbed or dismantled due to competition from foreign players.

- Local regulations: There are many discrepancies among national regulations which currently limit the opportunities to generate economies of scale. In the asset servicing markets, many European markets are still far from the T2S corporate action standards; some markets are actually showing some reluctance to adopt the new standard.

Harmonization is an objective, not a reality in the European Union. The ECB has acknowledged the situation and decided in June 2012 to discontinue the Correspondent Central Banking Model 2 (CCBM2), an adjacent project to T2S. "*In the project detailing phase, a number of challenges in the field of harmonization were identified and the Eurosystem has decided to address these issues first before proceeding further with a common technical platform.*"

IMPACT ON BACK OFFICES OF MARKET PARTICIPANTS

MARKET PARTICIPANTS THAT WILL CHANGE THEIR POST-TRADE INFRASTRUCTURE TO LEVERAGE T2S

There are numerous types of market participants that are involved in European post-trade securities processing and that will have the opportunity to leverage the settlement platform developed by the ECB.

- Banks, broker-dealers, and global custodians: As we have mentioned in our scenario analysis, there are multiple options available to these types of market participants to leverage the T2S platform. It is important to note that direct connectivity to T2S for these types of market participants will be based on discretionary access granted by their CSDs. Nevertheless, considering the competitive pressure that T2S will foster on CSDs, we assume that the financial institutions that will make the request to become directly connected to T2S and have the relevant capabilities are likely to be granted access. However, depending on their size and volume of transactions, there will not be a business case for every financial intermediary to switch to a new post-trade arrangement. In our analysis we found that, with less than 1 million settlement orders per annum to go direct with T2S, this volume is likely to be insufficient to achieve any breakeven point, even in the long run. Hence financial institutions with a volume of settlement orders below that level should consider keeping a post-trade arrangement in which they hand over their post-trade activities to an external provider.
- CSDs: The ECB had set the deadline for CSDs to inform the central bank of their intent to sign the T2S framework on 30 June 2012. At this date, 23 CSDs have joined the T2S initiative; 18 from the Euro area, and 5 outside including SIX SIS. Other CSDs can sign at a later stage but with different conditions.
- National Central Banks (NCBs): Every Eurozone central bank has to be able to manage cash accounts in T2S.

While the first group of market players has many opportunities to leverage the T2S infrastructure, the CSDs and even more the central banks have little options: they will have to be directly connected to the platform. Obviously, we acknowledge that in the case of CSDs, some firms could decide to outsource their T2S-related operations to a third party; however, if this is the case, it is unlikely to be limited to T2S settlement and would have a major impact on the institution business model, which is why this approach is currently not very popular among CSDs. Nevertheless, as we mentioned earlier in the report, CSDs are clearly in a difficult situation because T2S adaption cost will come on top of their running cost without driving any cost benefit. Therefore, most CSDs will pass on their T2S adaptation cost to their users through increased fees; this will be done according to the same principles used by the Eurosystem for the amortization of its T2S investments. As a matter of fact, Clearstream has recently announced that it will pass on one-third of its T2S development cost to its customers, with some potential upside such as a decrease in safekeeping fees. It is important to note that CSDs will not be allowed to cross-subsidize their transaction activity with asset servicing and vice versa.

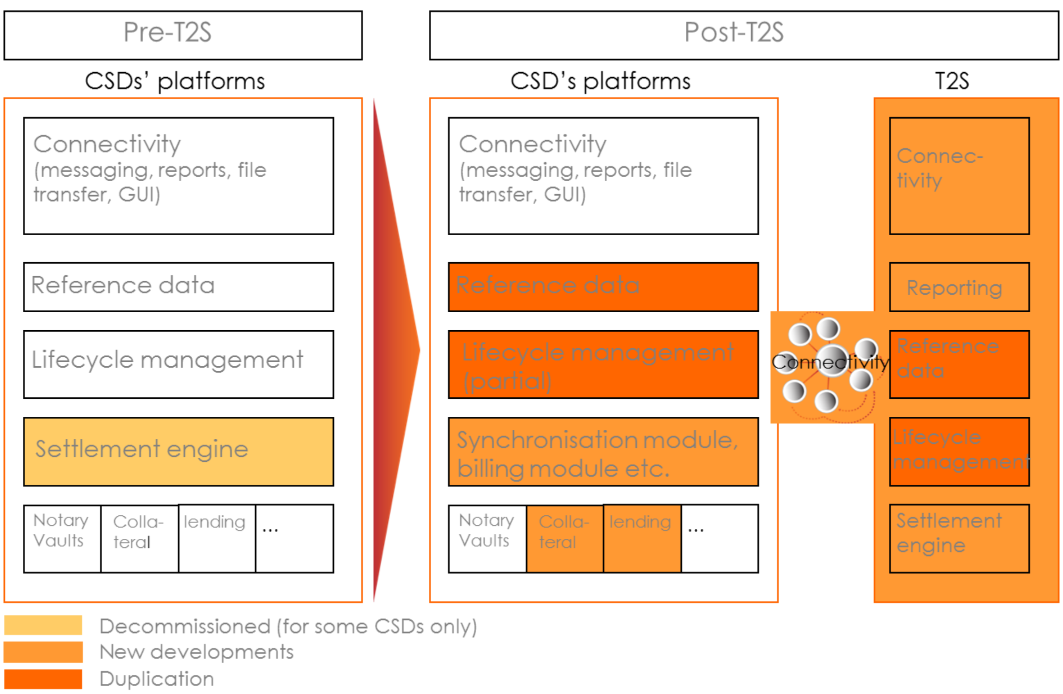
Considering the major changes that T2S is fostering on the European securities post-trade industry, one could question the limited effort that has been conducted by the ECB to facilitate a mutualization of the development and adaptation cost among market participants, especially among CSDs. As we will discuss in the following chapter, the implementation of T2S will drive additional complexity in the back office operations of providers.

Impact of T2S on Post-Trade Providers' Back Office Systems

The T2S platform has been designed by the ECB to operate on a pan-European basis leveraging recent technological solutions and communications standards but also around a "consensus" in terms of local market practices, etc. Therefore the migration of the settlement functions toward T2S will require some significant changes to the back offices of European post-trade providers:

- Settlement engine: The T2S account structure is not just different from the one being used in every local market; DiCoAs will also have to ensure that some key pieces of information that are currently irrelevant are being provided to T2S to ensure the settlement of the transaction. For example, if the DiCoAs is a financial intermediary, it has to ensure that the account number of its CSD is being provided to T2S for a cross-border transaction to be settled. In the case of CSDs, the situation is very acute because T2S fosters a redesign of the functional scope of a CSD platform, not only by outsourcing the settlement function but also by requiring synchronization and sharing/duplication of reference data and lifecycle management between T2S and the CSD (see Figure 7) and adding reporting functionalities. In addition a CSD may decide to move along the value chain and evolve toward an iCSD model, which will drive significant changes of its operation to offer asset servicing, lending and collateral management functionalities.

Figure 5: Functional Scope of CSDs' Platforms Vs. T2S



Source: T2S AG Meeting

- Workflow: Certain local workflow related to the settlement functions will not be supported by T2S and will have to be redesigned or abandoned in order to operate with the T2S platform. This is notably the case for transactions that have "ex" or "cum" options related to dividend payments.

- Asset Servicing: There are still numerous markets which have local practices related to asset servicing which are not supported by T2S market standards. The existence of these specificities is a clear limitation to the economies of scale expected from the implementation of T2S and also reduces the emergence of significant competition in the respective local markets. Elements such as corporate action-related activities, notably buyer protection, transformation, and market claims, are still a long way from harmonization. Creating an asset servicing platform that fully adapts to T2S requires some significant investment, notably if the goal is to operate on a pan-European basis.
- Messaging format: With the adoption of the 20022 format by the T2S platform, some element of information that is currently captured by the existing format will not be supported/provided within T2S. In addition, the overall post-trade ecosystem will not adopt the 20022 format at once; hence market participants and notably CSDs and custodians will have to deal with disparate messaging formats that will drive significant network complexity.

There are some major discrepancies among market participants in terms of their readiness for T2S implementation. Not surprisingly, on an industry level custodians and CSDs are among the post-trade providers that are the most advanced in their preparation; on the other hand, market participants that will be impacted to a lesser extent, such as banks and broker-dealers, are still navigating the complexity of T2S. Apart from a handful of market players, they do not have a clear strategy regarding the future of their European post-trade infrastructure (see Table 2).

Table 3: Level of Readiness for T2S Implementation

		LEVEL OF READINESS			
STEPS TOWARDS T2S ADAPTATION	ELEMENTS OF ANALYSIS	Custodians	CSDs	Banks/ Broker-Dealers	Others
T2S UNDERSTANDING	Understanding of T2S timeline and content	◕	●	◑	◑
T2S IMPACT EVALUATION	Operational review of all business impacted by T2S	◕	◕	◑	◔
	Review of Infrastructure supporting messaging services	◕	◕	◑	◔
	Impact of T2S on operational processes	◑	◕	◔	◔
T2S ROADMAP	Mapping of impacts in terms of processes, operations, and messaging	◑	◕	◔	◔
	Budget allocation	◑	◕	◔	◔
	Finalize message costs, operational efficiency, and levels of added services	◑	◑	○	○
TECHNICAL DESIGN	Integration analysis of required mapping and transformations	◑	◑	◔	○
	Back office connectivity	◕	◕	◔	○

Source: Celent

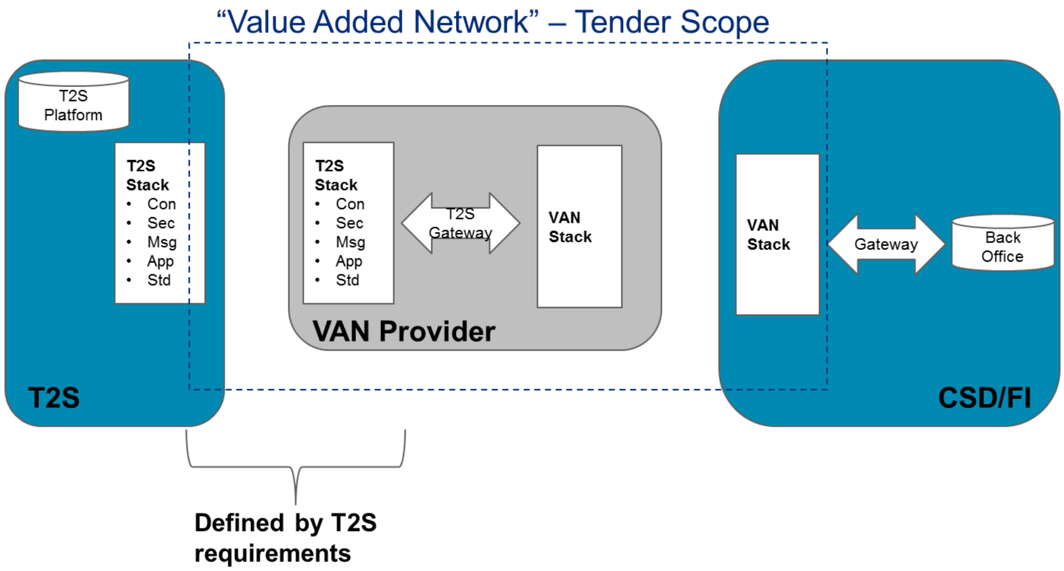
Across the board, we have found that, while most market participants have a good high-level understanding of the T2S platform, there are some significant gaps in the industry's T2S adaptation plan. While the leading players have made some significant headway toward their T2S strategy, the majority of the market has some unknowns regarding the detailed impact of T2S on their back office system, the technical design of their solution, and a precise idea of the budget that will be required to migrate to the T2S environment. Actually, some market participants which are likely to become DiCoAs are still considering the fact that they may not have to conduct any significant changes to their back office systems to adapt to T2S, which is highly unrealistic.

Dealing with Network Complexity Under T2S

In the previous chapter, we have outlined the various options available to market participants to leverage the T2S platform and a high-level estimate of the investment required to adopt one of the strategies available. However, an element of complexity driven by the migration toward T2S is the different level of readiness of the various players of the European securities industry and their adoption of the new messaging format ISO 20022. While this messaging format will be mandatory to "communicate" with T2S, the overall European securities ecosystem will not embrace it in all its back office operations on day one; hence, the need for market participants that will connect to T2S to maintain their capabilities of supporting other messaging formats. The complexity will also be driven by additional connectivity links that market participants will have to set up:

- Establishing links to T2S: There are two main options to connect to T2S. DiCoAs can either implement a dedicated line (DL) to T2S or adopt a value added network (VAN) solution delivered by the two providers selected by the ECB: SWIFT and SIA/COLT. Theoretically, the dedicated link approach should eventually drive down operating cost in the long run but requires some significant investment in the short term, while the VAN approach keeps upfront investment to a minimum but should not generate as much cost reduction in the long term. The reality is quite different, and at this point the vast majority of market players that are considering becoming DiCoAs are planning on using a VAN solution. The reasons for this choice are quite simple: first, there is no view on what the DL will cost and when the service will be available; second, with the declining volume of transactions in Europe, the business case is too risky compared to a VAN approach; and third, the DL approach is adding another layer of complexity to an already quite complex initiative.

Figure 6: T2S VAN Overview

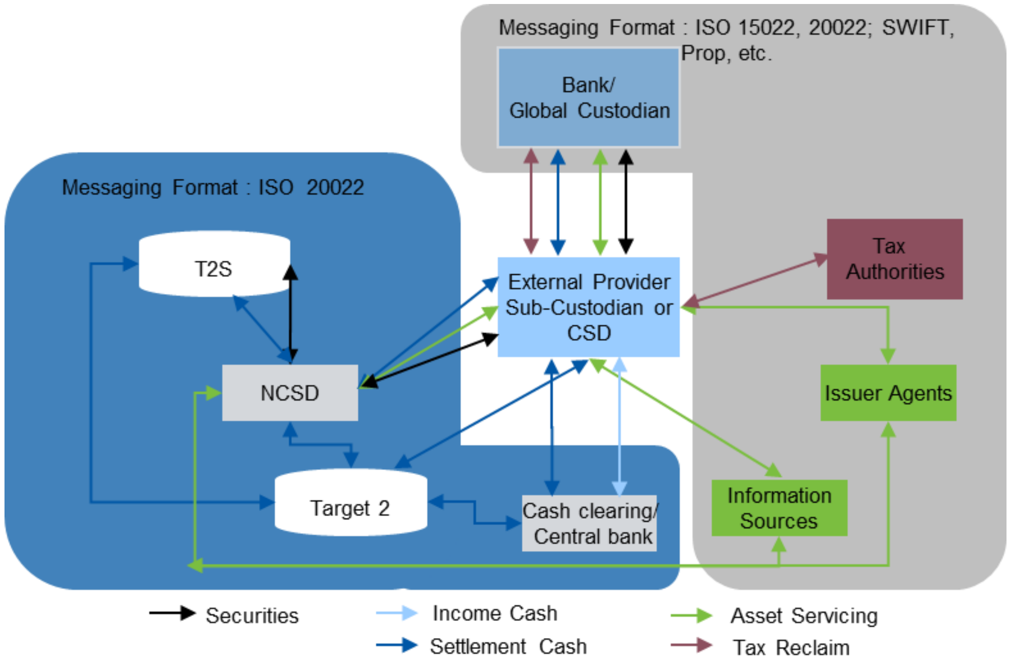


Source: SWIFT

- Establishing links to CSDs or custodians: In addition, in a cross-border environment, establishing links with national CSDs will be compulsory to manage the national specificities of the settlement process. For CSDs, it will depend on their expertise around national specificities, based on their links with other NCSDs. Despite the CSD regulation, there could still be cross-CSD issues (e.g., lack of omnibus account structure) that need to be assessed precisely before CSDs decide which external provider to work with.
- Setting up links to tax and paying agent: For DiCoAs, the cash settlement should be managed by the user himself, because he will have the securities account in T2S However, it is more likely that he will hire a paying agent to handle the process. The paying agent will be required to facilitate the payment of the cash legs of settlement instructions, dividends, and a local tax agent could be required in certain markets to facilitate tax-related activities (e.g., tax reclaim).

We believe that DiCoAs, notably CSDs, custodians and to a lesser extent NCBs, will have to invest significantly in their back office system to support the various messaging formats that will coexist in the European post-trade environment pre- and post-T2S. As we have seen in the previous chapter, 23 CSDs and all Eurozone NCBs will become DiCoAs and therefore will support the ISO20022 messaging format. However, this messaging format will not be adopted by all of their users and information providers on day one, and therefore they will have to support existing formats (e.g., 15022, proprietary, etc.). (See Figure 7.) In a scale industry like post-trade services, where a high level of STP is essential to keep transaction cost minimal and limit transaction mismanagement, this situation could create some serious challenges.

Figure 7: DiCoAs Will Have to Deal with the Increased Complexity of Messaging Formats: payment flows



Source: Celent

This increased complexity of connectivity and messaging format structure will have a tremendous impact on market participants operations through:

- Increased cost: Settlement engines will not only have to deal with the ISO 20022 format to communicate with T2S but also be able to support/translate other formats. Existing settlement engines that have not been implemented recently are unlikely to be able to adapt to the T2S environment and new business rules seamlessly, and will require significant effort to be efficient in a post-T2S environment. The usage of the ISO 20022 format from T2S-specific messages will impact the DiCoAs' business areas of securities settlement, securities management, cash management, reference data, account management, and collateral management. As a matter of fact numerous market participants, such as the National Bank of Belgium and Clearstream, have taken the opportunity of the T2S implementation to revamp their IT system and ensure that their new platform is able to support the new business process and the various messaging formats that will be used by the industry in the mid-term. The situation is even more complex for asset servicing functions that could require communication with an increased number of parties.
- Increased operational risk: The coexistence of different messaging formats and the complexity and diversity of the future post-trade arrangements will eventually drive an increase of operational risk in the short term. This increase will not only be driven by the settlement functions but also by asset servicing. If the market participants' back office systems are not ready to support different messaging formats and deal with various types of business logic, this could drive an increase of the settlement order failure. In terms of asset servicing, the increase of operational risk could be quite significant. Asset servicing is an area that requires strong in-house expertise and one where mismanagement of operations such as corporate actions can drive losses above the million euro mark. For example in the case of corporate action, the issuer should inform its issuer (I)CSD through en electronic formatted form of the details of a cash distribution, including the key dates, as soon as the issuer has publicly announced the corporate action according to applicable law. It should also inform the

issuer CSD of any change or confirmation of the corporate action. The issuer CSD should electronically communicate the information, and any subsequent information, without undue delay of receipt from the issuer to all its participants who, at the time of the announcement, have a direct holding or pending transaction in the underlying security with the issuer CSD. The information should then be distributed from the CSD participants to their clients and the onward chain of intermediaries, each at its respective level towards its own clients. Obviously this distribution of information along the trading value chain towards the end investors is streamlined when everyone shares the same messaging format, but what happens if there is a discrepancy? In the short term, market players such as CSDs and subcustodians will have to ensure that the relevant information is captured from and shared with the relevant parties irrespective of the messaging format being used.

- Dealing with complexity management: As we've outlined above, there are two main drivers of complexity: increased connectivity links, and coexistence of different messaging formats. To ensure sound and safe migration toward T2S, market players such as DiCoAs will have to conduct a detailed mapping of internal processes, business rules, relevant messaging formats, and communication channels.

In order to simplify the complexity driven by the coexistence of various messaging formats, some third party providers have come with message translator. The implementation of a communication hub that services business applications across the enterprise and all lines of business (e.g., core settlement, custody, asset servicing) for settlement through T2S coupled with a message converter (external or internal) is a strategy that would allow an FI to leverage T2S without revamping its overall back office system. Obviously if significant changes have to be made to the current processes to adapt to the new environment, this market participants is very likely to have to go a little further and implement a middleware. While this approach may not be the most efficient one in the long run, it is nevertheless an option to consider, acknowledging the significant upfront investment required to revamp a DiCoA back office system to adapt to T2S, as we will discuss in the next paragraph.

Strategy to Back Office Adaptation

T2S for many market participants will require significant adaption of the back office system, workflow, and connectivity. There two main strategies being pursued by European post-trade providers:

- Big bang approach: Replacing existing legacy settlement systems and potentially custody systems to adapt to T2S business process and messaging format. This strategy is being implemented by market participants that want to drive economies of scale from T2S and reduce long-term operational cost. T2S is seen by certain market participants, notably regional and global custodians that operate on a pan-European basis, as an opportunity to aggregate disparate settlement platforms that were previously used to serve local markets into one central back office system. Therefore, T2S in this context is a driver of back office consolidation and an opportunity to reduce running cost and eventually generate economies of scale. This approach is being pursued by:
  - Global and regional custodians that wish to generate economies of scale and have the opportunity with T2S to integrate the disparate legacy systems that they were using to access the various local European markets.
  - CSDs that wish to adapt fully to the T2S environment and to drive consolidation and integrate smaller and less equipped local CSDs.
- Implementing T2S business logic on top of existing back office systems: Market players may decide to adapt their existing settlement and custody system to operate under the new T2S infrastructure and messaging format. This approach requires

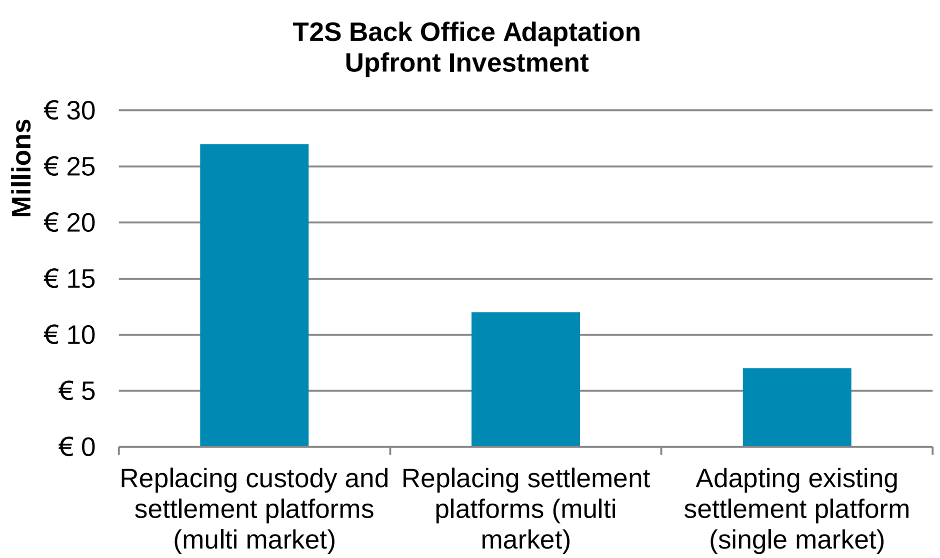
some detailed and granular mapping of the existing business workflow and back office systems of market participants vs. T2S. Obviously, when pursuing this strategy, the market participants are likely to leverage solutions delivered by external providers such as message converters. This tactic allows market participants to reduce their upfront investment but provides less of an opportunity to reduce long-term operational cost. This approach is mostly relevant for local CSDs and local agent banks that need to adapt to new settlement workflow and business practices but do not have sufficient budget to revamp their IT system and/or wish to extend the life of their existing back office solutions.

Spending to Adapt to T2S

As we have seen, there are different options and suboptions that a market participant can choose from when considering how it will leverage the T2S platform. In this section we will outline overall upfront investment required by market participants to adapt their back office system to the T2S environment. More of the various elements that will impact the overall project cost are detailed in the Appendix.

- Implementing any strategy will require some significant evolution of the bank's existing settlement engine and custody platforms. This will require upfront investment from the financial institution to adapt its existing settlement and asset servicing platform. In some cases, implementing a new solution will be more cost-effective than adapting the existing system, notably when legacy systems have been developed to serve local/home markets, and the financial intermediary wishes to operate directly in many markets. In addition, the evolution of the post-trade arrangement in a post T2S environment will require the setup of new connectivity links with post-trade service providers from T2S platforms to local CSDs, information providers, etc. The systems should also be able to handle different types of formats, from 20022 and 15022, to native languages for certain providers. Systems costs include hardware, software, consulting, implementation, and legal. It is interesting to note that the data that we have collected this year is very much in line with our 2011 survey when it comes to back office system big bang replacement. However, for adapting existing back office systems, the quality of the data captured has clearly improved compared to our previous analysis. The situation can be explained by the fact that more local CSDs have participated in this survey and also that numerous third party providers have ramped up their offering in this space to support the migration of existing legacy system towards a T2S environment.

Figure 8: DiCoAs Investment to Adapt Back Office System to T2S Environment



Source: Celent survey 2012

The upfront investment required to adapt the post-trade infrastructure of a financial intermediary will be related to the type of strategy that is being implemented. Obviously, the decision to extend the capabilities of current IT platforms through recoding, and use of middle layers such as message translators is the less expensive one, with spending in the range of €7 million. Some market participants have mentioned budget allocation for this project to be much lower than this figure; however, they were only starting their journey towards T2S land and believed that their budget could be revised at a later stage. For DiCoAs that will conduct a big bang replacement of their settlement engine but will rely on external parties to conduct the asset servicing and custody on a cross-border basis, the spending is estimated to be in the range of €12 million to self-settle (see Figure 4). For a market player that considers providing settlement and custody on a pan-European basis, the adaptation requires the revamping of the custody platform as well, which could drive overall investment towards the €27 million mark. While this latter approach was only considered by a very limited number of market participants in our 2011 survey, the potential impact of combining T2S and CSDR has relaunched a discussion for this strategy across aspiring market leaders. However, it is important to note, as we have mentioned, that even in a post-T2S environment and even with CSDR, numerous national specificities will remain. Hence, a custody platform that has been developed for a local market is likely to require some significant development to operate on a cross-border basis.

The strategy followed by each market participant will be highly dependent on the number of markets accessed, volume of settlement, and assets under custody. For financial intermediaries, the benefit of becoming DiCoAs should be closely evaluated:

- Extending existing back office system: A financial intermediary that would become a DiCoAs by only adapting its current back system to T2S (very likely for a single market) could reach a breakeven point in eight years if it handles over 1 million settlement orders per annum. Below that threshold, there is no business case to become DiCoAs.
- Big bang approach for settlement (scenario 2): Our analysis shows that that below 1 million settlement instructions, there is no business case for an FI to become DiCoAs. And even at 1 million settlement orders, it would require more than 60 years before breaking even on the investment, and on the strict condition that these 1 million settlement instructions are concentrated in one market. To summarize, even at 1 million settlement orders, there is hardly a business case. However, above 4 million settlement orders, there is clearly a business case because the breakeven point could be reached in four-and-a-half years. This data point are informative and obviously depending on the cost of the current settlement engines the break even point could be reach earlier or at a later stage.
- Big bang approach settlement and custody (scenario 3): For a financial intermediary that needs to bear the full cost of implementing scenario 3, meaning that it does not yet operate in a domestic market in which it could leverage its existing custody platform or its platform cannot be adapted, the breakeven point will be difficult to achieve below 4 million settlement instructions per year and €200 billion of assets under custody. At this level, the breakeven point should be reached in 8 to 11 years. For financial institutions with over 10 million settlement orders and €500 billion in assets under custody, the business case is more obvious, and adding self-custody on top of direct connectivity to T2S only adds an average of 1.5 years to reach the breakeven point. To summarize, it appears that the implementation of scenario 3 detailed in the first chapter of this report is mainly suited to very large institutions.

For the CSDs the situation is a bit different, because their decision to become DiCoAs has already been made for 23 of them, and also because some of them have decided to pass on their T2S adaptation cost to their customers. Nevertheless, the combined effect of T2S and CSDR that will foster competition among post-trade providers should encourage CSDs to keep the cost of their services to a minimum. In addition, the uncertainty about the long-term prospect of certain elements of CSDs' operations is driving numerous Tier 2 and Tier 3 CSDs to avoid the big bang replacement approach and to focus on adapting their current back office system to operate in a T2S environment.

NEW SOURCES OF REVENUE

While the European post-trade industry is facing numerous challenges with the implementation of T2S and the potential CSD regulation, market participants feel that there are nevertheless opportunities to develop additional sources of revenue for both custodians and CSDs. However, as we will outline in this chapter, these opportunities mainly seem reachable to a handful of market players that have the scale and reach to reap the benefits of the future changes.

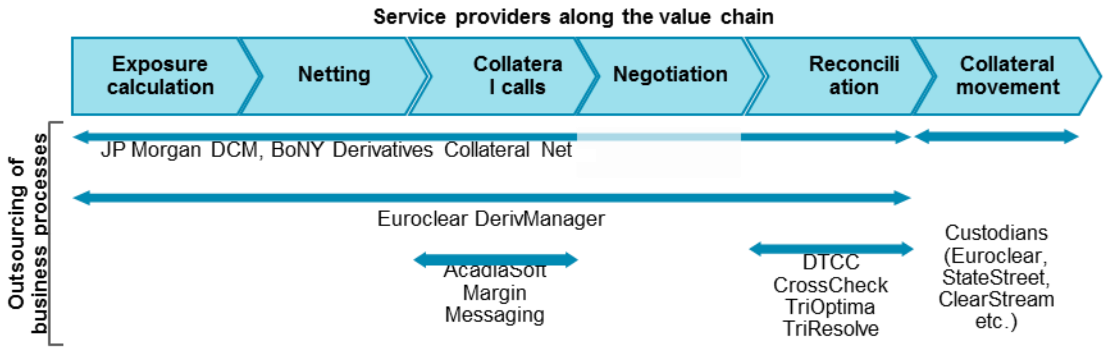
Collateral Management

An estimated 40–50% of OTC contracts are expected to be cleared by year end 2013, creating an additional collateral requirement of $2 trillion to $2.5 trillion. Moreover, within the next four years an estimated 80% of OTC contracts would be cleared by CCPs, creating an additional collateral requirement of $6 trillion (for more details, please refer to Celent report *Cracking the Trillion Dollar Collateral Optimization Question*, August 2012). Market players will need an adequate post-trade architecture to ensure that collateral is in the right place at the right time to respond to these requirements and deliver the liquidity buffers required by Basel III and CRD4. As a result, many organizations including custodians, dealers, and CSDs are looking to offer collateral transformation or collateral upgrade services to their clients. Obviously, T2S will contribute to a better flow of collateral within the Eurozone. However, the discontinuation of the CCBM2 project by the ECB is a major drawback in this field for financial intermediaries that were hoping to avoid the web of CSDs and iCSDs to access central bank money. The end of CCBM2 limits the opportunity for global and regional custodians to improve the efficiency of their collateral optimization and management services and creates some tension with iCSDs that are ramping up their offering related to collateral and liquidity management. In fact, leading custodians that had previously evacuated the idea of operating a CSD in the context of T2S are now reconsidering the matter for two main reasons:

- **Protect tri-party collateral and liquidity management:** With the implementation of Dodd-Frank and EMIR, the demand for collateral and liquidity management solutions will become a main challenge for the industry as a whole. The ability to access the various parties in collateral management, including the central bank and the CCP, will be key to developing a sophisticated offering in this space. The immediate benefit of the development of a CSD by a custodian is the ability to access central bank money (Securities Settlement System status) that is essential in collateral management.
- **Protect custody services:** The leading European iCSDs are planning to leverage their settlement scale to improve liquidity and collateral management for market participants that should eventually drive more custody business. Global custodians could reverse the logic and leverage their custody scale and collateral management services by acquiring or creating a CSD and eventually drive settlement scale, especially with the prospect of CSDR.

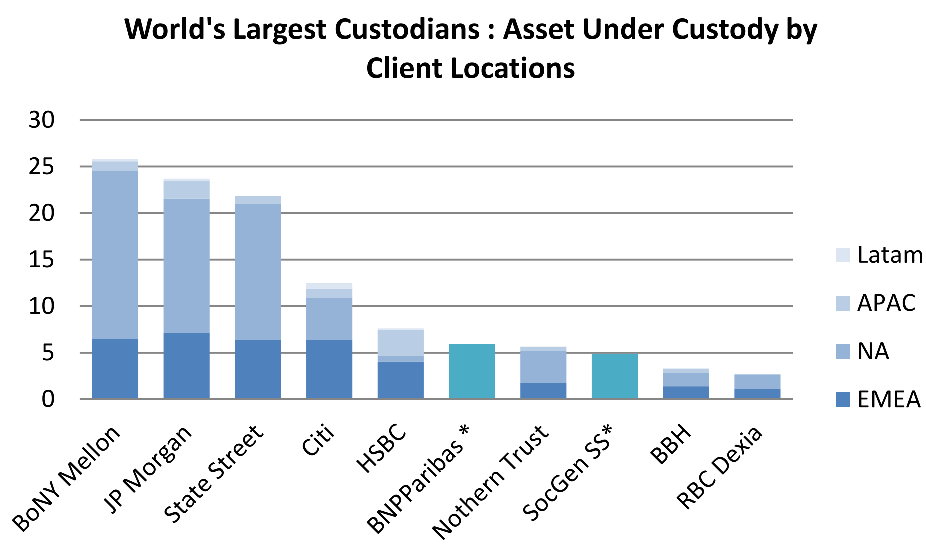
Operating a CSD is certainly not necessary to offer collateral management and optimization services and the partnership approach between custodians, iCSDs, and other market participants is also relevant, as the “Collateral Highway” initiative from Euroclear demonstrates. For a custodian to consider operating a CSD it needs an existing strong offering in collateral management and large pool of assets under custody, which limits the opportunity to only a handful of market players (see Figure 9 and Figure 10).

Figure 9: Competitive Landscape in the Collateral Optimization Market



Source: Celent

Figure 10: Competitive Landscape in the Collateral Optimization Market



Source: Greensted Report 2011
*: breakdown by region is unavailable

SECURITIES LENDING

A few years back, there was a sentiment among the industry that the implementation of T2S would drive CSDs to move along the value chain and offer new services around securities lending to compete with custodians. Although that may still be a consideration for certain market participants, the EC proposal for CSDR that requires the creation of a separate entity registered as a banking institution to carry out those services could jeopardize the business model acknowledging the impact of Basel III prudential ratio. In addition, securities lending operations are still facing the unknown impact of potential "shadow banking" regulations that could require some significant changes to current market practices (for more details, please see the Celent report *Shadow Banking Products in Europe and North America*, October 2012). The European securities lending market is still much smaller than its US counterparts with a market value of US$25 billion compared to US$34 billion. Here Basel III could have a potential impact on the value of indemnification that a bank provides their securities lending clients, and encourages banks to consider central credit counterparties. Basel III may also encourage more acceptance of noncash collateral to manage balance sheets.

REPO MARKET

The European repo market has managed to weather the crisis well. Volumes have grown in the last two to three years. From a low of €4,533 billion in December 2008, repos have gone up to €6,979 billion in June 2010. With the increase in standardization and the use of CCP, this trend is expected to continue. Due to economic developments, the share of Eurozone debt in bilateral repo collateral has risen. In other words, collateral from the rest of the Eurozone, outside the national or home market, has become important, partly due to the effect of the sovereign debt crisis that meant some of the national debt was considered less desirable in the form of collateral. The usage of repos is highly concentrated in the European market. The share of the top 10 banks has gone up from 54% in June 2006 to 69% in June 2010. This rapid rise in concentration is worrying and can be detrimental to the healthy development of the market. Also, the share of the top 30 participants was almost 96% in June 2010. This further shows that repos are used by the main banks in Europe, and their use is not widespread in other financial institutions which could limit the potential growth of the revenue driven by these services by new market players such as CSDs.

CONCLUSION

The implementation of T2S by the European Central Bank is driving many changes in the European post-trade industry, and although the initiative should benefit the overall market in the long term, it will require some significant investment from market participants, especially the DiCoAs, in the short term.

Our analysis shows that the cost of adapting to T2S could jeopardize the business model of certain market participants, a situation that is implied by the ECB, which expects T2S to drive consolidation in the European post-trade market. The combination of T2S and CSDR puts CSDs in a very difficult situation: they need to invest to adapt to the future environment and outsource their settlement activity to the T2S platform; meanwhile, their other sources of revenue are at risk with the increased competition that will be fostered by the CSDR.

One of the key pain points in the T2S adaption scenario is the fragmented nature of the European post-trade ecosystem and the coexistence of different market practices and messaging formats. This situation is increasing the complexity that market participants will have to deal with, notably around network management. Our analysis shows that there are still some significant gaps on the road to T2S, and we expect current projects to be revised and amended as market participants progress on their journey. While the overall understanding of the T2S platform is well shared among market participants, as usual the devil is in the details.

Financial intermediaries need to devise an efficient and cost-effective adaptation program to realize the benefits from T2S and also dovetail the organization's long-term strategy. As we have seen, depending on the approach followed, the budget required to adapt to T2S could change from €7 million to close to €30 million for the most ambitious one.

Market participants need to conduct detailed planning of their T2S adaptation program and ensure that their strategy is relevant to their volume of activity. Some best practices and approaches to ensure a cost-effective program are:

- Design a T2S Transformation Framework that ensures a structured and phased approach to enable the transformation.
- Adopt an IT portfolio approach for adapting to T2S. FIs should identify and evaluate opportunities for consolidation, retirement, or integration of applications or outsourcing.
- Consolidate communication interfaces for settlement through T2S so that business applications across the enterprise (e.g., for all geographies and all lines of business, such as core settlement reporting, etc.) are serviced by a single communication hub.
- Use message converters (internal or external) to minimize the impact on existing systems.
- Examine add-on components for T2S-specific needs which would interoperate and coexist with FIs' current settlement systems as opposed to changing or replacing the entire IT system. Here there is a real balancing act between upfront investment and long-term maintenance cost that needs to be assessed precisely.

APPENDIX

This appendix is an abstract from our 2011 report *Leveraging T2S Infrastructure: What Are the Options?* The references to scenario 1, 2, and 3 are related to the various options available to financial intermediaries and that are outlined on pages 4 to 6 of this report.

Cost Components of Each Post-Trade Arrangement Option

As we have seen, there are different options and suboptions that a financial intermediary can choose from when considering how it will leverage the T2S platform. In this section we will outline the various cost components, whether additional costs or savings, that financial institutions need to consider before implementing the aforementioned scenarios of post-trade arrangements. Before going into the details of the numerous cost components that we have identified, we have outlined the four macro cost components that a financial intermediary should consider when adapting its post-trade arrangement.

- Systems: Implementing any version of scenario 2 or 3 will require some significant evolution of the bank's existing settlement engine and custody platforms. This will require upfront investment from the financial institution to adapt its existing settlement and asset servicing platform. In some cases, implementing a new solution will be more cost-effective than adapting the existing system, notably when legacy systems have been developed to serve the local/home market, and the bank wishes to operate directly in many markets. In addition, the evolution of the post-trade arrangement in a post-T2S environment will require the setup of new connectivity links with post-trade services providers from T2S platforms to local CSDs, information providers, etc. The systems should also be able to handle different types of formats, from 20022 and 15022 to native languages for certain providers. The systems costs include hardware, software, consulting, implementation, and legal.
- Running cost: The evolution of the post-trade infrastructure of the financial intermediaries will have a knock-on effect on its running cost. For example, implementing scenario 2 or 3 in numerous markets will obviously increase the connectivity spending of the bank. The choice of scenario 3 will increase the running cost of the asset servicing operations of the financial institutions and is likely to extend its operational risk as well. The running costs include licenses, human resources, connectivity, etc.
- Services: T2S platform has been developed to drive down the settlement cost in Europe, notably for cross-border transactions, and this should have an overall positive impact on the settlement cost across every scenario that we have developed. However, depending of the model that is being implemented, banks will still have to purchase services from external providers, be they asset servicing, tax services, etc. Obviously under scenario 3, the spending for external services will be much lower than it would for scenario 1.
- Liquidity: Modeling precisely the cost of liquidity for each scenario was not possible because it is specific to each institution. Nevertheless, one has to acknowledge that, under scenario 1a, liquidity under a certain threshold is provided by custodians as part of their bundled service offering. In scenarios 1b, 2, and 3, the bank will have to ensure that it has enough liquidity to meet its requirements and adapt to the overnight batch under T2S. However, operating under one liquidity pool may also generate some liquidity optimization opportunities.

In the following chapter, we will detail all the cost components of each category and their relevance for the various scenarios. It is important to note that when we have identified additional cost or cost savings in certain components, the comparison is made to current post-trade arrangements.

Systems

The systems macrocategory includes all the up-front investment that could be required to implement one of the different post-trade arrangements options available to market participants. We have, then, differentiated between the cost components that require one upfront investment, such as buying a custody platform, and the one that will be correlated to the number of markets accessed, such as expanding custody platforms.

- Buy/adapt settlement engine to T2S: Existing settlement engines that have not been implemented recently are unlikely to be able to adapt to the T2S environment and new business rules seamlessly, and will require significant effort to be efficient in a post-T2S environment. However, financial intermediaries may find it difficult to source the legacy technology skills required to adapt their current platform.
- Buy/adapt custody platform: Traditional custody applications were mostly developed in the 1990s, usually on mainframe backbones, to support large transaction volumes. Hence many of them are not able to accommodate the various evolution required to handle the full asset servicing operations and to adapt to a different logic under scenario 3.
- Set up link to T2S and technical providers: In order to conduct self-settlement transactions through T2S under scenario 2 and 3, the settlement engine of the financial intermediaries will have to be connected to the providers of technical links to T2S, such as Swift.
- Expanding settlement engine: While the financial intermediary can adapt its existing settlement engine or purchase a new platform, it will nevertheless have to make some customizations/evolution that will be related to the number of markets in which it wishes to self-settle.
- Expand asset servicing and custody platform: Similarly to the settlement function, the custody operations will require some additional cost linked to the number of markets accessed. This will include development cost, human resources, legal requirements, etc.
- Set up connectivity to CSDs: Under scenario 2 and 3, establishing CSD links will be compulsory to manage the national specificities of the settlement process. In addition, under scenario 1b, it will depend on the CSD's expertise around national specificities, based on their links with other CSDs. There could be cross-CSD issues that need to be assessed precisely before CSDs decide which external provider to work with.
- Set up links to tax and paying agent: In scenario 2 and 3, the cash settlement should be managed by the client himself, because he will have the securities account in T2S. However, it is more likely that he will hire a paying agent to handle the process. In scenario 3 the paying agent will be required to facilitate the payment of dividend, and a local tax agent could be required in certain markets to facilitate tax-related activities (e.g., tax reclaim).

Running Cost

In this chapter, we have outlined the various components of the running cost for a financial institution depending on the scenario that it chooses to implement. The running cost will certainly be impacted by the overall volume of transactions but also by the number of markets accessed via the scenario implemented. For example, the running cost under scenario three will be lower to access two markets than it would be for four. We have compared this cost with the existing cost structure of post-trade arrangements to identify potential additional costs.

- Connectivity and communications: Implementing scenario 2, and 3 will require additional connectivity and bandwidth with external market participants such as T2S, CSDs, paying agent, issuer agent, etc. Compared to scenario 1a, where all these interactions are handled by the agent bank, this will drive significant additional running cost. Obviously, scenario 3 will have a much greater running cost than scenario 2 for the same number of markets accessed.

- Messaging and reporting: Under scenario 2 and 3, the financial intermediaries will have to handle additional reporting and messaging operations which will drive additional cost. For example, under scenario 2, the external party handling the asset servicing functions is likely to require a mirroring of settlement transaction in order to process its duty efficiently.
- Operational risk: Here it is important to note that the additional cost driven by increased operational risk in asset servicing will differ between scenario 2 and 3. In the case of scenario 2, the main risk is driven by the fact that two separate entities handle the settlement function and the custody one. Hence, there could be issues of information and data that are not appropriately shared between the two parties, and in case of mismanagement, settlement of the dispute could be difficult to achieve. Under scenario 3, the operational risk is driven by the self-management by the FI of the asset servicing function. Asset servicing is an area that requires strong in-house expertise and one where mismanagement of operations such as corporate actions can drive losses above the million euro mark.
- Settlement platform running cost: Under scenario 2 and 3, the financial institutions will have to handle the settlement function in-house, hence increasing its operational cost compared to the current infrastructure or to scenario 1, where the settlement function is performed by an external provider. This cost components include the hardware, software licenses, human resources, etc.
- Custody operations running cost: The management of the custody operations by the financial intermediaries under scenario 3 will drive some additional cost compared to scenario 1 and 2, where these operations are handled by an external provider. This cost components include the hardware, software licenses, human resources, etc.
- Cost of settling in central bank money: the T2S platform perform book entry settlement in central bank money with delivery versus payment (DVP) and free of payment (FOP). Settling in central bank money could drive additional cost for financial intermediaries implementing scenario 2 and 3.

Services

In this category we have identified the various fees that an FI will have to pay from external providers based on the scenario it wishes to implement. Similarly to the running cost, we have identified elements of cost savings and additional cost compared to the existing cost structure. We have differentiated between the settlement fees expressed in euros and the custody fees that are expressed in basis points.

- External provider of settlement services: These fees are built on top of the existing CSD settlement fees and eventually on top of the T2S settlement fees. They are expressed in cents of euros, and agent banks have different fees based on the volume of settlement transactions generated by each customer. By implementing scenario 2 or 3, the financial intermediaries will remove this fee from their cost structure, since they will conduct self-settlement directly through T2S.
- Mirroring settlement flow to ensure asset servicing: Under scenario 2, to minimize the operational risk driven by the segmentation of the settlement and asset servicing function between two entities, the external providers that handle asset servicing are likely to require a mirroring of settlement flow from customers and charge a fee for that.
- Tax agent fees: Under scenario 3, the financial intermediaries will have to work with local entities to perform all the tax-related activities. This will drive additional cost, depending on the number of markets accessed and volume.

- Paying agent fees: Under scenario 2 and 3, the financial intermediaries may require the services of a paying agent for the cash settlement into T2S. When implementing scenario 3, the financial institution will also require additional services from its paying agent, such as dividend payment management.
- External provider of custody services: This fee is stated in basis points of the asset under custody. It will differ depending on the size of the asset under custody and the complexity of the securities held. Under scenario 3, the financial intermediary will not have to bear this cost any longer because it will manage its custody operations directly.
- Other services from agent bank: This includes fees related to asset servicing and custody to deal with nation-specific aspects but also added services such as tax reclaim. Under scenario 3, the financial intermediary will not have to bear this cost any longer since it will handle the custody function.
- CSDs minimal custody and settlement fees: This set of fees will remain no matter what scenario is implemented. They are often added on top of the external provider settlement and custody fees for scenario 1 and 2.

Liquidity

In the analysis of the evolution of the cost structure driven by the implementation of one of the aforementioned scenarios, one has also to consider the impact on its cost of funding liquidity. Currently and under scenario 1, liquidity provision is delivered by the agent banks as part of their bundled services offering. It is provided for “free” as part of the bundled services package under a certain threshold and with a fee expressed in basis points. With T2S, the vast majority of transactions will be settled through overnight batch, and hence it may create some significant tension for participants that will not have a liquidity pool large enough to cope with it. Nevertheless, one should also consider the potential liquidity opportunity that a financial intermediary could generate by having a single pool of liquidity under scenario 2 and 3.

Liquidity funding is an important component to consider when evaluating the opportunities to implement one of the various scenarios outlined in this report. However, due to a lack of reliable data and the fact that liquidity funding is specific to each institution, this component will not be included in our further analysis.

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