

Evaluation of clearing channels

Introduction

Prior to the mandatory migration to Europe-wide schemes and standards for mass credit transfers and direct debits in euro stipulated by the SEPA regulation, each European community had its own national schemes and standards for handling euro retail payments. Accordingly, the domestic clearing arrangements used for processing these national payments differed in their conceptual and organisational approach as well as in terms of the processing and interface standards they used.

While the national schemes and standards have given way to uniform SEPA schemes and standards, there are still different conceptual approaches in place across Europe today with regard to the clearing arrangements used for processing SEPA transactions. Following the successful SEPA changeover in the Eurozone, banks are faced with a vaster choice of infrastructure providers responding to their clearing and settlement needs in a post-migration payments landscape; at the same time, this more integrated landscape offers opportunities for banks to reduce and simplify their clearing and settlement arrangements.

Against this background, the present document has been designed to support banks in their individual analysis of the current cost of their current clearing and settlement arrangements as well as in rethinking their respective clearing strategies.

To enable a practical cost comparison of different clearing models it is important to first determine all relevant cost elements

including the direct and the hidden indirect costs and to then calculate the costs per transaction.

It goes without saying that a strategic decision on clearing channels to be used is not only taken based on the cost aspects. Other key points of consideration include the fact that CSMs differ in the functionalities and cut-offs they offer, as well as in levels of robustness and resiliency and in the direct reach they provide.

Another big cost saving factor for banks to be taken into account is the netting effect each bank could have when counter parties are sending/receiving in the same system.

Goal of this document

The present questionnaire is intended to be used as an **evaluation tool** by banks wishing to reassess and compare the costs of their current clearing infrastructure and their underlying strategy.

The questionnaire should enable each bank to make a detailed cost-based analysis of all processes directly and indirectly involved in the clearing process and the related operations. Naturally, these analyses are based on the underlying business model of each individual bank and therefore not only direct clearing related costs have to be considered, but the indirect costs occurring in other departments as well.

The approach

The implementation of clearing channels by a bank is accompanied by significant costs, which have to be considered and paid for.

In the present survey, the questions regarding the cost components of clearing are grouped in two major blocks:

- One-off costs required for the initial implementation and installation of a clearing channel
- Running costs related to operating and maintaining the system and to be compliant to changes in regulations

Both blocks are separated into internal and external costs, which arise from internally provided services and infrastructure or externally bought-in or outsourced services and infrastructure. Especially internal costs are often undervalued or overseen due to the difficulty of quantifying the exact costs.

The **internal costs** highlight the fundamental installation costs and the cost of running a new clearing system: hardware, software, the testing of the software, the project costs for the implementation project team, network connections, backup-systems, and the provision of collateral (if needed).

An increase of the number of clearing systems leads to more complex processes throughout the whole organisation, during the implementation and afterwards. This has to be organised from scratch until the go-live and is here reflected in the **project costs**. The staff that supervises the already existing clearing systems has to be trained on the job and simultaneously run the other systems. Every further change in each clearing channel increases the need and

timing of regular training of everyone involved. This involves not only the payments department, but everyone from the back office to the central liquidity management.

In addition to the growing complexity of a larger number of systems in use and to administer, the clearing systems themselves are constantly changing. This is a multiplier for complexity.

To boost the timing of liquidity provision and finality of payments, the numbers of clearing and settlement cycles are growing, which leads to a more complex liquidity management, higher risks, a lower netting effect, and a more difficult monitoring of all ongoing processes. Gross and net settlement systems make liquidity provision and liquidity management more complex.

Another aspect of this review aims at delivering a deeper view on costs that are often overseen or ignored because they are not totally obvious.

Implementing and running a clearing channel involves several departments of the bank that are not directly tied to the payments department. The choice and first installation of a new clearing system involves the **legal** department to review contracts and agreements, as the central **risk management** must evaluate risks of processes and the particular counterpart, as well as regulatory aspects for clearing and settlement processes and inherent systemic contingency risks. Every future change in contracts and license agreements has to be checked as well, and the new system and processes must be included in regular audit processes. Additionally, there can be costs for **external consulting**, assessments, and **audits**.

The involvement of the audit department and external auditors should be considered both for set-up and while operating the clearing channels. The implementation of new processes and the software tied to them has to be reviewed and verified constantly. These recurring audits have to involve risk assessments to cover contingency and stress tests. The growing importance and complexity of compliance needs make great demands on the risk department.

Another relevant factor for the evaluation is the **external costs** for clearing. These determine the work for implementing and running a clearing channel that cannot or will not be provided by internal departments, for example due to limited resources or the nonrecurring need within the bank.

Examples of external costs are costs for the provision of collateral, external review of contracts, consulting costs or external testing activities and any related project costs. Besides that, there are recurring fees to the CSM to be considered in addition to transaction-based costs. All these cost factors have to be evaluated in order to determine the possible cost reductions generated by the consolidation or change of clearing channels.

Software for interfaces and routing mechanisms has to be externally purchased or developed in-house. After the initial purchase, there are high maintenance costs to keep the system running and to implement all regulatory and performance-wise changes to be up to date.

The implementation and the regular changes in the software involve a constant investment in working and in audit proof back-up systems to cover worst case scenarios and to guarantee uninterrupted processes.

The constant changes of the used software, especially due to the regulatory environment, increase the internal and external **testing costs**. These software changes, functional and technical, have to be dealt with. Every change in software and processes has to be documented and tested. This need for regular testing after the initial installation of the software demands a well-structured test team, which analyses changes and guarantees a minimal occurrence of problems after an update or a process change in the main software and all connected delivering or receiving systems. These tests have to be standardised and organised to always test all functional and technical aspects with every go-live of a larger change.

The already constant and fast-paced changes of the last few years will probably increase in the future, rather than slowing down.

Chapter 3 covers key decision factors that are more qualitative than quantitative. The questions focus on the requirements of clearing systems as well as the banks' own assessment of the future development of the market for clearing systems. These questions should help decision-makers to focus the view on the topic and to help identify non-quantifiable arguments in the self-assessment.

1. Evaluation of the usage of clearing channels

The first chapter intends to establish the basics about the current and future usage of different clearing channels.

In order to later determine and compare the costs of different clearing channels, it is important to determine the throughput of each clearing channel and of the whole system.

With multiple clearing channels in different countries, there are different cost components to consider regarding the complexity and load.

1.1 Current usage of clearing channels

Which clearing channels are currently used for clearing SEPA transactions?

(Please check the used clearing channels in the first column and the importance of the particular channel in the other columns.)

Clearing channels	in use	important	less important
EBA CLEARING STEP2 system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National central bank clearing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other national CSM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bilateral clearing (e.g. "Garagenclearing")	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inhouse Clearing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How many transactions are cleared via the particular clearing channel? (in 1,000 Tx)

Clearing channels	SCT	SDD	Sum
EBA CLEARING STEP2 system			
National central bank clearing			
Other national CSM			
Bilateral clearing (e.g. "Garagenclearing")			
Inhouse Clearing			
Other			
Other			
Other			
Sum			

CL1 to CL4 represent the main clearing system descending to the least important system

1.2 Future usage of clearing channels

Do you expect to abandon or to add clearing channels in the future?

Abandonment of at least one CSM.	<input type="checkbox"/>
Addition of at least one.	<input type="checkbox"/>
Changes.	

Do you have any specific wishes for your currently used clearing channels? If yes, please specify.

Are you considering a partly or full consolidation of your different national clearing channels?
(only to be answered if using clearing channels in different countries)

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

If yes, which?

2. Costs of clearing channels

This chapter of the survey gives the opportunity to determine the costs of installing and running different clearing systems.

There are two major parts, the one-off costs for initial installation of a clearing channel into the existing infrastructure and the recurring costs for running the system.

These costs should be understood as the additional costs, which derive from the specific clearing channel.

Both parts, the one-off costs as well as the running costs are again split into 'internal' and 'external' costs.

This will help to understand the costs that occur internally during the implementation and the continuous business activity afterwards.

The internal costs cover the hardware and software costs, as well as the internal testing activities. Further costs covered are the general project costs, the provision of network connectivity, backup systems, and the initial provision of collateral (if needed).

2.1 One-off costs

Internal one-off costs:

This part specifically covers the one-time costs for the initial implementation of a clearing channel into an existing clearing infrastructure.

The one-off costs are split between the internal and external costs:

Internal costs refer to the work done by different departments of the bank and can be approximated with internal cost rates. An example would be the costs for the IT support staff, which is already in place, but has to be trained on the new systems and new software and has therefore a higher workload.

A huge block of costs will be created by the legal, risk and audit departments which have to check each new clearing approach. In addition to the costs mentioned above, there are costs and effort required to set-up and run control functions.

A typical external cost during the implementation can be an external audit or outsourced consulting services, e. g. testing. These services are needed only once while implementing the new system and can be provided from a contractor.

Important note:

The costs to be specified in the tables below should be understood as the marginal costs which occur additionally to the "basic" clearing activities already in use.

Which <u>internal</u> one-off costs did occur with the implementation of clearing channels? (in 1,000 €)				
Cost category	Channel 1	Channel 2	Channel 3	Channel 4
Hardware				
Server				
PC-Systems				
Software				
General software adjustments				
Interfaces (APIs)				
File transfer infrastructure (SWIFT, EBICS, etc.)				
Testing				
Integration tests				
Load tests / stress tests				
Functional tests				
Project costs for initial implementation				
General project costs (time * daily costs)				
Implementation of new processes				
Documentation of new processes				
Training of staff				
Contract management				
Risk management				
Legal review				
Internal audits				
Process alignment				
In-house training				
Provision of network connections				
Link implementation costs (SWIFT, EBICS, etc.)				
Redundancy				
Internal IT support				
Audit-proof data back-up systems				
Server installation				
Licences				
Collateral provision (internal allocation)				
Other costs				
Sum of internal one-off costs				

External one-off costs:

During the initial implementation, there are multiple external one-off costs that are recurring for every additional clearing channel but not in continuous operation.

Besides the non-recurring fees to the particular clearinghouse, there are costs for the initial provision of collateral, if required. This includes, e.g. the costs for personnel entrusted with this matter and the related management attention and risk management. Not included are the running opportunity costs for providing the collateral in the long-run.

The external contract management are costs regarding external law firms, which review contracts and agreements made with contractors, software vendors, and the particular CSM.

With every implementation of new IT systems, testing is an important part of the process. It is important to distinguish between the initial testing and regular functional tests afterwards.

The cost positions for 'External Auditor' and 'External project costs' assume the assistance of external auditing firms, consulting firms, and project managers involved in the implementation process.

Which <u>external</u> one-off costs did occur with the implementation of clearing channels? (in 1,000 €)				
Cost category	Channel 1	Channel 2	Channel 3	Channel 4
One-off connectivity fees to clearinghouse				
Collateral provision Depending on the clearing system, there can be a considerable amount of collateral to be provided				
Procurement costs for IT				
External contract management				
External project costs				
Testing (external contractor)				
Integration tests				
Load tests / stress tests				
Functional tests				
External auditor				
Other costs				
Sum of external one-off costs				
Sum of internal one-off costs				
Sum of external one-off costs				
Sum of total one-off costs				

2.2 Running costs for the system

The first part of this chapter focussed on the one-off costs for a clearing system, while this second part aims at a better understanding of the running costs.

While the implementation costs are one time (per clearing channel), the operational costs are recurring and increasing the more clearing channels are in use.

While cost positions like hardware and software are more or less obvious, other costs are rarely calculated or overseen. Regular testing activities for changes in software updates and stress tests are relatively simple to calculate with "daily costs * time".

The calculation of the costs for liquidity management is more complicated, due to the fact that there is a running liquidity management team, which has a higher and more complex workload the higher the number is of clearing systems in use. Not only the pure provision of liquidity is costly, but the intraday-liquidity needs are complex to manage and have to be considered into the cost calculation.

The simultaneous operation of more than one clearing channel complicates many processes and increases the involvement of other departments like the risk management division or compliance.

What are the <u>internal</u> costs of a clearing channel? (in 1,000 €)				
Cost category	Channel 1	Channel 2	Channel 3	Channel 4
Hardware				
Modification of existing hardware				
Installation of test systems				
Backup hardware				
Maintenance				
Software				
Purchase of new software				
Modification of existing software				
Installation of test systems				
Updates				
Software licenses				
Testing				
The implementation of new clearing channels and APIs, as well as changes in the running systems increase the complexity of dependencies in software regarding performance, stability, and security. This demands an ongoing test management to guarantee best possible performance and stability.				
Integration tests				
Load tests / stress tests				
Functional tests				

Cost category	Channel 1	Channel 2	Channel 3	Channel 4
Network operations The demand for stable network operations and monitoring to prevent incidents from happening increases with a more complex network of channels and systems.				
Integration of new systems				
Traffic costs				
Network monitoring				
Operations The costs of personnel and the work it does increases with the number of clearing channels in use. The handling of incidents and the account management is more complex and incidents are more probable, e.g. with returns in bilateral clearing with individual contracts and agreements.				
Personnel costs				
Handling and monitoring of bilateral clearing				
Incident management				
Account reconciliation				
Routing table management				
Continuous change management With new regulations and new processes in clearing, there is a constant need of training of staff and documentation of process changes.				
Continuous staff training				
Continuous process documentation				
Auditing The focus is on the costs of regular audits carried out by an internal department. These costs increase with the growing complexity and higher number of clearing channels in use.				
Internal audits				
Activity monitoring				
Risk management This reflects the costs of work done by the internal risk management department dealing with the multiple agreements in bilateral clearing and the associated risk.				
Liquidity management The costs of liquidity provision and management (e.g. 1 person full time plus surcharge for every additional clearing channel) increase with the number of clearing channels in use				
Liquidity provision (amount, settlement time & method)				
Liquidity monitoring & handling (higher complexity with more CSMs)				
Contract management This should reflect the costs for internal advisory from lawyers regarding changes in the contracts between the bank and the CSM or banks in bilateral clearing				

Cost category	Channel 1	Channel 2	Channel 3	Channel 4
Compliance, contingency, operational risk This reflects amongst others the cost of regular stress tests, worst case scenarios, and the handling and analysis of operational risk.				
Emergency scenario training				
Continuous risk monitoring				
Other costs				
Sum of internal running costs				

The calculation of running external costs is easier and more transparent than the identification and calculation of internal costs positions.

Relevant cost positions are the transaction costs (in- & outbound) to CSM, the costs for the data transfer itself, fees for the CSM and the opportunity costs of capital provision for possible provision of collateral. This implies a lower yield on collateral provision than otherwise possible.

Costs for maintenance and consulting are difficult to split between systems, but it has to be considered, that different clearing channels are differing in complexity and therefore related expenditures.

What are the <u>external</u> costs of a clearing channel? (in 1,000 €)				
Cost category	Channel 1	Channel 2	Channel 3	Channel 4
Transaction costs to CSM (in- & outgoing)				
Transaction costs for data transfer				
e.g. SWIFT & EBICS fees				
File transfer costs				
Dedicated network costs				
Recurring fees to CSM				
Collateral provision (Opportunity costs of capital provision)				
Maintenance				
Hardware (e.g. replacements, upgrades)				
Software (e.g. updates, upgrades, licences)				
Service contracts				
Backup services				
Consulting				
External auditing				
Contract review				
Legal advisory for contract changes				
Market changes				
Other costs				
Sum of external running costs				

Cost category	Channel 1	Channel 2	Channel 3	Channel 4
Sum of internal running costs				
Sum of external running costs				
Sum of total running costs				
Sum of total one-off costs				
Sum of total running costs				
Total costs per clearing channel				
Sum of transactions per clearing channel from chapter 1				
Total costs / sum of transactions (per clearing channel)				

3. Key decision factors for clearing channels

The following two tables are linked.

The first table establishes the importance of several key decision factors, while the second table identifies the clearing channels that fulfil most of the identified criteria.

How do you classify the importance of several key decision factors regarding the selection of a clearing channel?				
Key decision factor	very important	important	less important	irrelevant
Fast and secure account settlement (Liquidity management, intraday liquidity)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of clearing cycles (Response time, fast finality)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reachability of all counterparts				
System stability (Redundancy, incident management)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of integration (Detailed description of APIs, well-proven integration processes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Key decision factor	very important	important	less important	irrelevant
Performance and availability				
Robustness and liability of the system in case of a member default (well-defined rules regarding risk avoidance and additional payment liabilities)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information & communication policies (active customer relations, quick response to incidents)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adequate and transparent governance- and participation rights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clearly arranged contracts (with preferably few changes over time)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transparent documentation of processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reliable change management processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flexible reaction to market changes and demands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Simple and transparent SDD execution in one bulk and a single settlement (one tier cost system, minimal risk)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

To what extent are the above stated decision factors covered by your clearing channel?
(1 - complete satisfaction ... 4 - complete dissatisfaction)

Cost category	Channel 1	Channel 2	Channel 3	Channel 4
Fast and secure account settlement (Liquidity management, intraday liquidity)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of clearing cycles (Response time, fast finality)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reachability of all counterparts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System stability (Redundancy, incident management)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of integration (Detailed description of APIs, well-proven integration processes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performance and availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Robustness and liability of the system in case of a member default (well-defined rules regarding risk avoidance and additional payment liabilities)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information & communication policies (active customer relations, quick response to incidents)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adequate and transparent governance- and participation rights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Cost category	Channel1	Channel2	Channel3	Channel4
Clearly arranged contracts (with preferably few changes over time)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transparent documentation of processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reliable change management processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flexible reaction to market changes and demands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Simple and transparent SDD execution in one bulk and a single settlement (one tier cost system, minimal risk)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How would you determine the increase of costs and complexity of processes due to the use of multiple clearing systems, e.g. the costs for resolving conflicts related to transaction returns in different clearing systems with varying regulations and contracts?

Number of used clearing channels	1	2	3	4 or more
Irrelevant / economically fully justifiable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manageable / reasonably justifiable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Significant / unjustifiable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Is the use of your domestic clearing channel indispensable for your domestic mass market clearing?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

If yes, why?

Are multiple clearing channels currently used in order to generate additional business as a service provider (Entry- & Exitpoint) for third-party banks?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

Are multiple (especially national) clearing channels currently used to cover residual services, e.g. cheque clearing?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

How do you consider the yearly additional expenses using multiple clearing channels versus one centralised solution?

0 - 5 %	<input type="checkbox"/>
5 - 10 %	<input type="checkbox"/>
10 - 20 %	<input type="checkbox"/>
more than 20 %	<input type="checkbox"/>

How do you weight the following attributes of gross and net mass clearing systems against the background of your business model?
(please mark the applicable)

Kind of settlement	gross	net
Complexity of handling	rather high <input type="checkbox"/> rather low <input type="checkbox"/>	rather high <input type="checkbox"/> rather low <input type="checkbox"/>
Speed of liquidity provision	rather high <input type="checkbox"/> rather low <input type="checkbox"/>	rather high <input type="checkbox"/> rather low <input type="checkbox"/>
Intraday liquidity needs	rather high <input type="checkbox"/> rather low <input type="checkbox"/>	rather high <input type="checkbox"/> rather low <input type="checkbox"/>
Complexity of liquidity management	rather high <input type="checkbox"/> rather low <input type="checkbox"/>	rather high <input type="checkbox"/> rather low <input type="checkbox"/>

Overall, do you prefer gross or net clearing systems for bulk payments?

Gross	<input type="checkbox"/>
Net	<input type="checkbox"/>

Comments

4. Future developments in the European clearing market

Considering the final standardisation of the European payments market and the cost-intensive and complex European clearing processes.

Do you regard these changes a chance and/or a necessity for an adjustment of your current clearing strategy?

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

Yes, because...

Which circumstances would lead you to rethink your current strategy and reduce the number of clearing channels?

Significantly lower transaction fees	
< 10 %	<input type="checkbox"/>
10 - 20 %	<input type="checkbox"/>
20 - 50 %	<input type="checkbox"/>
The reachability of all European counterparts is ensured via one single CSM	<input type="checkbox"/>
Absolute reliability and stability of a single system	<input type="checkbox"/>
Significantly reduced complexity of all processes	<input type="checkbox"/>
The possibility of bilateral clearing with the own main partner banks	<input type="checkbox"/>

Do you expect a future consolidation of the European clearing infrastructure?
(EURO & NON-EURO)

No	<input type="checkbox"/>
Yes	<input type="checkbox"/>

Yes, because...