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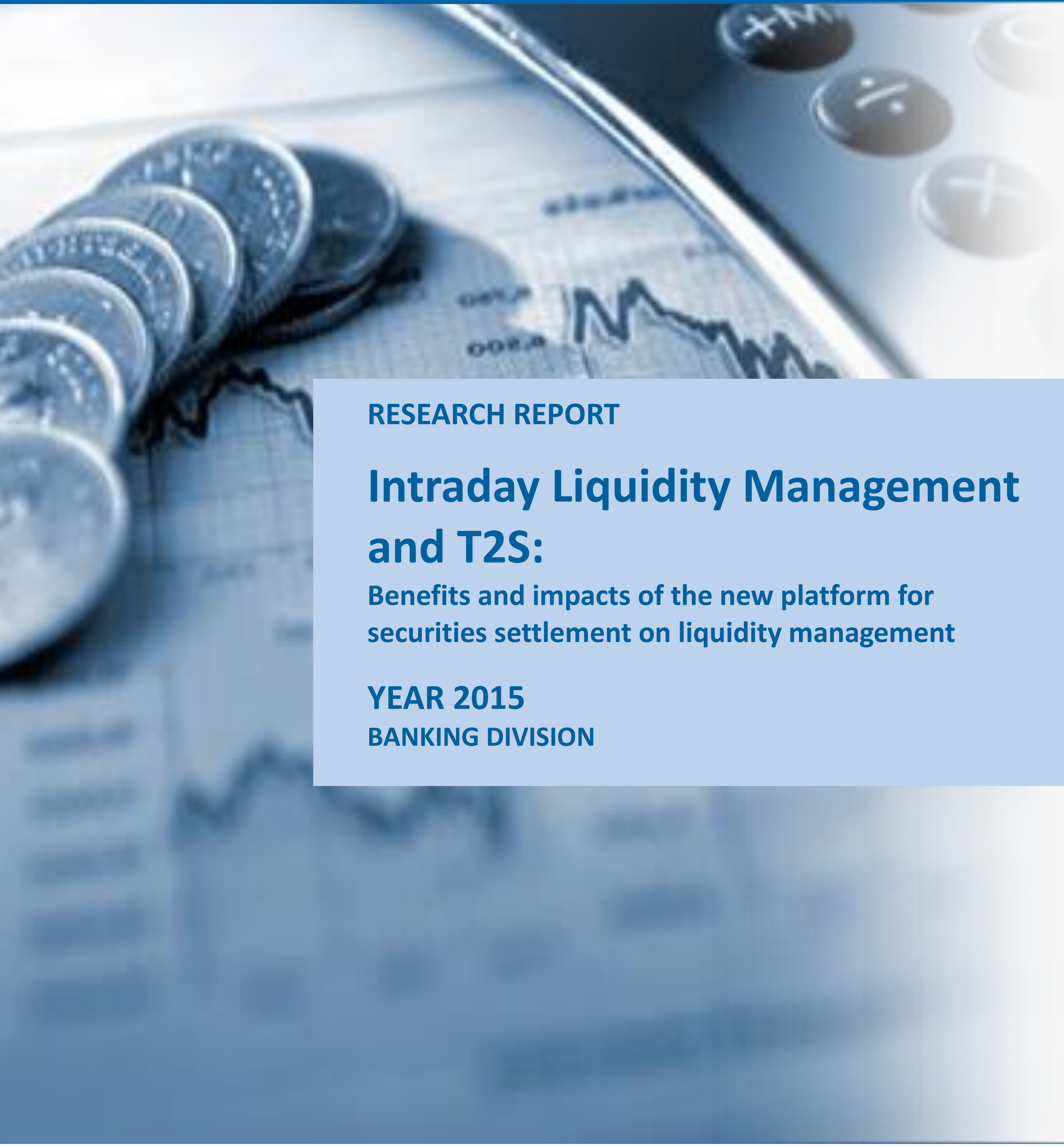

RESEARCH REPORT

Intraday Liquidity Management and T2S:

Benefits and impacts of the new platform for securities settlement on liquidity management

YEAR 2015

BANKING DIVISION

CeTIF

UNIVERSITÀ CATTOLICA del Sacro Cuore

tasgroup

FIT European Research Centres for Finance and IT

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innovation and finance
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The **Research Center on Technology, Innovation, and Finance** was established in 1990 by Cattolica U. of Milan.

CeTIF focuses on technological and organizational innovation in the banking and the financial industries. It investigates the adoption of innovative ICTs and their impacts on processes and organizational structures. The Bank of Italy (BI), the Italian Stock Exchange (Borsa Italiana, BI), the Italian Bankers' Association (ABI) and other important organizations founded CeTIF, which today works with many of the largest Financial Institutions and Insurance Companies. These institutions are key actors in the promotion of technological innovation as a business lever.

CeTIF's Scientific Director is Federico Rajola; Chiara Frigerio is Deputy Secretary. Both have Dphils in Information Systems from the Faculty of Management at Cattolica U. of Milan, where they currently teach. CeTIF's research activities are selected and monitored by a Board, assisted by the Scientific Committee and the Program Committee. Topics for research can also be proposed by members of the Center. The Board of Directors comprises five individuals from the Management Faculty of Cattolica U. of Milan and three representatives of the Associated Banks. The Scientific Committee is responsible for defining guidelines and methodologies for the research activities and the quality of the research outputs.

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CeTIF is also one of the main founders of **FIT, the European Association of Research Centers on Finance & IT**, which develops and shares innovative practices at the international level.

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BANKING DIVISION

Intraday Liquidity Management and T2S:

Benefits and impacts of the new platform for securities settlement on liquidity management

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The meetings were organised and managed by the CeTIF Working Group in the persons of:

Chiara Frigerio
Serena Lobbia

We would like to thank the TASgroup for its effective collaboration during the set-up and implementation of the study.

EXECUTIVE SUMMARY

THE BACKGROUND: T2S PROJECT

The market environment in recent years has been characterised by widespread financial crises and increasingly stringent regulatory pressures; this represented a strong opportunity for financial institutions to review their Collateral Management and liquidity management policies.

The target of the studies conducted by CeTIF in collaboration with TAS Group focused on monitoring the progress of the new financial scenarios, which have undergone profound changes over time.

Additionally for the study conducted in 2014, we monitored the best practices applied by the Italian banking treasuries for liquidity and collateral management.

The objective was to identify the issues that had the most impact in terms of investment and the areas that need improvement, to ensure efficient management of treasury processes.

The research highlighted that the operational model adopted to date by intermediaries, meets the average requirements. However, there are a number of actions to take in order to achieve a full optimisation, especially to build up efficient forecasting systems able of supporting Treasury.

The ongoing optimisation process has laid the foundations for new research to assess how this process is progressing and understanding the strategic implications that the launch of the new platform for securities settlement will have on Italian banking treasuries.

On 17 July 2008, the Governing Council of the European Central Bank launched TARGET2-Securities (T2S) to harmonise the securities market infrastructure according to the standard of the payment platform TARGET2.

T2S management was entrusted to four central banks of the Eurozone (4CB): Deutsche Bundesbank, Banco de España, Banque de France and Banca d'Italia.

T2S offers central securities depositories (CSD) a single technical platform for continuous securities settlement, both domestic and cross-border, and its cash equivalent in the respective central bank currency.

T2S has three main objectives:

- To allow intermediaries to regulate all securities transactions concluded on the European markets using a single settlement account with clear benefits in terms of managing their liquidity
- To significantly reduce the cost of settling cross-border transactions - far superior to that of post-trading in other markets, particularly in the US - and make it equal to that of domestic transactions
- To harmonise practices and standardise regulation processes, thereby stimulating competition between CSDs - and between them and the large international banks - in the provision of services with higher added value

Technical management of securities settlement

T2S will thus allow CSDs to delegate to Eurosystem, the technical management of some securities settlement activities while retaining those with higher benefits, as well as trade relations with customers, with whom they remain legally liable.

TS2 is launching gradually over the course of about two years, between June 2015 and February 2017. Several migration dates (Waves) are planned for the different national financial markets; the Italian market migrated to the new platform in the first wave.
The migration deadlines toward T2S has been scheduled as follows:

- Wave 1: 22 June 2015 (postponed for the Italian market to 31 August 2015)
- Wave 2: 28 March 2016
- Wave 3: 12 September 2016
- Wave 4: 6 February 2017

This unique turning point aimed to build up a single capital market in Europe, demonstrating the willingness of single markets to achieve deeper integration at regional level.
"Nevertheless," Mario Draghi said, "further action will be necessary if the remaining legislative and regulatory barriers in the infrastructure market are to be removed. This is because the financial markets in Europe are subject to a wide network of legal rules, which sometimes conflict on topics such as tax requirements, insolvency proceedings and corporate governance. For full integration, we must have a single set of rules for the capital markets and all players in the market must have equal access." [1]

While the simplification of the schemes the new system can offer seems obvious, what remains unknown and a source of debate at various levels within financial institutions are the actual benefits the platform will produce and what issues related to the migration process itself may arise.

Based on these considerations, **CeTIF** developed the research project called:

"Intraday Liquidity Management and T2S:
expected effects and benefits of the new platform for securities settlement on liquidity management"

This research is an initiative to consolidating the several contributions of the participating institutions and the investigations carried out by CeTIF researchers, following to the T2S project.
The report is organised as follows:

- **First section**: Analyses the expected benefits and incurred costs arising from the implementation of T2S
- **Second section:** Chapters 3, 4 and 5 show the results of the three variables that make up the Treasury Maturity Model 2015

[1] Mario Draghi, ECB President, Presentation of the launch of the T2S platform, Milan 2 July 2015.

OBJECTIVE: OPTIMISATION OF TREASURY PROCESSES

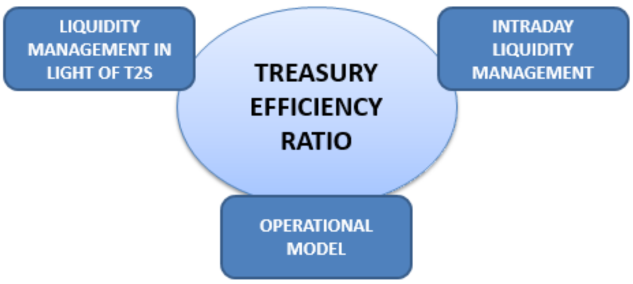
The research took place together with the treasury heads of the main Italian banking institutions, in different stages, mostly roundtable meetings. The final stage included a consolidated survey where participants were called to share their expectations on two different timeframes: the first half of 2016 (second migration wave of T2S) and second half of 2017 (last migration Wave to T2S).

The survey questionnaire circulated amongst 14 participating Italian financial institutions, representing the major share of cash handled by the Italian banking system.

The areas of investigation concerned the expected benefits, the investment costs incurred and expected running costs and the expected changes to liquidity management, including intraday, and to the operating model in the light of the entry into force of T2S.

To measure the level of optimisation of Treasury processes, the research considered three efficiency aspects (Figure I) with the ultimate goal of identifying a Treasury Efficiency Ratio for each aspect examined.

Figure 1 - Treasury efficiency aspects



Source: CeTIF 2015

This survey took place right before the operational *kick-off* of the new platform and the results provide an indication of how the system would work under normal circumstances. However, it should be taken into account that the overall results were certainly affected by the difficult testing period that was running in conjunction of the survey.

At this stage, Italian financial institutions demonstrated complete heterogeneity in their strategic choices for membership. The sample identified the possible combinations to connect to T2S: directly for both securities and cash, direct cash and indirect securities, indirect cash and securities, or through a *payment bank*. These different approaches reflect the different business models of the single institutions, showing that the complexity of the business, in terms of internationalisation, size, financial exposure and liquidity also have a direct impact on their connection to T2S, the operating standard and Treasury expertise.

RESULTS

With the mode of participation of the individual institutions determined, the survey proceeded with investigating five major areas:

1. EXPECTED BENEFITS OF T2S
   In terms of benefits, the respondents acknowledged that T2S will optimise collateral management (fully achievable according to 43% of respondents) and possibly reduce prefunding cash as a result of the use of auto collateral in T2S. However, according to 64% of respondents this would not be achievable before Wave 4. Additionally, the following benefits were perceived as less achievable: Reduction of operating costs, perceived as fully achievable by 14% of respondents and reduction of back office costs, that none of the financial institutions considered at all feasible within Wave 2, and only 7% believed would be fully realised by 2017.

2. ANALYSIS OF T2S COSTS: INVESTMENT COSTS INCURRED AND RUNNING COSTS EXPECTED
   Regarding the implementation cost, there is a wide gap among the investments made. This largely, depends on the preferred connection mode, thus, all direct members (*cash* and / or securities) state that they have incurred investment costs of over one million Euros while *payment bank* members claimed that they incurred investment costs for less than
   € 200,000. T2S also involves *running* costs, and in this regard, respondents were asked to express a qualitative measure. Results show that 69% of respondents, following the introduction of T2S, expected increasing costs mostly for their IT infrastructures. Costs relating to organisational structure, on the other hand, are expected to remain constant by 62% of respondents. Finally, costs related to *post-trading* settlement *and services* are expected to remain unchanged by 46% and to decrease by 23% of respondents, while 31% believe they will be above the costs incurred prior to the implementation of the platform.

3. LIQUIDITY MANAGEMENT IN THE LIGHT OF T2S
   Liquidity management in the light of T2S will undergo changes. According to 58% of respondents, T2S will produce significant improvements in the management of cash and securities by Wave 4 in comparison to the previous year (Wave 2); whereas the greater percentage of respondents (57 %) believe, levels of efficiency will be lower as they expect limited improvements.

4. INTRADAY LIQUIDITY MANAGEMENT
   Additionally, 91% of respondents believe the move will be increasingly towards an integrated management model that will allow managing intraday liquidity and collateral on a real–time basis.
   Research has shown how Italian banks achieved high levels of efficiency with regard to the management of *intraday liquidity*, most likely due to the new reporting standards

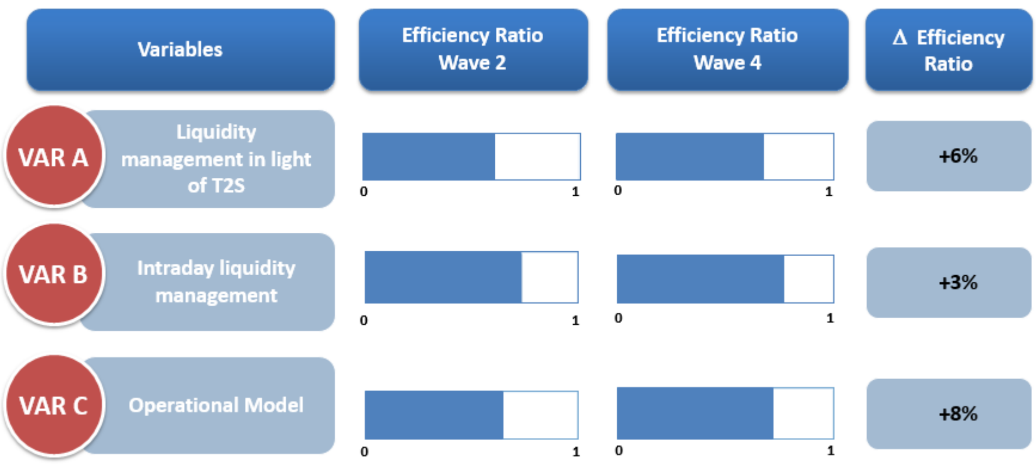
required *by the regulators*. However, in the operating model, there is room for improvement in some aspects of integration and technology.

5. OPERATING MODEL
   Only 42% of respondents expected that the T2S would lead to effective standardisation of the operating model and consequent efficiency in treasury organisation.
   Concerning the technological model, they shared the need to implement an advanced Forecasting system and to run stress-testing simulations.
   The indicator that shows a significant increase in efficiency between Wave 2 and Wave 4 is the intraday integration of cash and securities settlement. Additionally, 28% of respondents claimed that they will be able to collect complete and standardised data information without further intervention.

SUMMARY OF RESULTS

A summary of the results of the Treasury Maturity Model 2015 shows expected improvement and significant investments by Wave 4 in all areas analysed, although with a wide scope for further efficiency.

Figure 2 - Summary of Results



Source: CeTIF 2015

Research has shown how Italian banks achieved high standards of efficiency with regard to intraday liquidity management. However, there is room for improvement in some aspects of technology and integration in the operating model.
Digitalization enables change in the banking business as in any production system; working on information systems improves the integration and usability of information for in-depth analysis, for example: possible risks or areas of optimisation and for synthesis and timely forecasting, which allow management to anticipate unexpected phenomena and related risks.

The average level of efficiency of the "Operating Model" variable is the lowest, but the one with the greatest variation between 2016 and 2017 (8%).
The operating model is expected to show improvements and significant investments by 2017 in nearly all areas. It is interesting to mention that even if respondents have achieved significant efficiency standards, they keep on investing.

RESEARCH METHODOLOGY

The research included the circulation of a survey questionnaire to the 20 largest banks operating in Italy with a response rate of 70%. The survey took place in July 2015, just before the T2S migration in Italy (migration was postponed vis-a-vis the other countries of Wave 1 until 31 August 2015).
The following took part in the survey:

- Banca Monte dei Paschi di Siena
- Banca Popolare del Lazio
- Banca Popolare di Milano
- Banca Popolare di Vicenza
- Banca Popolare di Sondrio
- Banco Popolare
- BNL
- Cassa Depositi e Prestiti
- Cassa di Risparmio di Asti
- ICBPI
- Intesa Sanpaolo
- UBI Banca
- Unicredit

The research identified two key periods, namely the end of Wave 2 (first half 2016) and the end of Wave 4 (second half 2017). The qualitative survey, therefore, aimed at capturing the *perception* of operators with regard to the two periods, in order to understand the expectations linked to key events of the T2S project.

Participant institutions had to disclose their participation mode of T2S, thus making it possible to identify the possible connection modes as shown in Figure 3:

Figure 3 - T2S participation strategies

PARTECIPATION STRATEGY	COMPOSITION
Directly connected participants DCPs (securities and cash)	29%
Indirectly connected for securities and directly for cash	21%
Indirectly connected participants ICPs (securities and cash)	29%
Payment Bank client	21%

Source: CeTIF 2015

The heterogeneity among the possible participation modes in T2S allowed, on the one hand, to draw conclusions that may apply to Italian banks as a whole and, to observe some correlations between participation strategy and analysed variables. The significant correlations are described in the respective chapters.

With the mode of participation of the individual institutions determined, the survey proceeded with investigating five major areas:

1. T2S expected benefits
2. Analysis of T2S costs: investment costs incurred and running costs expected
3. Liquidity management in the light of t2s
4. Intraday liquidity management
5. Operating model

For the first two points, we chose a traditional survey approach, where respondents were asked to describe their expectations concerning the expected benefits of the new platform for regulating and managing liquidity, indicating a level of agreement with respect to an increasing scale, qualitative for the benefits and quantitative for the costs.

The research adopted a 'Maturity Model' concept to conduct the survey on the last three points. The model shows the "level of maturity" reached by the bank operators in each of the three variables, to produce the Treasury Maturity Model 2015.

The Maturity Model is an investigation tool that consists of a qualitative checklist through which participants were able to position the level of maturity most representative of their situation with regard to the aspects of interest.

The degree of maturity of a bank, according to these aspects, may be represented by an evolutionary path in terms of efficiency and in several stages, which may vary depending on the model adopted by the intermediary.

Each dimension is represented by descriptors, (i.e. drivers whose efficient management produces tangible benefits for the optimisation of that aspect). Participants had to indicate the relevance of each descriptor, within the variable (0 to 100%).

The Maturity Model identified three maturity levels, which correspond to a different level of efficiency in relation to the situation described: Level 1 (inefficiency/poor efficiency), level 2 (medium efficiency), level 3 (maximum efficiency).

The Maturity Model was built so that the maximum level of maturity attainable in conjunction with the maximum degree of agreement expressed (developmental stage, from one to 5) would be a finding of the maximum efficiency achievable for a given variable.

For each of the aspects considered, the ultimate objective is to identify a Treasury Efficiency Ratio, i.e. an index between 0 and 1 that allows the state of the art of Italian banking intermediaries to be understood in relation to Treasury activities.

1 - EXPECTED BENEFITS AND COSTS OF T2S

1.1 - EXPECTED BENEFITS OF T2S

The expected benefits of T2S that were measured can be split into four categories:

- Collateral savings
- Liquidity savings
- Safety benefits
- Simplify operations

Below is a summary of the results broken down by category of expected benefits.

COLLATERAL SAVINGS

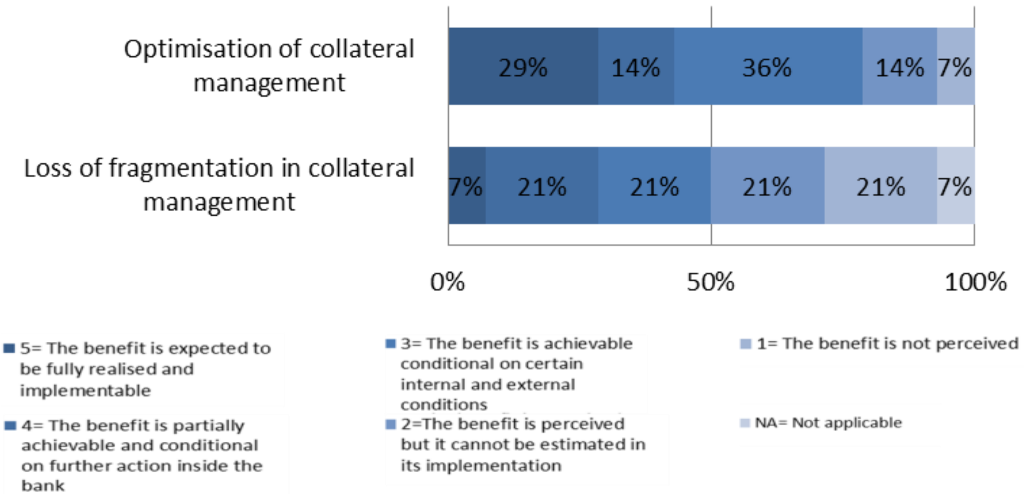
Collateral savings means the benefits of an improvement in collateral management made possible by the introduction of T2S.

You can see from the two charts below that there is a general increase in expectations of the expected benefits between 2016 and 2017, which, on the one hand, is surprising, since the benefits should occur simultaneously with the migration in Wave 1.

This could be a result of some uncertainty in the perception of the benefits of implementing the new system[2].

The figures below show the perceptions of collateral savings for the first half of 2016 (Figure 4) and for the second half of 2017 (Figure 5).

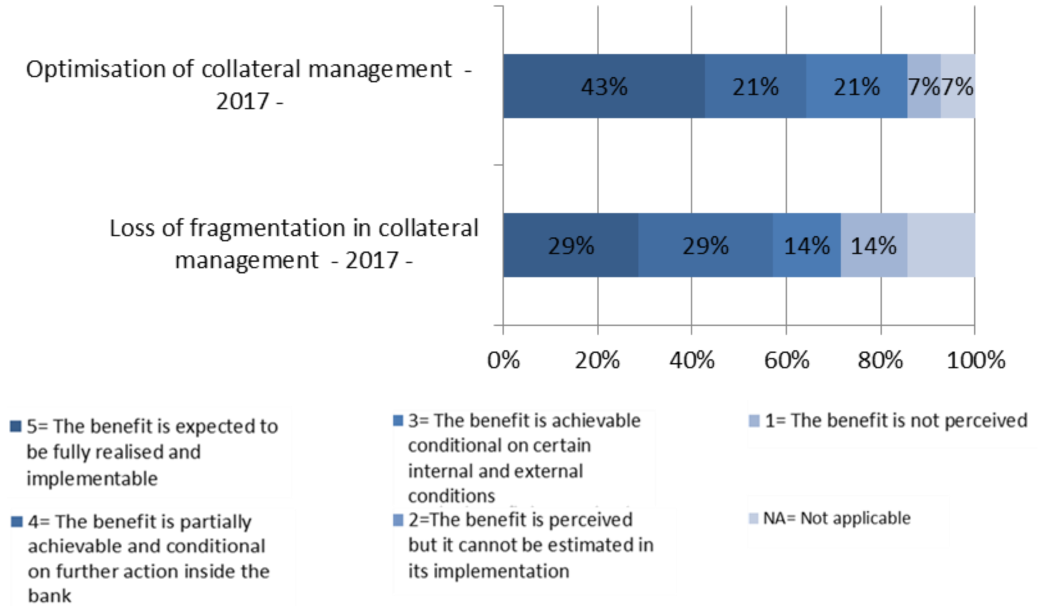
Figure 4 - Collateral Savings - 2016 (Wave 2)



Source: CeTIF 2015

[2] In reading the responses please take into account the expectations survey period, in July 2015, just before the Italian migration. At that time the banks' expectations were rather negative, given the unreassuring experiences recorded during the testing period of the new platform.

Figure 5 - Collateral Savings - 2017 (Wave 4)



Source: CeTIF 2015

It is noticeable that, for 43% of the banks, optimisation of collateral management is expected to be fully realised by Wave 4 and a further 21% considers its achievement conditional on further action inside the bank itself (Figure 4). Only 7% of respondents do not perceive this benefit by the end of 2017 and a further 7% think the benefit is not applicable (Figure 5).
Optimisation of collateral management is therefore seen as a key element of T2S.

The absence of fragmentation in collateral management, scarcely perceived as beneficial for Wave 2 (Figure 4), shows healthier levels for Wave 4 where 58% of respondents believe that this benefit will be fully realised or realised conditional on further inward investment . Overall, 28% do not perceive the benefit related to less fragmentation in collateral management or deem it not applicable to the adoption of T2S.

LIQUIDITY SAVINGS

T2S should provide Italian Treasuries with a perceived benefits in terms of easier liquidity management. In particular, it was possible to determine the six categories of potential savings represented in figures 5 and 6 and analysed in detail below.
In particular, 64% of respondents believe it will not be possible to reduce prefunding cash before Wave 4 (Figure 7) while the centralisation of the liquidity portfolio for market access does not seem to be perceived as possible or not as a result of the introduction of the new regulation platform. This may also be due to the composition of the business of Italian banks, which, with a few exceptions, are not very oriented to foreign markets.

Figure 6 - LIQUIDITY SAVINGS - 2016 (Wave 2)

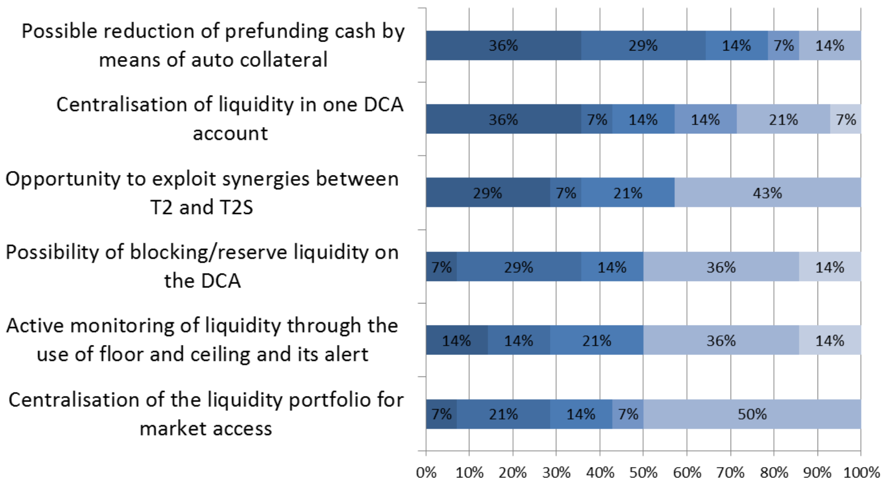
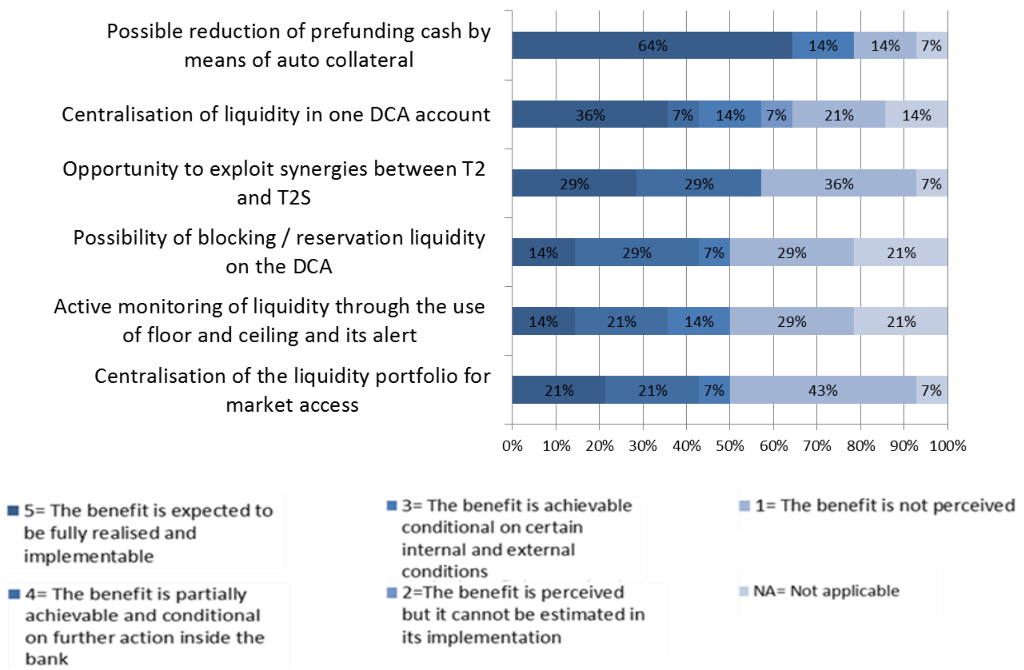


Figure 7 - LIQUIDITY SAVINGS - 2017 (Wave 4)



Source: CeTIF 2015

The possible reduction of prefunding cash by means of auto collateral is perceived as critical by respondents, so much so that 36% believe the benefit will be already fully achievable in Wave 2 while 64% of respondents believe this possible in Wave 4, reflecting the fact that the Italian banking system is believed to have already made (or will have made by the end of 2017) the investment required to achieve the benefit related to this component. Only 14% say they do not perceive any benefit for Wave 4 (unchanged from Wave 2).

The ability to centralise liquidity in one DCA is one of the distinctive elements of T2S and, in fact, this is also perceived as a benefit that can be fully achieved in Wave 2 by 36% of respondents. This percentage also remains unchanged in Wave 4 (Figure 7), as well as the percentages for those who claim to perceive this benefit partially or only when certain internal and external conditions occur. The lack of change in the results is surprising because of the fact that, with the extension of the use of T2S to other countries, the adoption of a single DCA will be progressively more feasible. 21% do not perceive any benefit for Wave 4 (it was 21% in Wave 2)

29% of respondents said they perceive the opportunity to exploit synergies between T2 and T2S as a benefit, with consistent results between Wave 2 and Wave 4. The percentage of those who declared that they perceived the benefit only on condition of further internal action increased from 7% for Wave 2 to 29% for Wave 4. It should also be noted that 36% state they do not perceive any benefit for Wave 4 (the percentage is 43% for Wave 2).

The percentage of those who perceive the possibility of blocking / reservation on the DCA as an achievable benefit due to T2S is decidedly low: 7% for Wave 2 rising to 14% for Wave 4. Instead, the percentage of those who do not perceive any benefit is high for Wave 2 (36%) falling to 29% for Wave 4. 29% (for both Wave 2 and Wave 4) states that the benefit is partially achievable and conditional on further internal action.

The percentage of those who do not perceive any benefit in terms of active monitoring of liquidity through the use of floor and ceiling falls from 36% for Wave 2 to 29% for Wave 4, while those who declare that the benefit will be fully achievable and implementable remains constant, for both reporting periods, at 14%. Those who perceive the benefit as being related to additional internal action increases from 14% for Wave 2 to 21% for Wave 4.

Half of respondents believe that in Wave 2 no benefit regarding the centralisation of the liquidity portfolio for market access will be felt; this percentage drops to 43% for the second reporting period (Figure 7). Only 7% believe that the benefit will already be fully felt in Wave 2 and this percentage rises to 21% in Wave 4. However, the percentage of those who argue that the benefit will be only partly perceptible and conditional on further internal action remains constant at 21% for both reporting periods. This finding is specifically linked to the configuration of the business profile of the banks.

SAFETY BENEFITS

Rather negative opinions are recorded in relation to risk reduction on *cross border* transactions and operating costs.

The category of *safety benefits,* which includes the two benefits listed above in this context, is the category recording the least optimism, particularly as regards the reduction of operating costs, which none of the institution respondents thought was an achievable benefit even by Wave 4 (Figure 9) .

Figure 8 - SAFETY BENEFITS - 2016 (Wave2)

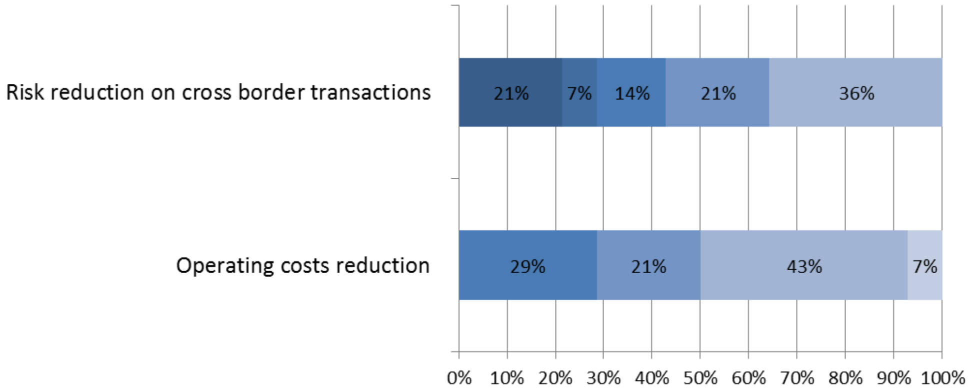
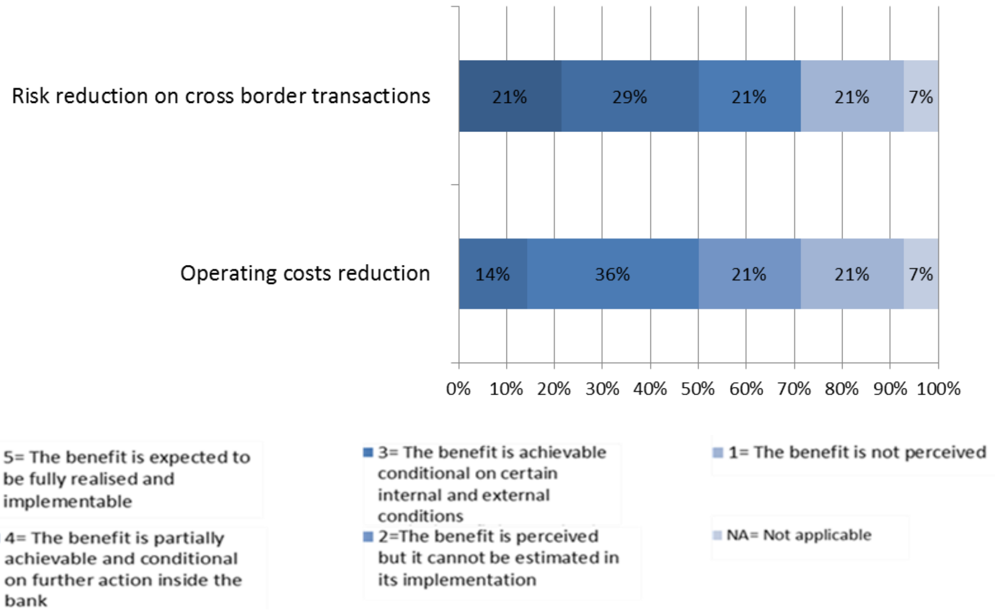


Figure 9 - SAFETY BENEFITS - 2017 (Wave4)



Source: CeTIF 2015

Specifically, 21% of respondents (relative to both Wave) believes that the risk reduction on current cross-border transactions is fully achievable. On the other hand, 36% believe that the benefit will not be felt in the first half of 2016 and even for the second half of 2017, the percentage stood at 21%. The benefit will be partially realized in Wave 2 according to 7% of respondents rising to 29% in Wave 4.

No respondent believes that the operating costs may go down for both time frames. As many as 43% believe that this benefit will not be perceived in Wave 2 (and therefore there are no cost savings). This percentage drops to 21% for the second time frame analysed. This contrasts with the assumptions made by the regulator in relation to the launch of the T2S platform.

SIMPLIFY OPERATIONS

T2S should allow a simplification of operations on several fronts, especially facilitating *cross border* transactions and making the reduction of operational interfaces possible.
Looking at the responses of financial institutions surveyed, a certain reticence with regards to this category of benefits can be seen.

Figure 10 - SIMPLIFY OPERATIONS - 2016 (Wave2)

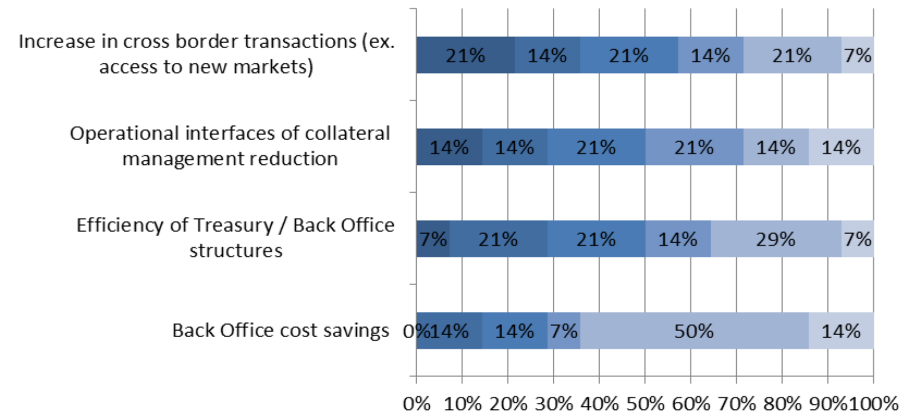
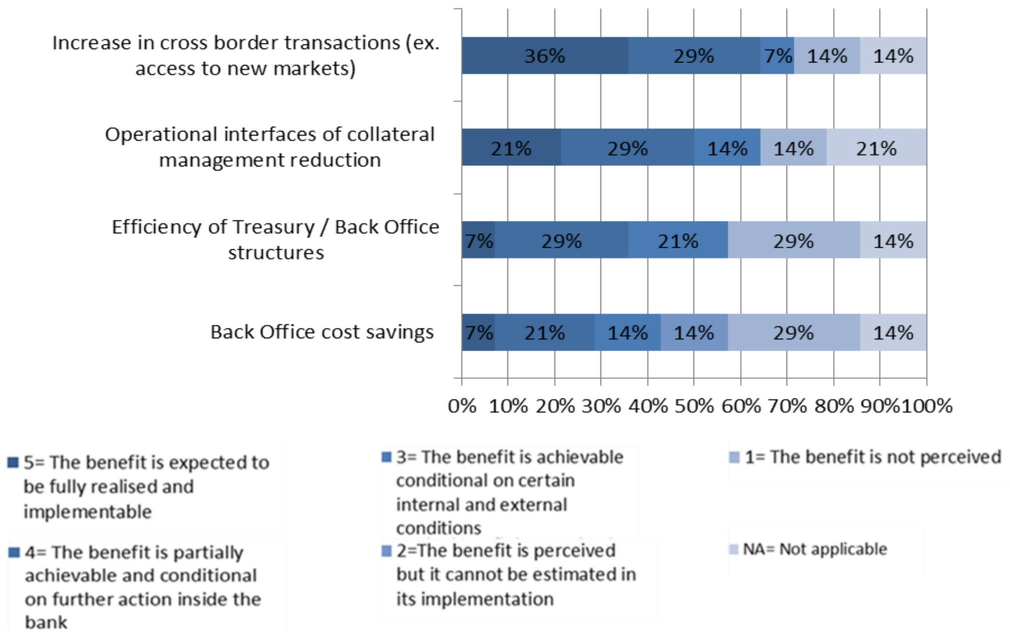


Figure 11 - SIMPLIFY OPERATIONS - 2017 (Wave4)



Source: CeTIF 2015

21% believe that the increase in *cross border* transactions (indicated by the ECB among the key points for the adoption of T2S) is fully realisable in Wave 2 and this percentage rises to 36% in Wave 4. A further 14% believe that the benefit is partially achievable in Wave 2 and 29% believe that this will be the case in Wave 4. On the other hand, 21% do not perceive any increase in *cross border* transactions for the first half of 2016 and 14% believe that even for the second half of 2017 there will be no benefit.

Reducing operational interfaces of collateral management is not perceived as a benefit by 14% of respondents for both periods. 14% believe that the benefit will be fully achievable within Wave 2 and 21% that the benefit will be fully achieved by the second half 2017. For 14% of respondents that benefit can be achieved in Wave 2 conditional on further internal action at the bank; this percentage rises to 29% in Wave 4.

Only 7% of respondents believe that there might be a streamlining of the Treasury / Back Office structures (no improvement for Wave 4) and 29% (also in this case constant for both reporting periods) believes that there will be no perceived benefits on the efficiency of Treasury / Back Office structures from the adoption of T2S. A further 21% believes that the benefits will be partial and conditional on further internal work for Wave 2 (rising to 29% in Wave 4).

Half of respondents believe that there will be Back Office cost savings in the first half of 2016 and for 29% there will be no savings even by the second half of 2017. No respondent believes that the benefit will be fully achievable within Wave 2 and only 7% believe it will be in Wave 4. 14% believe that the benefit will be partly achieved by Wave 2; this percentage rises to 21% in Wave 4.

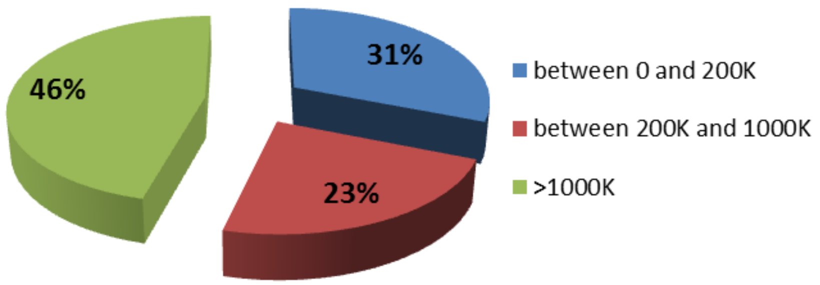
1.2 - T2S COSTS

Investment costs incurred and running costs expected by financial institutions in view of the Italian migration to T2S were analysed.
The investment costs incurred, as expected, are closely related to the membership arrangements chosen by the respondent institution. It has been possible to verify that all direct members both cash and bonds have incurred expenses of more than one million Euros, while all payment bank members incurred expenses of less than 200,000 Euros.

Another interesting finding in relation to the membership mode is that members who have incurred investments of more than one million Euros on average perceive the expected benefits as being higher for each category of expected benefit analysed in the previous section.

COSTS OF IMPLEMENTATION

Figure 12 - Project costs (including IT, organisational and change management costs).



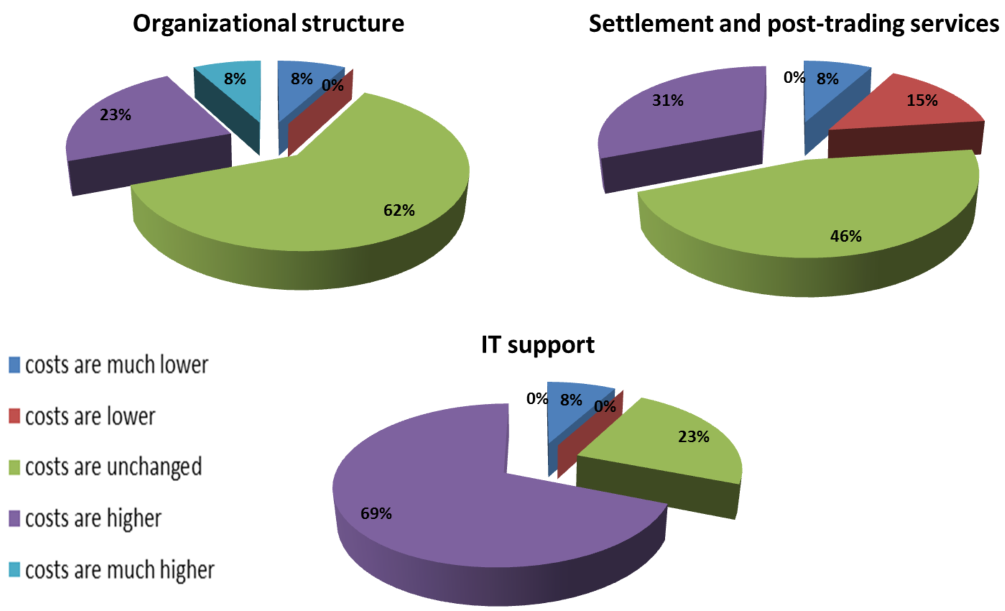
Source: CeTIF 2015

46% of respondents said they have incurred costs in view of the introduction of T2S exceeding one million Euros, while 23% incurred costs between 200,000 Euros and one million Euros and 31% stated costs incurred were less than 200,000 Euros.

EXPECTED RUNNING COSTS

After having asked for an indication on the costs incurred, we wanted to assess the expectations of running costs that did not seem to have been fully assessed even after the last meeting of September 24.
Given the uncertainty, we wanted to get an estimate of the costs with regard to those currently incurred by financial institutions.
We tried to find a correlation between the type of membership and *running* costs but, unlike our findings for investment costs, no evidence was found that these running costs are influenced by the T2S membership mode chosen.

Figure 13 - Running costs expected in view of the introduction of T2S



Source: CeTIF 2015

62% of respondents believe organisational structure costs will remain unchanged with the introduction of the T2S platform while 23% believe the costs will be higher. 8% of respondents state that the costs will be much higher and the same percentage, on the other hand, state that they will be much lower.

As for the costs associated with settlement and post trading services, 46% of respondents believe that the adoption of T2S will have no impact on current settlement and post-trading activities costs. 31%, on the other hand, believe the costs incurred will increase while 15% believe that the costs will be lower. 7% of respondents believe the costs will be much lower.

As many as 69% of respondents believe that IT costs will increase after the introduction of T2S and 23%, however, believe they will remain unchanged. The remaining 8% believe that the costs will be much lower.

2 - TREASURY MATURITY MODEL

The study aimed to identify the level of optimisation of certain Treasury processes with regard to the arrival of T2S through a panel of intermediaries on the Italian scene.
Three aspects of analysis were examined to investigate the optimisation level of these Treasury processes:

• Liquidity management in the light of T2S
The series of activities and methods useful in the determination of assessment strategies liquidity management strategies, whether formalised through rules or covered by operational practices, has been considered in the light of T2S
• Intraday liquidity management
The series of activities and methods useful in the determination intraday liquidity management strategies, whether formalised through rules or covered by operational practices, has been considered Reference is made in this session to the management of liquidity in the Euros
• Operating model
The activities, procedures and the relative degree of automation required to allow colateral and liquidity management are viewed as a whole

Each of these aspects, particularly the efficiency of each of them, allows a more careful and optimised management of Treasury as a whole to be achieved.
In other words, if an intermediary wanted to achieve the optimisation of liquidity management processes in conjunction with that of the management of collateral management processes, they would necessarily have to focus on the improvement of the above areas.
For each of the aspects considered, the ultimate objective is to identify a Treasury Efficiency Ratio, i.e. an index between 0 and 1 that allows the state of the art of Italian banking intermediaries to be understood in relation to Treasury activities.

In order to investigate the four aspects of interest, each of the participating institutions has been given a Treasury Maturity Model, i.e. a model for assessing the maturity level of the intermediaries in relation to the degree of optimisation of Treasury processes.

Research and the collaboration of financial institutions that have actively participated in the CeTIF Observatory have led to the decision to create a Maturity Model of Treasury processes in the light of T2S.
The Treasury Maturity Model is an investigation tool that consists of a qualitative checklist through which participants were able to position the level of maturity most representative of their situation with regard to the aspects of interest.

- Liquidity management in the light of T2S
- Intraday liquidity management
- Operating model

The degree of maturity of a financial institution with regard to these aspects may be represented by an evolutionary path, in terms of efficiency, in several stages, which may vary depending on the model adopted by the intermediary.

Each dimension is represented by descriptors, i.e. drivers whose efficient management produces tangible benefits for the optimisation of that aspect.
The Maturity Model identified three maturity levels, which correspond to a different level of efficiency in relation to the situation described: Level 1 (inefficiency/poor efficiency), level 2 (medium efficiency), level 3 (maximum efficiency).
The Maturity Model was built so that the maximum level of maturity attainable in conjunction with the maximum degree of agreement expressed (developmental stage, from 1 to 5) would be a finding of the maximum efficiency achievable for a given variable.

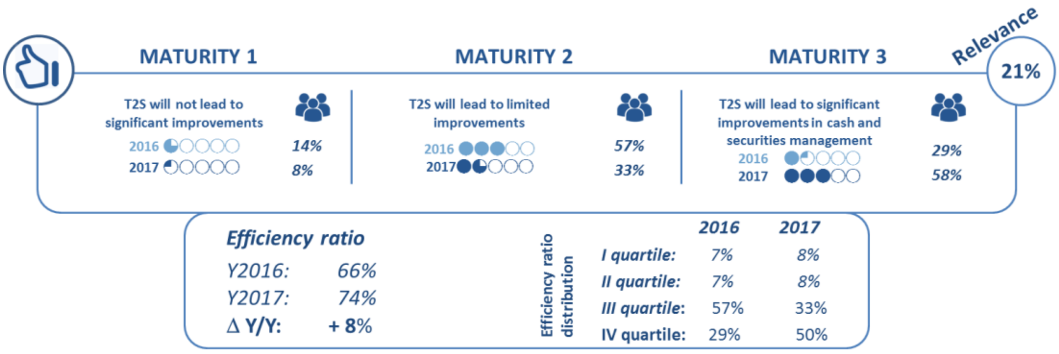
3 - LIQUIDITY MANAGEMENT IN LIGHT OF T2S

In light of the introduction of the new securities settlement platform, key functional areas such as liquidity management, would be significantly impacted

The objective of this section is to measure the expected level of efficiency and the most significant elements for an efficient liquidity management in the light of T2S.

It was thus possible to see which are the most expected areas for improvement and what weight the different descriptors identified during the research in collaboration with the participating banks have for Italian Treasury departments.

Figure 14 - Improved cash and securities management with T2S



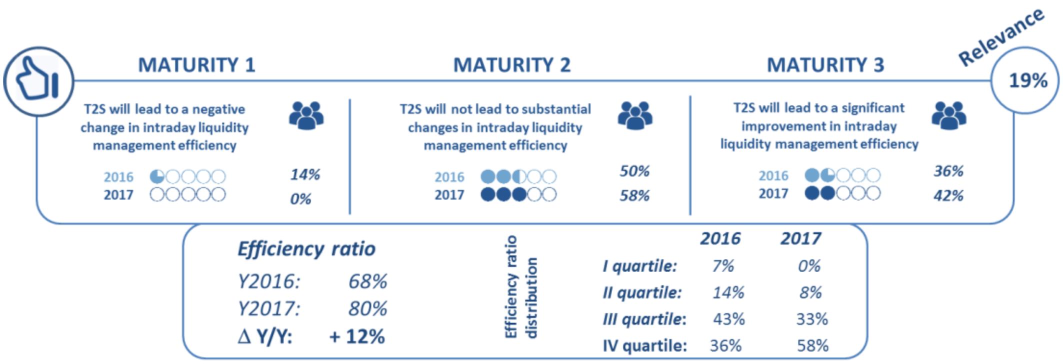
Source: CeTIF 2015

The improvement in cash and securities management with T2S has shown the highest relevance among the descriptors investigated within the liquidity management in the light of T2S.

In fact, the importance assigned to this indicator is 21% (Figure 14), against an average of 14%, reflecting the fact that Italian banks have consistent expectations regarding the improvement of cash management and securities with T2S.

The efficiency ratio stood at 66% for 2016 and increases to 74% in 2017: this illustrates that for respondents there is an on-going process that will lead to the full benefits being enjoyed at the end of Wave 4 (due to the extension of T2S to all the countries covered by the introduction of the new platform).

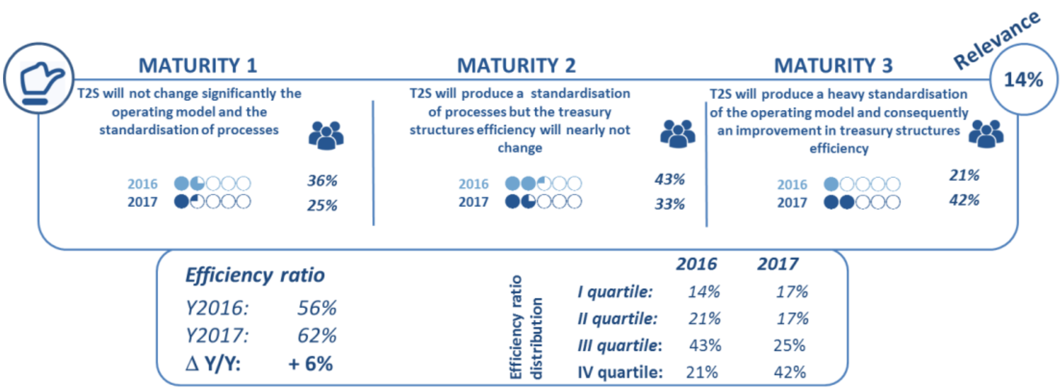
Figure 15 - T2S and Intraday Liquidity Management



Source: CeTIF 2015

Management of T2S and Intraday liquidity (Figure 15) marked a relevance higher than average. The efficiency ratio increased from 68% in Wave 2 to 80% in Wave 4. It should be noted that 58% believe that T2S will not produce substantial changes in intraday liquidity management efficiency and 42% believe it will lead instead to a significant improvement. None of the respondents believe that T2S will result in a decrease by the end of 2017.

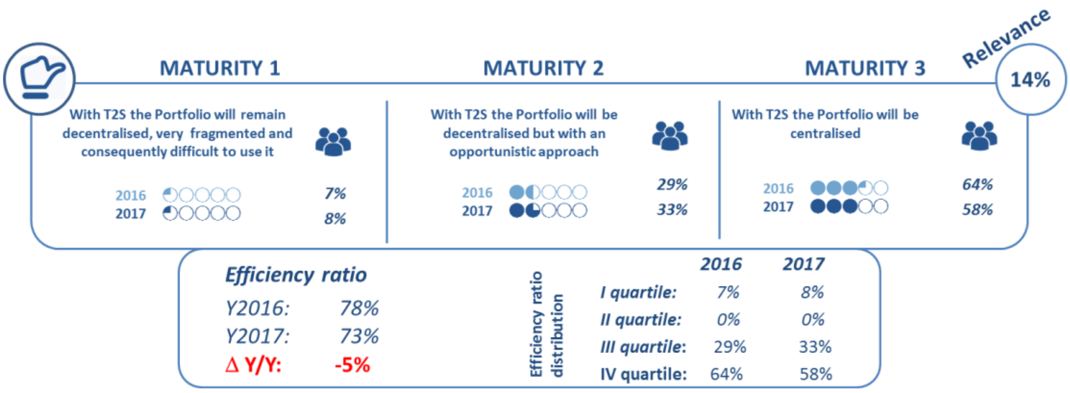
Figure 16 - Standardisation and streamlining of the operating model



Source: CeTIF 2015

Standardisation and efficiency of the business model is perceived by respondents as a significant element on average. In this case too, the efficiency ratio rose from 2016 to 2017 (from 56% to 62%), but the levels are below the average compared to those of the other components of cash management in the light of T2S. 36% in 2016 (down to 25% in 2017) believe that T2S will not produce significant improvements relating to the operating model and the standardisation of processes.

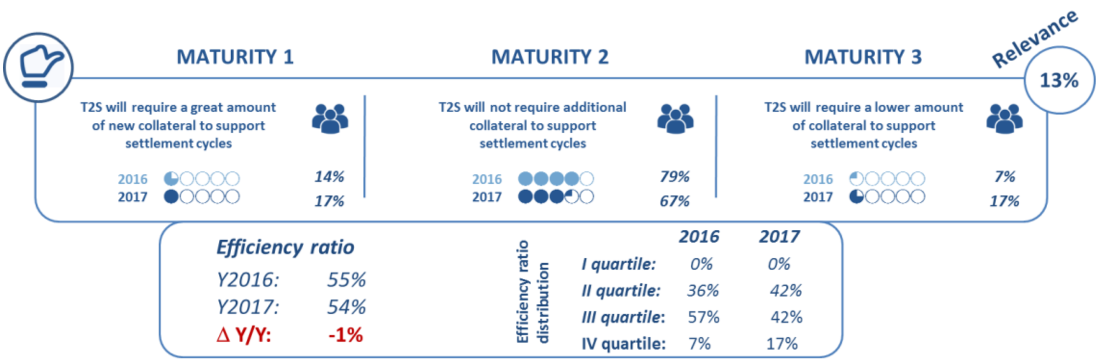
Figure 17 - Location of the portfolio (minimisation of use for access to liquidity)



Source: CeTIF 2015

The importance of the location of the portfolio is positioned around the average of liquidity management indicators in the light of T2S. It should be noted that the efficiency ratio decrease is not necessarily due to a worsening perception, but the fact that some banks will choose an opportunistic approach provided by T2S, which is to be considered positively in connection with the strategy of the bank. In 2017, 58% believe that the portfolio will be centralised and 33% that it will be decentralised but with opportunistic approach.

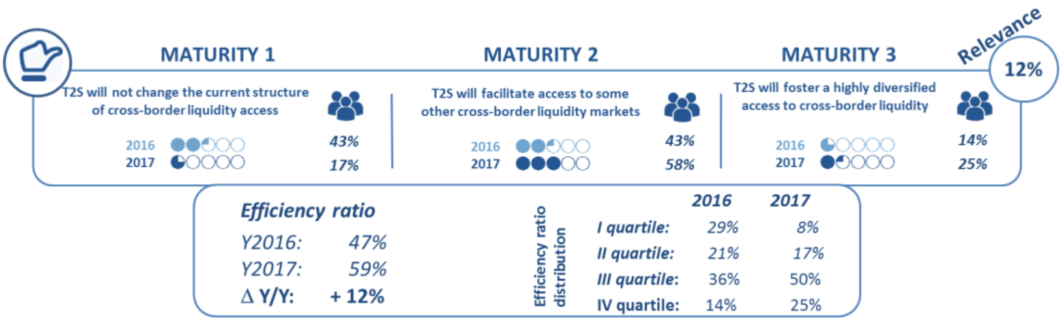
Figure 18 - Need for new collateral



Source: CeTIF 2015

The majority of participants claimed that T2S would not require additional collateral to support settlement cycles. This is due to the auto collateral feature up and running during the operating day. However, within liquidity management the need of new collateral is not essential (Figure 18), but it should be accounted that the market is now very rich of liquidity.
This liquidity management component presents an efficiency ratio well below the average positioning at 55%. Only 7%, rising to 17% by the end of Wave 4 believe that T2S will require a lower amount of collateral. 79% believe that collateral will remain unchanged in 2016, dropping to 67% in 2017. It should be noted that 17% consider that, by the end of 2017, T2S will lead to a substantial amount of new collateral to support the placement cycles.

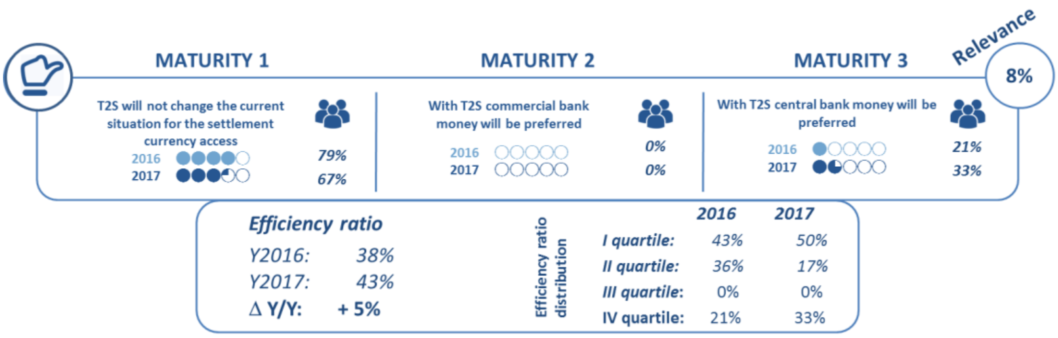
Figure 19 - Cross-border access to liquidity



Source: CeTIF 2015

Cross-border access to liquidity has a lower than average relevance for respondents and the efficiency ratios are low (47% in 2016 and 59% in 2017) although with consistent growth between the two periods. 58% of respondents believe that T2S will facilitate access to some other cross border liquidity markets by the end of 2017, while 25% believe that T2S will foster a highly diversified access to cross-border liquidity. In contrast, as many as 43% believe that T2S in 2016 will not change this aspect from the current situation (this percentage drops to 17% in 2017).

Figure 20 - Settlement currency access



Source: CeTIF 2015

The access to settlement currency present a less priority aspect with an Efficiency ratio (Respectively 38% in 2016 and 43% in 2017) and relevance (8%) below the average. As many as 79% in 2016 (down to 67% in 2017) believe that T2S will not change the current situation for the settlement currency access. All respondent believes that commercial bank money will be not be preferred and 33% claim that central bank money will be the most used by the end of 2017.

SUMMARY OF RESULTS

The results can be summarised in the figure below, which shows all the descriptors, measured qualitatively in order of importance attributed to the responding financial institutions.

Figure 21 - Cash management in the light of T2S: system average

Relevance	Descriptor	Efficiency I semester 2016	∆ Efficiency II semester 2017
21%	Improved cash and security management with T2S	MEDIUM-HIGH	↑
19%	T2S and Intraday Liquidity Management	HIGH	↑
14%	Standardisation and streamlining of the operating model	MEDIUM	=
13%	Location of the portfolio (minimisation of use for access to liquidity)	HIGH	=
13%	Need for new collateral	MEDIUM	↓
12%	Cross-border access to liquidity	MEDIUM	↑
8%	Change of the settlement currency access	LOW	↑

Source: CeTIF 2015

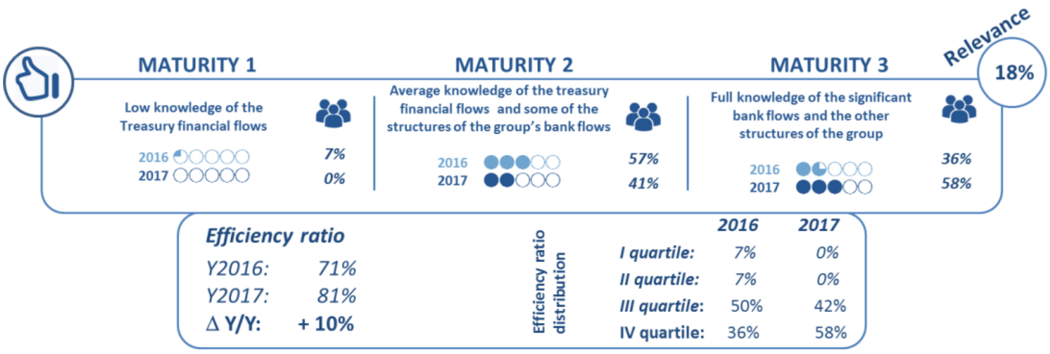
The research results confirm that high levels of efficiency in liquidity management are expected with the migration to T2S.
Looking in particular at the results shown in Figure 21, it can be seen that among the descriptors with the highest level of efficiency, there are those that also have a greater degree of relevance; one exception is the standardisation and streamlining of the operating model that stands at an average level of efficiency, but with prospects of improvement between Wave 2 and Wave 4. Only the change of the settlement currency access, an indicator with low significance, saw low levels of efficiency even though it showed prospects for improvement by Wave 4.
We can thus affirm that liquidity management in the light of T2S will undergo changes. According to 58% of respondents T2S will produce significant improvements in the management of cash and securities by Wave 4, showing a strong increase in comparison to the previous year (Wave 2), whereas the greater percentage of respondents (57 %) believe levels of efficiency will be lower as they expect limited improvements.

4 - INTRADAY LIQUIDITY MANAGEMENT

The objective of the Treasury Maturity Model (TMM) is to analyse the degree of efficiency of treasury departments in intraday liquidity management. Scope of this variable is to measure the expected level of efficiency and establishing the most significant elements for efficient intraday liquidity management.

The survey identified the improvement areas and what relevance the Italian treasury departments have assigned to each of them.

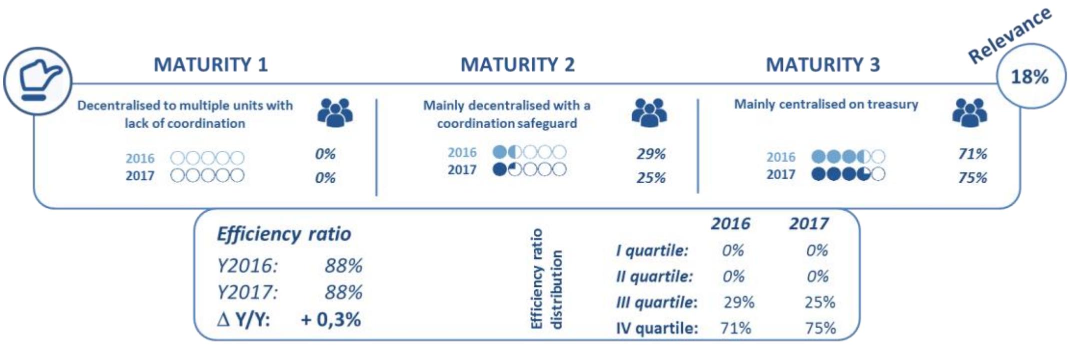
Figure 22 - Knowledge of the significant bank flows



Source: CeTIF 2015

The capacity to measure liquidity flows has a relevance of 18%, which is above the average of all intraday liquidity management indicators analysed. Efficiency ratio for 2016 of 71% rising to 81% for 2017. 36% of respondents claimed full knowledge of the significant bank flows for 2016 (a figure that rises to 58% for 2017). This result proves that Italian banks have a consolidated in-house knowledge around the intraday liquidity management.

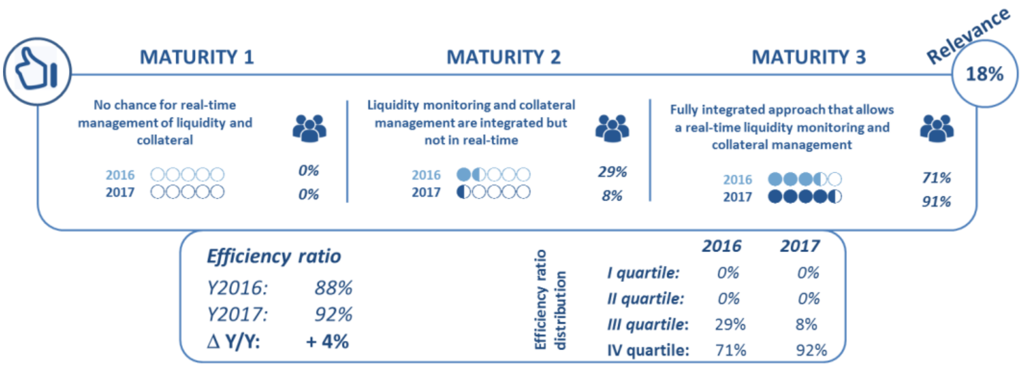
Figure 23 - Intraday liquidity management active protection



Source: CeTIF 2015

The intraday liquidity monitoring resulted to be as one of the key elements (relevance of 18%) showing a very high efficiency ratio in 2016 maintaining a stable position throughout 2017.
71% of participants claimed that the active monitoring practise would be centralised on treasury level by beginning of 2016 (rising to 75% at the end of 2017). None of the respondents claimed to lack on the intraday liquidity management exercise.

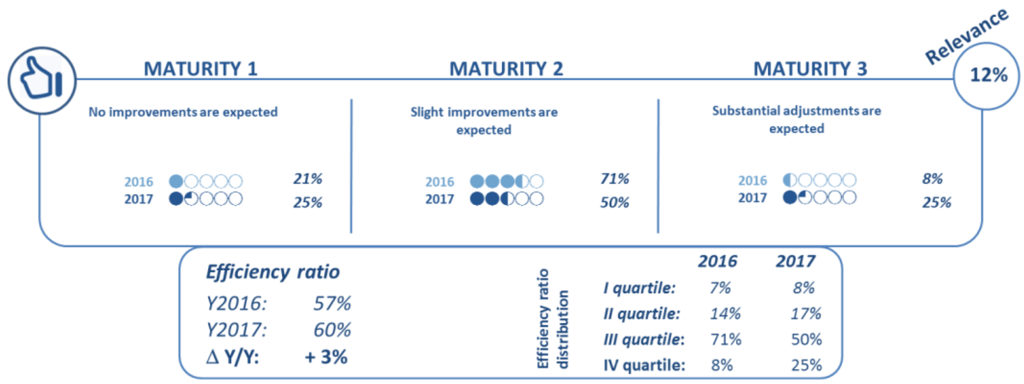
Figure 24 - Intraday liquidity management



Source: CeTIF 2015

The intraday liquidity management remains within the hot priorities of bank treasury. 71% of respondents claimed that real-time liquidity monitoring and collateral management will be fully integrated by 2016. This percentage rises to 91% in 2017. The result highlights that by 2017 all respondents will manage both liquidity and collateral with a full-integrated approach.

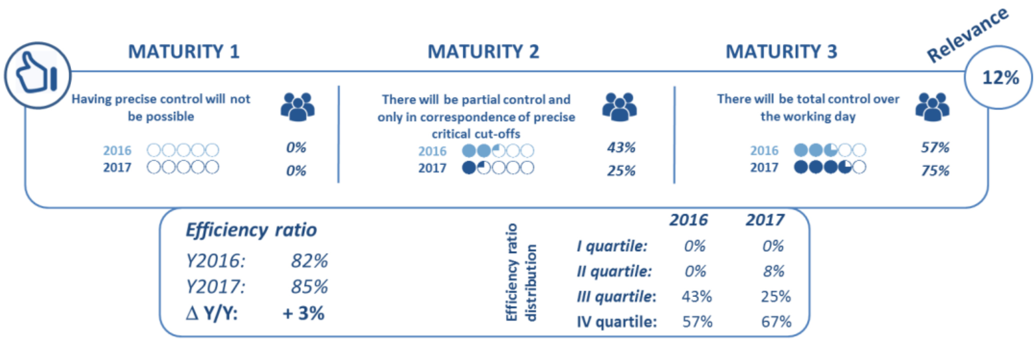
Figure 25 - Liquidity Policy: adaptation to the principles of intraday liquidity management



Source: CeTIF 2015

Relevance at 12% (just below the average) and efficiency ratio levels lower than the average of the variable: 57% for 2016 and 60% in 2017. The majority of respondents (71% for 2017 and 50% in 2016) states that slight improvements are expected, while 8% said that they expect substantial adjustments (25% in 2017). The percentage of those who do not expect adjustments was 21% in 2016 and 25% in 2017.

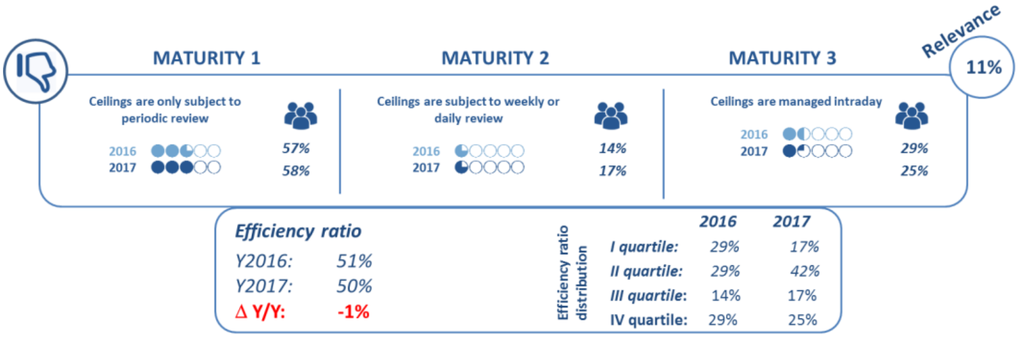
Figure 26 - Intraday liquidity usage control



Source: CeTIF 2015

Below average relevance but definitely high efficiency ratio: 82% for 2016 and 85% for 2017. 57% state that there will already be total control over the working day in 2016 rising to 75% for the second half of 2017. No one believes that you cannot have precise control.

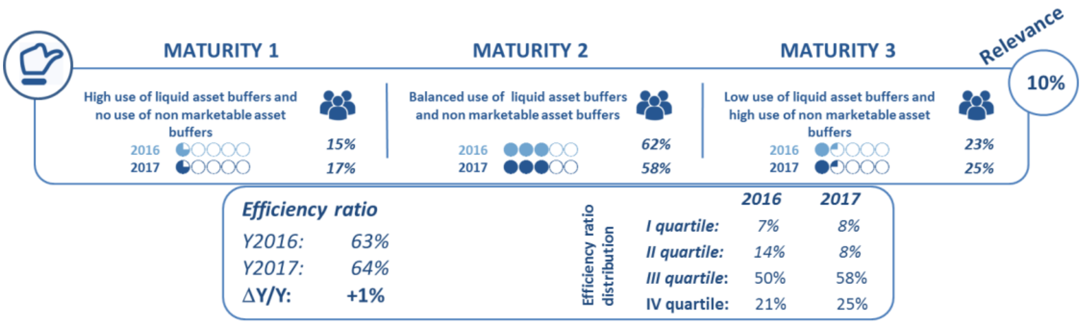
Figure 27 - Management of the ceilings for the purpose of monitoring the effectiveness of intraday liquidity and reducing the impact on liquidity



Source: CeTIF 2015

The management of the ceilings has low relevance and a decidedly low efficiency ratio (50%) that remains constant over the two observation periods. More than half of respondents (constant over time) believe the ceilings are only subject to periodic review. A quarter of respondents, however, state that the ceilings are managed in intraday (with consistent responses between the two time frames).

Figure 28 - Cost of collateral



Source: CeTIF 2015

The survey highlighted that the cost of collateral relevance is lower than average as well as a less significant efficiency ratio. 62% state the balanced use of liquid asset buffers and non- marketable asset buffers already at Wave 2.

SUMMARY OF RESULTS

The survey results on liquidity management in the light of T2S can be summarised in the figure below, which shows all the descriptors, measured qualitatively in order of importance attributed by the responding financial institutions.
The survey took place during a sensitive transitional period (July 2015) which probably affected the overall results (However, the results estimated a significant increase in liquidity management efficiency.

Figure 29 - Management of intraday liquidity: system average

Relevance	Descriptor	Efficiency I semester 2016	∆ Efficiency II semester 2017
19%	Knowledge of the significant bank flows	HIGH	↑
18%	Intraday liquidity management active protection	HIGH	=
18%	Intraday liquidity management	HIGH	↑
12%	Liquidity Policy: adaptation to the principles of intraday liquidity management	MEDIUM	↑
12%	Intraday liquidity usage control	HIGH	↑
11%	Management of the ceilings for the purpose of monitoring the effectiveness of intraday liquidity and reducing the impact on liquidity	MEDIUM	↓
10%	Cost of collateral	MEDIUM/HIGH	=

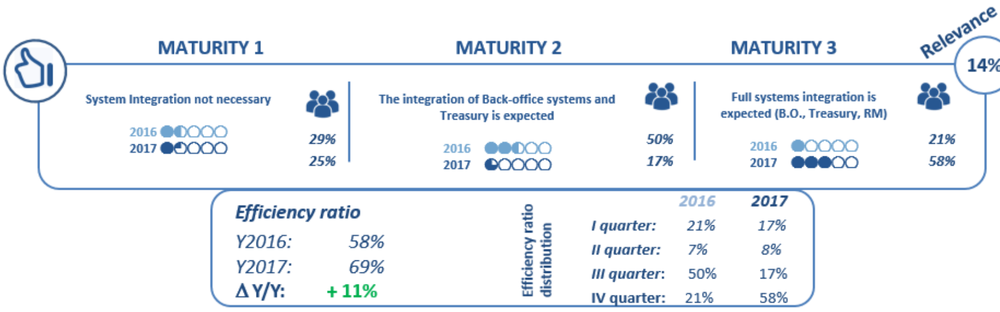
Source: CeTIF 2015

This year's results confirm the approach emerged from previous surveys namely that the Italian treasury achieved a high level of efficiency with regard to intraday liquidity management.
91% of respondents claimed that the integrated real-time intraday liquidity and collateral management model would be adopted amongst bank Treasuries.
Research has shown that the Treasuries of Italian banks achieved a high level of efficiency with regard to intraday liquidity management. However, there is room for improvement in technology and integration in the operating model.

5 - OPERATING MODEL

The third variable considered for the Treasury Maturity Model (TMM) is the operating model. Objective of the survey is to measure the level of efficiency achieved to manage efficiently assets and procedures and to measure the degree of automation required to enable liquidity and collateral management.

Figure 30 - Level of integration of systems for cross are information sharing, Securities Back Office, Treasury, Risk Management

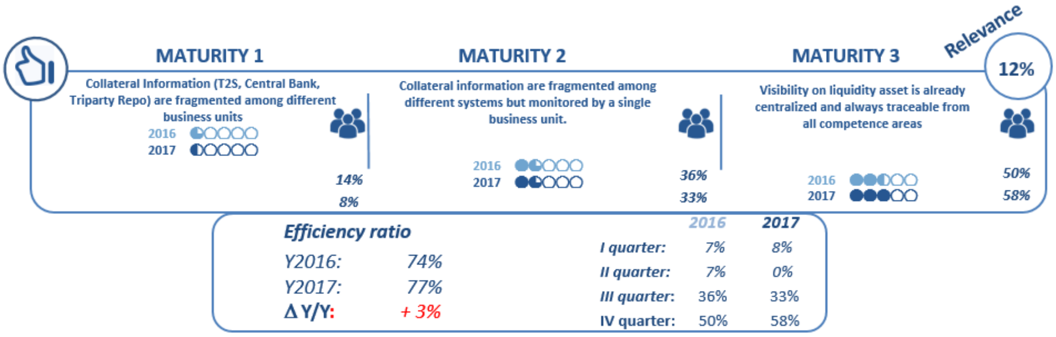


Source: CeTIF 2015

The survey evidenced that systems integration is the key element of interest and therefore will be subject to constant investment throughout 2017. The variable has the greatest relevance among the indicators analysed, (14%). The maturity level in 2016, is low (efficiency ratio of 58%) as the investment will become effective in 2017 with a significant increase (11%) to reach an efficiency ratio of 69%.

Thus, if for Wave 2 50% of respondents stated they would finalise the integration of back office systems and Treasury, only 21% included integration of risk management systems, the latter figure increasing to 58% for Wave 4. This result shows the intention to consolidate all systems allowing Treasury desks to have greater visibility.

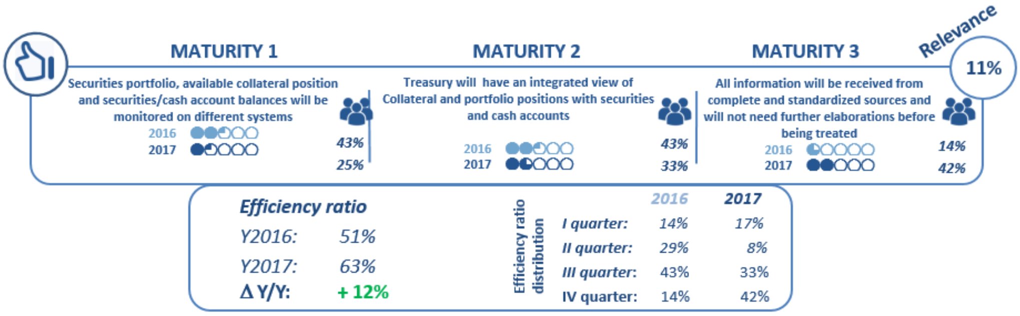
Figure 31 - Collateral Integration (T2S, Pooling, Triparty)



Source: CeTIF 2015

The integration issue is still a priority for collateral management, with a relevance of 12%. The efficiency ratio is 74%, highlighting a medium-high level of maturity with a significant increase in 2017 where it will reach 77%. The low increase is due to the latest investments, as 50% of respondents claimed that visibility on liquidity asset is already centralised. A further 8% of respondents currently manages information centrally but in a fragmented way, aiming to achieve a better level of integration in 2017.

Figure 32 - Integration of Intraday and securities / cash settlement

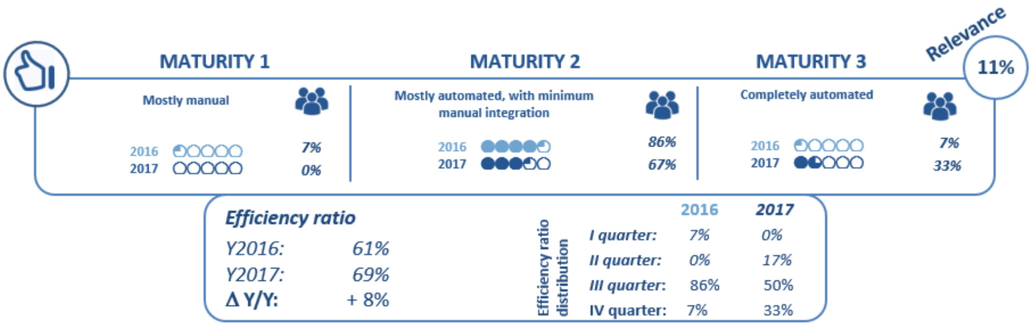


Source: CeTIF 2015

The integration between cash and collateral is a key element of the business model (11% relevance). In line with the first variable (cross-area integration), the level of maturity in 2016 is still not meeting the expectations, (51%), However, they expect to increase up to 63% by 2017, establishing the highest delta growth (12%) of the indicators analysed.

For 2016, most of respondents positioned themselves in the first two levels of maturity with a percentage of 43% each. Only 14% of respondents expect to achieve the highest degree of efficiency (fully standardised level of integration) in 2016, followed by a 28% in 2017 (42%). This significant increase is driven by two simultaneous factors: the almost complete migration of European regulation markets to Target2 Securities (easy integration) and the evolution of the regulatory scenario that requires a greater capacity for managing intraday liquidity, obtained precisely by means of this integration.

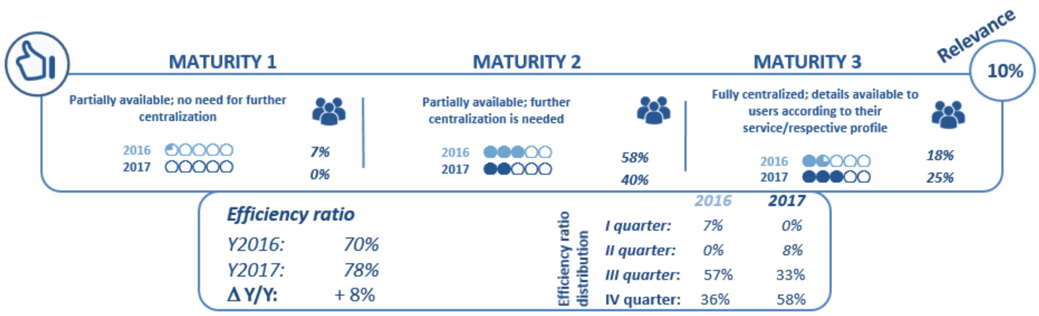
Figure 33 - Methods of collecting information related to intraday reporting



Source: CeTIF 2015

The results highlight an increasing concern over the management of intraday liquidity. Respondents have assigned a great relevance to the data collection methods applicable to the Intraday Reporting standards (11%). The efficiency ratio of 61% in 2016, with moderate increase up to 69% in 2017, combined with a consolidated level of maturity (although not yet optimal), are an indication of how strategic banks consider the management of such information even if they are not subject to the reporting regulation. 86% of participants stated that in 2016 they would gather all necessary information in a mostly automated way, but with a minimum of manual integration. In 2017, it will increase of a further 26% (from 7% to 33%) as respondents are planning to move towards a model of fully automated data collection. By 2017, no one will have a mostly manual management of this information.

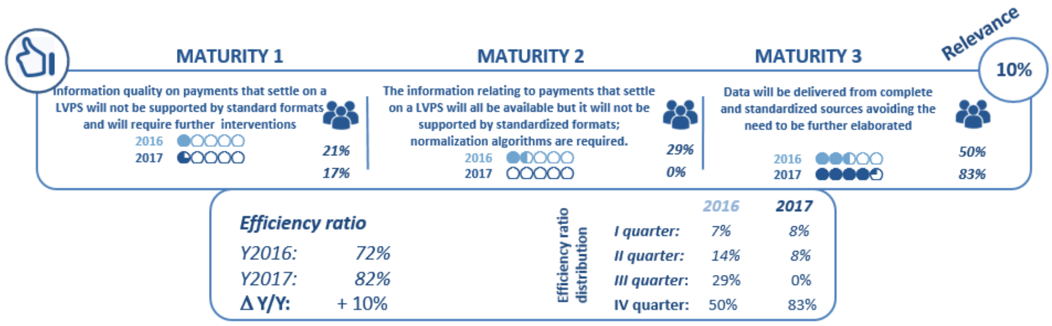
Figure 34 - Availability and monitoring of the information collected in a centralised vision that includes LVPS (e.g. TARGET2), Correspondent Banking and Liquid Assets



Source: CeTIF 2015

The centralised monitoring of information related to Large Volume Payment Systems (LVPS) and correspondent banking systems ranks in the middle average with 10% relevance. The efficiency ratio for 2016 stood at 70%, with an increase of 78% in 2017. The figures show a medium-high level of maturity reached by users in the intraday liquidity area. 57% of participants stated that in 2016 they expect to reach only a partial level of data centralisation. This percentage will drop down to 42% in 2017 where a 58% of respondents estimate to achieve an overall degree of centralisation (availability and monitoring) by marking an increase of 16% over the previous year.

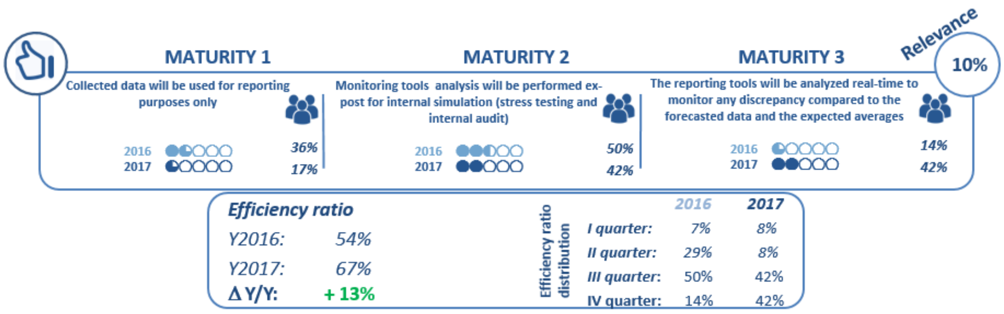
Figure 35 - LVPS: Quality of data collected



Source: CeTIF 2015

Relevance of data quality of payments got an average rank of 10% among the descriptors of the operating model. The efficiency ratio for 2016 is 72% with a significant increase to 82% in 2017 marking the highest level of maturity reached by all indicators. 50% of participants stated that by 2016 they expected to pull data from complete and standardised source. The percentage raises to 83% in 2017. Such a high maturity is a sign of how the level of knowledge of intraday payment flows is already deeply rooted and fundamental for the Treasury, so much so that it shows a constant evolution until 2017.

Figure 36 - Forecasting / stress test

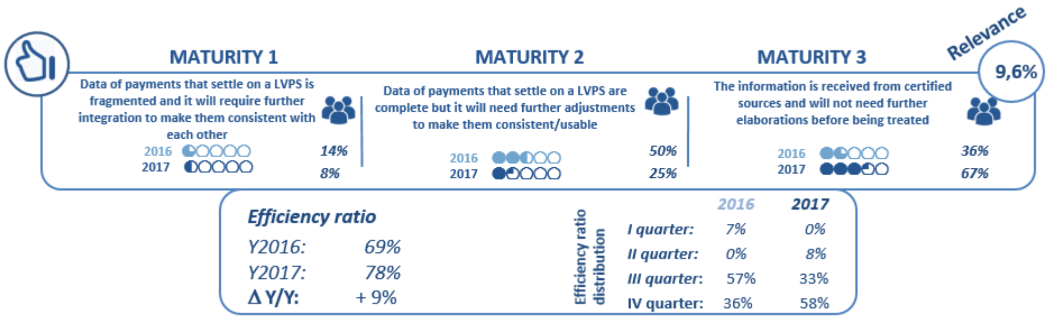


Source: CeTIF 2015

Despite an average relevance of 9.6% and a very low efficiency ratio of just 54% estimated for 2016, respondents expect to invest significantly in their forecasting and stress testing activities raising up to 67% in 2017 (marking an increase from 14% to 42%).
The third level of maturity indicates the need to monitoring data on a real-time basis by means of a more advanced technology. The roundtable flagged the challenges to gather data on both quantitative and qualitative aspects and how technology can support users to achieve better result in a faster, safer and more detailed way.
Participants explained that the purpose of monitoring goes beyond the compliance with the reporting regulations, but extends to identify the critical aspects of their activities applying internal simulation of stress scenarios.
50% of respondents answered that by 2016 they expect to use the monitoring tools to run internal tests while 36% will limit the usage of collected data for reporting purposes only. In 2017,

the approach will change substantially, as 42% of users estimate to monitor payment flows on a real *time* basis and remaining 42% to apply data to simulate internal stress tests.

Figure 37 - LVPS (e.g. TARGET2): Availability of data collected

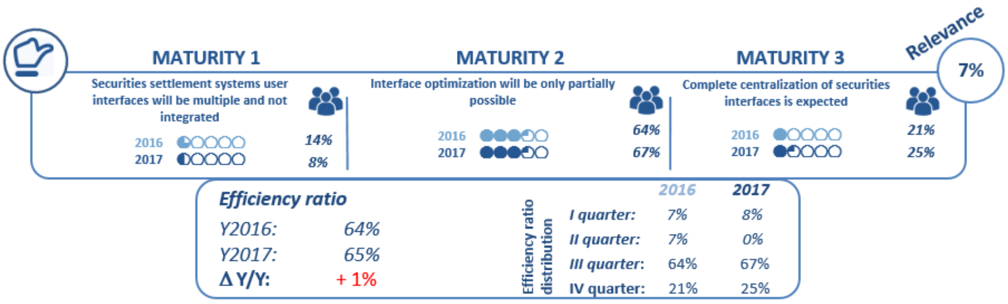


Source: CeTIF 2015

The results about the subject indicator (average relevance of 9.6%) show an average efficiency ratio of 69% in 2016, with an increase up to 78% in 2017.

In 2016, 50% of respondents are able to collect complete information on LVPS payments. However, there is still the need to be further adjust data in order to make it consistent. In 2017 67% of respondents aim to achieve the highest level of maturity, implementing a fully automated information collection method.

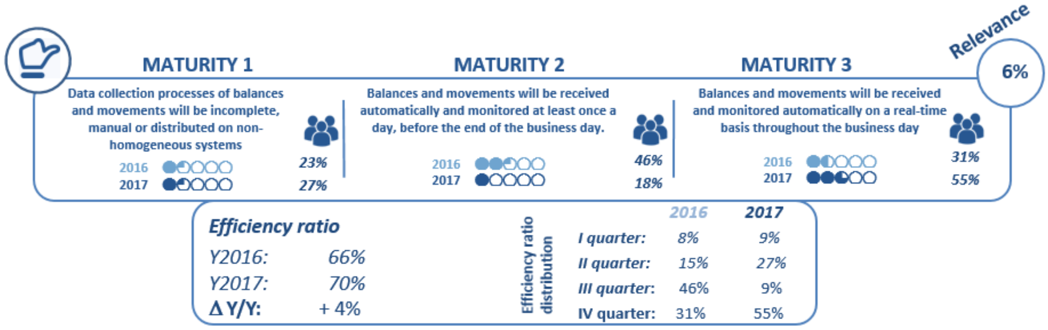
Figure 38 - Reduction of user interfaces for Securities Settlement



Source: CeTIF 2015

Reducing interfaces for securities settlement is considered less strategic (7% weighting). This explains why the average efficiency ratio in 2016 (64%) will have a minimal increase (1%) in 2017. The majority of respondents believe that interface optimisation can be partially implemented during the next Migration Wave of T2S (efficiency ratio of 64% in Wave 2 and 67% in Wave 4). Only 25% of respondents expect a complete centralisation of securities interfaces after the major European markets migrate to T2S (end 2017).

Figure 39 - Correspondent: Multi-currency exposure levels and information completeness provided by the correspondent bank



Source: CeTIF 2015

The significance given to the management of information relating to correspondent banking activities is medium-low with a value of 6%. The efficiency ratio for 2016 is 66% with a slight increase to 70% in 2017. 43% of respondents expect to monitor correspondent accounts balances and movements once a day in 2016, while 31% state they have real-time visibility throughout the business day. In 2017, 27% state they will continue having an incomplete and inconsistent view of correspondent accounts while 55% expect to get real-time visibility. The data show a minimal change in liquidity monitoring of related to correspondent banking, due to the limitations of counter parties in providing real-time information and the scarce use of this service.

SUMMARY OF RESULTS

The results obtained on the operating model can be summarised in the following table, which lists all the descriptors measured qualitatively in order of importance attributed by responding financial institutions.

Figure 40 - Operating Model: system average

Relevance	Descriptor	Efficiency I semester 2016	Δ Efficiency II semester 2017
14%	Level of integration of systems for cross are information sharing, Securities Back Office, Treasury, Risk Management	MEDIUM	↑
12%	Collateral Integration (T2S, Pooling, Triparty)	**HIGH**	=
11%	Integration of Intraday and securities / cash settlement	MEDIUM	↑
11%	Methods of collecting information related to intraday reporting	MEDIUM-HIGH	=
10%	Availability and monitoring of the information collected in a centralised vision that includes LVPS (e.g. TARGET2), Correspondent Banking and Liquid Assets	**HIGH**	=
10%	LVPS: Quality of data collected	**HIGH**	↑
10%	LVPS (e.g. TARGET2): Availability of data collected	MEDIUM-HIGH	↑
9%	Forecasting / stress test	MEDIUM	↑
7%	Reduction of user interfaces for Securities Settlement	MEDIUM-HIGH	=
6%	Correspondent: Multi-currency exposure levels and information completeness provided by the correspondent bank	MEDIUM-HIGH	=

Source: CeTIF 2015

This year's results confirm that the ongoing investments on the systems integration is a top priority. In line with the findings of previous observatories, the level of integration achieved so far evolves by extending its scope to other areas, such as Risk Management (horizontal evolution), to improve the quality of the data collected and the automated systems involved (vertical evolution). Having integrated and useful information for the various services makes the operating model efficient and responsive, allowing the Treasury to respond more easily to the needs of internal and external bank stakeholders (i.e. regulators).

All parties involved in the study agreed unanimously that systems integration represents a first step in getting a complete picture of the operational scenario, an essential and necessary basis for carrying out the next evolution of the model itself. The development also meets the need of putting an end to fragmentation at the operational level ("treasury and collateral management for the trading post") faced with the introduction of T2S.

Results show the attention to quality and quantity of data collected, which combined with the implementation of advanced technology, can support accurate forecasting and simulation of stress testing

This aspect is more important for financial institution who will need to produce the reporting for the regulator and thus are under specific pressure to conduct internal analysis.
However, despite the fact that the quality of data necessary for these functions has now reached sufficient maturity, implementation of the data still has a low efficiency ratio, despite it being the indicator with the largest increase between 2016 and 2017 (+13%), at the end of the survey period the average value stands at only 67.2%.

Other important aspects still "works in progress", in the analysed period, are:

- The integration of systems for cross-area information (maximum relevance between variables observed, greater than 14%);
- The integrated management of intraday cash / securities settlement.

Both aspects are the subject of investment but, although their level of maturity represents a significant increase with an efficiency ratio difference greater than 11%, the result in 2017 does not seem to be definitive with an efficiency ratio of less than 70%.

This can be interpreted as the result of an ongoing exercise. The needs of collateral management had already given a push toward this direction, and now, with the mandatory implementation of Target2 Securities, brokers had the opportunity to develop an integrated management system for cash and securities settlement.
During the meetings of the Observatory, it was made clear that the main benefit of the new securities settlement platform is the opportunity to invest in changing / developing a new business model. The investment made today justify the implementation costs by delivering a stable operational model, which will bring significant benefits in the future.
The complexity of T2S so far is unmatched among other European projects. Between now and 2017, an appropriate approach to its management is an opportunity to apply a new business model, necessary not only for managing the new regulation platform, but to meet the needs of an evolving market, in which players need to play by different rules than in the current situation.

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