Regulatory Developments in the Securities Services Chain

Main Changes Experienced by the Securities Services Industry as a Result of Regulatory Developments

9 August 2018

Abstract

In 2012, ISSA published a Report on "Regulatory Trends and Initiatives Affecting Custodians, Clearers and (I)CSDs; Impacts and Implications". This Report was written in the relatively recent context of the 2008 financial crisis.

ISSA's follow-up Report of November 2017 provided an overview of the main progress made in the various regulatory initiatives undertaken and of the new regulatory trends underway for the securities industry over the last 5 years.

This new Report appraises as to how the securities services industry has adapted to these various evolutions, notably by modifying internal organization and operational processing, but also by introducing new types of client services.

Target Audience

This paper is addressed to market intermediaries, such as custodian banks, clearers, brokers as well as to asset managers, issuers, industry associations / groups, market infrastructures and regulators.

Acknowledgements

This report is the result of efforts by a team of experts drawn from ISSA Operating Committee members and other ISSA participating member firms. All participants supplied valuable market information. The names of participating firms and the individual contributors are listed in chapter 5. The ISSA Executive Board wishes to thank all supporters for their contributions as well as their firms having enabled their participation.

Disclaimer

It is ISSA’s intention that this report should be updated periodically. This document does not represent professional or legal advice and will be subject to changes in regulation, interpretation, or practice.

None of the products, services, practices or standards referenced or set out in this report are intended to be prescriptive for market participants. Therefore they should not be viewed as express or implied required market practice. Instead they are meant to be informative reference points which may help market participants manage the challenges in today's securities services environment.

Neither ISSA nor the members of ISSA's Working Group listed in chapter 5 of this report warrant the accuracy or completeness of the information or analysis contained in this report.

International Securities Services Association ISSA
c/o UBS Switzerland AG
EUR1 – EG2230, P.O. Box
CH-8098 Zurich, Switzerland
Contact +41 (0)44 239 91 94
issa@issanet.org

Table of Contents

Introduction

In June 2012 the International Securities Services Association (ISSA) issued a comprehensive Report reviewing the regulatory changes triggered since the 2008 financial crisis in the various geographic regions that affect the securities industry. This 2012 Report analyzed the impact of new regulatory initiatives adopted on custodians and financial market infrastructures in terms of additional cost, changed risk responsibilities and the creation of new opportunities.

In view of progress made in the regulatory sphere over the last years, ISSA members agreed that an update of the Report would be of great value for all types of market participants. As was the case with the Report issued in 2012, the scope of the new review has been restricted to regulatory developments for securities services providers, at both international and regional level.

At the same time the approach retained for the update has been slightly different from the initial one. Instead of publishing a single new Report that would cover both regulatory developments and their implications for securities service providers, the 2017 / 2018 review has been articulated around two distinct Reports:

- A first one presenting exclusively the regulatory developments that need to be taken into consideration by securities services providers, at both international and regional level. This analysis seeks to describe how regulators' priorities have evolved over the last years, how their recommendations have been enforced and how these developments are expected to trend in the near future.
- A second one focusing on appraising how the securities services industry has adapted to these various evolutions, notably by modifying internal organization structures, operational processes and in some cases by introducing new types of services to their clients. More recent and future developments are also taken into consideration, especially when they may incur new orientations compared to those which prevailed following the financial crisis.

The main findings from the first Report published in November 2017 (Report 1) on regulatory developments can be summarized as follows:

- Regulators' priorities have globally remained stable over the last years with strong focus on resilience of financial participants, enhanced transparency towards both supervisors and end-investors and increased investor and asset protection.
- While completing work undertaken in the aftermath of the financial crisis, regulators have also initiated new work streams to address full concerns resulting from the crisis (notably with reforms on the shadow banking system and on recovery and resolution plans for financial market infrastructures). They have also started to explore totally new areas which have emerged as potential game changers in the future, in particular new technologies and sustainable finance.
- Considerable progress has been made in terms of effective implementation (with adoption of final rules in many circumstances). These implementation measures have exposed the very concrete challenges that financial participants are faced with by the new regulatory framework.
- In addition, even though the general principles and public policy concerns are quite common and universal, there are substantial differences in terms of local implementation, for instance with respect to effective timeline, scope of application and regulators' requests on reporting.

In this context, all types of market participants have become subject to new sets of rules that have significantly transformed the regulatory landscape for financial intermediaries.

This Report (which is the second and final part of the 2017 / 2018 review) is dedicated to this transformation and is structured as follows:

- **Section 1** will present the main impacts on post-trade processing from the extensive regulatory actions undertaken in all financial sectors.
- **Section 2** will elaborate on how stakeholders have adapted to this new framework through various types of actions, largely aiming to address their clients' new expectations and constraints. Some adaptations have resulted in structural changes to adapt to the new framework and to maintain competitiveness.
- **Section 3** will focus on the new challenges that securities services providers have to face in that new context. It is obvious that some rules have also produced some unintended consequences for both post-trade players and all financial participants. The full effects of new regulation associated with the emergence of new trends are still to be tested in several areas and will probably result in structural impacts on the traditional business models.

The Report will conclude with the main challenges for regulators in the near future in view of current priorities. Regulators will continue to have to strike the right balance between their several priorities. These may prove to be contradictory in some circumstances, not least in the resilience and stability of the financial sector versus its economic growth and innovation. This Report concludes with a summary of main issues identified through the various sections while keeping in mind that all financial participants (including securities services providers) are still developing their response to a fast-moving regulatory environment where continuous adaptation is essential to remain profitable and competitive.

1. Traditional Business Models of Securities Services Providers have Significantly Evolved

As presented in Report 1, securities services providers, as any other category of securities market participants, have been directly subject to major regulatory reforms in the aftermath of the financial crisis. As a consequence, securities services providers have had no other choice than to adapt the way they provide core services to their clients through revision and extension in some cases of the existing models and offering more choice for their clients. A key driver for regulators in this area has been to improve investor protection through reinforcing risk management policies, enhancing transparency and increasing the general level of safety for assets owned by end-investors.

New regulatory requirements applicable to other market participants (who are the clients of securities servicers) have been critical in the transformation of securities services providers' business as securities servicers have had to align with clients' requirements and expectations.

The move to regulate markets and financial market infrastructures is another major regulatory initiative that will impact securities servicers and that will have major implications in the post-trade environment.

The search for more efficiency has remained also a central element with different initiatives around enhanced harmonization and standardization. The development of inter-operability capacities between central securities depositories as well as the increased regulation of such depositories under the CSDR in Europe (as well as interoperability between the EU and US depositories and among Asian depositories such as between China and Hong Kong) has opened opportunities as well as creating operational and regulatory challenges for the industry.

In addition to key regulations that need to be considered for a relevant vision of implications for post-trade services (as a reminder of the first Report), this section also identifies the main changes observed for the provision of traditional core services and then focuses on main positive outcomes stemming from this new post-trade environment. The intention is not to be comprehensive and to present an exhaustive list of all relevant regulations and their impacts on post-trading, but to select the aspects that ISSA sees as major ones and which may really create a new paradigm for the post-trade landscape.

1.1 Improved Investor Protection and Risk Mitigation

Improved investor protection (including risk mitigation) has been the most important regulatory stream for securities services providers. This has been defined in very different ways across the various regulatory initiatives; ISSA has retained the following ones as most relevant for post-trading.

1.1.1 Strong Focus on Risk-Management Policies

As described in the first Report, all securities services providers have been required to put in place a comprehensive risk management framework which covers all categories of risks, with inclusion of new types of risks in some situations. In addition, risk management is now indivisible from new requirements on transparency as all risk management policies and procedures have to be properly documented and widely disclosed to both investors and regulators. The policy makers' intention in this area has been to trigger a profound cultural change in the way business is conducted, with the objective to preserve market integrity by identifying and monitoring potential conflicts of interests and to address these issues with appropriate independent organizational structure principles. As a consequence,

these new rules have required a strong adaptive effort for all participants with impacts not only on their internal organization, but also their operating models and the services offered to clients. This has notably been the case for Financial Market Infrastructures (FMIs) as a result of the 2012 CPMI-IOSCO Principles for Financial Market Infrastructures (PFMIs), transposed in different ways at regional and local level.

A good illustration of this transformation for Central Counterparties (CCPs) is the way they have reformed their margin requirements and default fund contribution models to be consistent with the new framework in terms of liquidity horizon and confidence level of their exposure. Changes in eligibility and valuation of collateral to cover margin requirements have also been a real evolution driver in the design of these new models. Another concrete case stemming from the revised approach to risk management is the one of CSDs regarding the assessment of their counterparty risks, the amount of credit lines they will grant to their participants and the types and amount of collateral they have to collect in respect of the counterparty.

Intermediaries have also experienced significant changes in this area. They have adapted themselves as participants to the FMIs and in the day-to-day management of their activities. They have also been required to significantly reinforce their Know Your Customer (KYC) processes to get further information on who has executed some transactions, and on the risks associated with these transactions, all along the value chain. There is great demand from policy makers to enable identification of end-beneficial owners, in particular to prevent cases of fraud, market abuse and money laundering as well as to support measures taken in the implementation of OECD Base Erosion and Profit Shifting Principles. Intermediaries are perceived as key in this process. In view of anticipating these types of developments, ISSA has developed guidance in the application of risk-based measures to protect the global system under which securities are safe-kept and settled from criminal abuse. The Financial Crime Compliance Principles (FCCP) agreed by ISSA members seek to codify current best practices in order to mitigate the risk that the cross-border custody, settlement and distribution of securities and investment funds can be abused for financial crimes.

More globally, service providers and their clients have also been required to ensure that they have the capacity to cope with stressed and extreme but plausible situations, with sufficient financial resources and development of recovery and resolution plans. These plans have been put in place for banking institutions (and more precisely for Global Systemically Important Banks [G-SIBs]) a couple of years ago as part of the new Basel 3 framework. For FMIs, the discussions of these plans are still on-going. Whereas international institutions (namely the FSB and CPMI-IOSCO) have already published a number of reports on both recovery and resolution aspects, additional ones are expected, and some negotiations have been launched at regional level (as in the EU and the US). Final adopted rules should have substantial implications for all stakeholders, notably on the level of transparency to be provided on risk management models and on the safeguards to be put in place by the various parties. Additional capital and funding resources in the CCPs could be another impact.

1.1.2 Asset Safety

Asset safety is about ensuring that end-investors will be able to get back their assets without undue delay in case of failure of one participant in the value chain. Regulators have been active mainly in two ways to improve asset safety under this perspective.

First there has been a general tendency to increase the liability of intermediaries in the value chain, in particular for depositaries of EU investment funds as adopted under the Alternative Investment Fund Managers Directive (AIFMD) and the Undertakings for Collective Investemt in Transferable Securities (UCITS) V Directive, with the imposition of the restitution obligation for assets held in custody that are lost for reasons within the

control of the depositary. At the same time the burden of proof has been reversed, i.e., in case of loss, depositaries have to demonstrate that all relevant controls have been properly performed and that the loss was fully out of the scope of the controls under their responsibility.

Due to the increase of liability, depositaries have adapted their business in different ways. As the scope and requirements have widened under the UCITS V Directive, some smaller players have decided to exit this business. Other participants have decided to reduce the recourse to external sub-custodians and have developed their proprietary network in local markets when offering both global custody and local custody in the main markets. Those remaining have globally enhanced their level of control and confidence over their sub-custodian network (including their contractual relationships) through stricter due diligence. As a result, some depositaries may decide not to provide their services in some jurisdictions where the level of risk is assessed as too high.

These new rules have also changed the business model of prime brokerage in Europe, as prime brokers are now considered as delegates of the depositary. Contractual relationships between depositaries and prime brokers have evolved on a bilateral basis in most cases and depending on the expectations and requirements of asset manager end clients. In any case prime brokers are restricted in the use of unencumbered assets and have to be more transparent on the use/re-use of these assets. Existing systems have been enhanced in order to accommodate the new rules and also to respond to new expectations from end clients who have themselves imposed new ways of working (such as the use of several prime brokers instead of a single one).

Secondly, stricter rules on asset segregation have been central to many debates between the industry and the regulators, with potentially full segregation all along the custody chain and for assets posted as collateral. As presented in the first Report, stricter rules on segregation have been seen by regulators as a way to enhance the level of safety provided to end-investors. Some of them have even envisaged to impose full individual segregation all along the custody chain to facilitate the restitution of assets in case of loss. In the end, full segregation along the value chain or segregation by types of end-investors has not been retained as a mandatory rule (except in the case of assets posted as collateral for non-centrally cleared OTC derivatives for which full segregation is required and any re-use, re-hypothecation or re-pledge by the collecting party is forbidden). The main reason for this outcome (i.e., no stricter rules on segregation) is that formal segregation is only one tool to ensure that assets will be restituted in case of loss and that the manner and level of segregation must be viewed in the context of the rules applied by the various local regimes in insolvency administration. In many cases, regulators have ultimately opted for giving the choice to end-investors between omnibus account segregation and full individual segregation (as in EMIR for central clearing and in the CSD regulation).

As a result, securities services providers must be able to offer at least these two segregation models to their clients and participants. Some of them have also introduced additional segregation models to be more aligned with the specific needs of certain categories of clients. Today it is still premature to assess what will be the preference of end-investors regarding the segregation model as some rules are still to become effective (as for instance mandatory clearing for a large part of asset managers). Most of them will have to find the right balance between the level of safety they want to benefit from and the additional costs they are ready to accept as a counterparty.

1.1.3 Increasing Collateral Demands

Lastly, increasing collateral demands imposed through several pieces of regulation are also to be considered as a major stream for the development of securities services over the last years. On this part, alongside the new requirements for their own activity, securities ser-

vices providers have been in the front line to introduce new collateral management solutions for assisting their clients in realizing their collateral rights and obligations.

Collateral management is not only about the quantity of collateral to be delivered by the various parties. Questions around eligible collateral, collateral mobility and velocity, collateral protection and operational handling have also raised quite concrete issues which add complexity to the efforts required in this area.

The complexity inherent to the development of an efficient solution (with new requirements for a wide number of financial counterparties) that will function in the context of multiple requirements has clearly encouraged the need for new services by securities services providers in view of facilitating customers' needs as regards the movement and management of collateral. Hence intermediaries have extended new services to meet their clients' needs by providing enhanced collateral optimization services and collateral transformation where an over-collateralized, lower quality basket of securities owned by a party seeking CCP-eligible collateral is exchanged for higher quality collateral from a lender.

These services are presented in detail in the Section 2 of this report referring to key new developments by securities services providers to address new regulatory requirements applicable to their clients.

1.2 The Move to Regulated Markets with Further Use of Market Infrastructures

The move to regulated markets with further use of market infrastructures has been perceived by regulators as a powerful tool to achieve a better monitoring of transactions and of their counterparties. In other words, regulators' intention has been to reduce the amount of bilateral transactions through the introduction of the right incentives and new rules to foster the move to regulated markets and the use of financial market infrastructures (FMIs). The reforms and initiatives mentioned below refer to this general trend.

1.2.1 Mandatory Clearing

Mandatory clearing of liquid and standardized enough OTC derivatives in CCPs and their execution on a trading platform, as agreed on at the G-20 Pittsburgh Summit in 2009, is one of the most illustrative reforms in this area. It has been widely implemented in all regions of the globe as described in the first Report with a complete re-engineering of the clearing business. On one hand, the scope of products cleared through a CCP has been largely expanded. On the other hand, the way clearing is performed from both an operational and risk management perspective has been substantially revised (as described in par. 1.1.1. above).

This trend has been coupled with two other structural developments: The first is the strong willingness to introduce much more harmonisation between CCPs across the world due to the global nature of the clearing activity (once again the adoption of a number of principles in the PFMIs issued by CPMI-IOSCO in April 2012 has been a major influence). Ensuring consistency of rules and introducing equivalence mechanisms between CCPs from different regions has been central to the work conducted in this area. Secondly, the significant amount of risk transferred into the CCPs with mandatory clearing of OTC derivative contracts has increased the focus on effective monitoring of systemic risk and making sure that any stress situation in one CCP would not endanger the stability of the whole financial system.

As a result, CCPs have made strategic choices in the scope of products they cover and on the models they use for margining and collateral holding with the objective to address the

expectations of their clients and help them to optimize their global needs. Accordingly, much has been done by some CCPs on the definition of cross-margining options between different types of products (i.e., underlying financial instruments) and currencies, with the final offering depending on the business mix and specificities of each CCP.

In that context, clearing members have played a key role in facilitating access to the CCPs. As eligibility criteria to be a CCP participant are quite strict on many aspects, only a limited portion of financial participants have found it effective and efficient to become a direct clearing participant. At the same time clearing members have also been compelled to re-evaluate their business models on several aspects. First, they have been impacted by new rules applicable to CCPs. They have typically been obliged to introduce new segregation models and also provide some disclosure to their own clients on both costs and risks associated to each model available. But the most impactful development for the clearing community has been for sure on the capital requirements to cover their exposures to both CCPs and their clients. They have experienced a significant increase in their global capital requirements with strong incentives not to clear in non-qualifying CCPs. In the end, some banks have decided to exit this business upon assessing it as not sufficiently profitable on a risk adjusted basis.

At this stage, all rules around clearing are not fully implemented as a phase-in approach has been retained for entry into force in most regions. In addition, the regulatory framework on clearing will keep evolving in the coming months and years in several domains. Discussions are still continuing on the definition of recovery and resolution plans with much attention on transparency requirements and resources needed to face extreme situations. In parallel, extension of the scope of products to be cleared in a systematic manner is still on the agenda, as for example, securities financing transactions. Lastly, the opportunity to give direct access to CCPs to the buy-side community is seen by some stakeholders as a relevant response to this new paradigm where central clearing is a major priority. This being said, the role of intermediaries in the clearing space should remain central as they would act as sponsor or systems operator for buy-side members having direct access to the CCP. In such a case they would in particular continue contributing to the CCP default fund. This new model will raise some structuring questions on the contribution of the various categories of members in case of insolvency of one or several clearing members and of the CCP itself.

1.2.2 Mandatory Execution on Trading Venues

Mandatory execution of OTC derivative products on trading venues is the second part of the commitments adopted during the G20 2009 Pittsburgh Summit. Different legislative vehicles have been used to transpose the corresponding rules in the various regions (Title VII in the Dodd Frank Act in the USA or MiFID2 / MiFIR in the EU). They have even given rise to the creation of new market infrastructures such as the Securities Electronic Facilities (SEFs) in the US and the Organized Trading Facilities (OTFs) in the EU.

In Europe, new measures have also been adopted in MiFID2 to move fixed income products from OTC markets to regulated markets. This extension of MiFID1 scope of application (which was restricted to equities) has come up with further constraints in terms of reporting of transactions to regulators (the transaction reporting) and transparency on pricing (ex-trade and post-trade transparency), even if some waivers have been identified.

For all these structural market changes at the front end, the role of securities services providers is key as they facilitate the set-up of the required arrangements and the associated post-trade processing. They are in particular active in assisting in record keeping and the processing and reporting of the underlying data. In view of the far-reaching investments and IT costs required to be compliant with these new constraints and the increasing complexity generated by the cumulative regulatory demand, some players have even considered that they should re-focus on their core activities and look for outsourcing solutions

for the treatment of post-trade operations. This general move is presented in more details in the section 2 of this Report where one paragraph is dedicated to outsourcing solutions and how they are deployed.

1.3 Harmonization and Standardization Initiatives

Harmonization and standardization initiatives have also played a key role in the development of securities services in the aftermath of the financial crisis. These initiatives have two main objectives: First to improve overall efficiency in post-trade operations in order to reduce both risks and costs inherent to these activities and second to ensure that financial participants benefit from a real single framework where barriers to cross-border investment are significantly reduced and where competition between players is fostered.

Once again, the issuance of the Principles for Financial Market Infrastructures in 2012 at the international level has been of course a key to this general process, particularly for FMIs. The PFMIs have required far-reaching adaptation efforts on a wide range of aspects, not only with stricter rules on monitoring of the various categories of risks (as mentioned above), but also with the introduction of new measures such as minimum segregation requirements, portability mechanisms and enhanced transparency on several aspects. In parallel, the industry has been quite active in promoting several harmonization and standardization initiatives in order to reduce or remove some existing barriers and consequently being more efficient in some processes. On this part a strong and effective cooperation between the public and the private sector is in any case crucial to ensure feasibility and consistency with the operational constraints.

The concrete cases presented below are some of the most far-reaching initiatives in post-trading.

1.3.1 Settlement Cycle Reduction

As set out in Report 1:

- In Europe, the move to T+2 happened in the context of the T2S project and of the CSD Regulation.
- In Asia Pacific, most markets have shifted to T+2 or are in the process of doing so.
- In the US, the migration to T+2 was completed in September 2017.

Migration to a shorter settlement cycle creates benefits for all market participants through reduced credit and counterparty risk, operational process improvements, cash deployment efficiencies, increased market liquidity, lower collateral requirements, and enhanced global settlement harmonization.

In Europe, the migration to T+2 happened in most markets in October 2014 and resulted from the combined efforts in both the T2S Eurosystem project and the adoption of the CSD Regulation. The scope of the migration was very broad: All 28 Member States were party to the migration and exemptions both in terms of financial instruments and transactions were very limited (only UCITS shares and new issues / primary market transactions). Thanks to very good preparation from all stakeholders, the migration was very successful and normal settlement operations were not interrupted.

In Asia, the T+2 settlement cycle is already in place for many markets (such as Hong Kong, India, Indonesia, Korea, Maldives, Singapore, Thailand and China). More recently, Australia, New Zealand and Vietnam have implemented T+2 settlements for all cash transactions, bonds, warrants, and ETF trades since early 2016. In addition, a couple of other countries (e.g., Japan) have formed working groups to assess the impacts and to implement a shortened settlement cycle.

In the US, the Securities and Exchange Commission adopted an amendment to its exchange settlement rule to shorten by one business day the standard settlement cycle for most broker-dealer securities transactions from T+3 to T+2 in March 2017. This rule took effect on September 5, 2017. The amended rule applies the T+2 settlement cycle to the same securities transactions previously covered by the T+3 settlement cycle. These include transactions for publicly traded stocks, bonds, municipal securities, exchange-traded funds as well as certain mutual funds and limited partnerships that trade on an exchange.

The trend toward reduction of settlement cycles is likely to continue in the future for all the reasons mentioned above. There are practical difficulties remaining for further shortening of the settlement cycle, including trading across time zones, and getting a trade matched, confirmed and allocated by the end of the trade date, especially in the context of emergence of new technologies that could have strong implications for post-trade services. New processing that could result from the adaptation of blockchain technology in the settlement space is often mentioned as a possible way to achieve further reduction in settlement cycles. In any case and whatever the approach, it will remain a good candidate for further improvements in the next years.

1.3.2 Migration to the T2S Platform

Migration to the T2S platform in Europe, in conjunction with the adoption of the CSD regulation, has been a strong driver in the harmonisation of settlement practices across Europe. Beyond settlement cycles shortening, many other aspects have been identified as relevant areas for adoption of standards (including T2S messages, CSD account structures, corporate actions and settlement discipline regime) and have been addressed through the work conducted by the Harmonisation Steering Group (as presented in Report 1).

At the same time, the migration to the T2S platform has substantially transformed the existing settlement models for all types of market participants (including banks and brokers-dealers) as a result of the new functionalities offered by the platform and the new services elaborated by securities services providers.

Under T2S, market participants may also disintermediate the settlement process by connecting directly to fewer entities, possibly a single one, instead of using multiple participants such as global and local custodians, and local and foreign CSDs. The introduction of unique collateral and liquidity pools tailored to meet specific asset protection regimes should also enhance services offered by the various securities services.

These efforts aim at adapting to the client profile (with the client choosing the most relevant option according to its own expectation and constraints) and proposing new added-value services for optimization of collateral and liquidity needs, as well as reporting and compliance monitoring (refer to section 2 of this Report). These developments, coupled with new transparency requirements and unbundling of settlement and asset services, create more competition between the securities services providers and are also blurring the lines among the various categories of participants as some services can be performed by all of them, as for instance asset services and collateral management which are provided by both custodians and CSDs.

Harmonization of post-trade practices should result in reducing barriers to cross border settlement across key European markets. Today, it is still too early to get a full picture of all changes emanating from the migration to the T2S platform. Some players (in particular brokers-dealers and banks) are still in a wait-and-see attitude to have better visibility of the new framework before making structuring choices for their target operating models. This being said, all in all, long-term benefits should be reflected in a substantial decrease in settlement pricing (at this stage costs incurred by the corresponding developments are still to be absorbed before the full benefit is visible). T2S could also substantially reshape the post-trade landscape with potential concentration in the sector due to merger activity.

1.3.3 Adoption of Unique Identifiers

Adoption of global identifiers is one of the most illustrative developments observed in this area. International regulators have strongly pushed for the introduction of these global identifiers, which are a key component of the various new reporting obligations on certain types of transactions as for instance those to be reported to trade repositories for OTC derivatives.

As presented in Report 1, alongside the efforts carried out for introduction of the Legal Entity Identifier (LEI), there has been intensive work on the adoption of Unique Trade Identifiers (UTIs), Unique Product Identifiers (UPIs) and Unique Swap Identifiers (USIs) over the last years. Securities services providers together with Market Infrastructures are very instrumental in the effective implementation of such evolutions as they have to convey the corresponding data in the various instructions and therefore to adapt their chains of treatment accordingly.

Even if some progress has been accomplished recently, it is obvious that this will be quite a long process that will require substantial and committed participation of all stakeholders involved in the use of these identifiers, which will drive significant improvement in systemic risk monitoring and in aggregating risk exposures more generally.

1.4 New and Changing Regulatory Requirements Relating to Tax, AML / KYC and Sanctions

Over the past few years, there have been significant developments in the areas of KYC/AML compliance and reporting as well as compliance in the realm of international sanctions and various tax reporting and taxation matters.

1.4.1 KYC / AML

Recently, there have been further developments in the realm of KYC / AML, specifically focusing on the use of legal entities and special purpose vehicles. The trend here has been a part of the broad global approach to enhance further transparency throughout the securities processing chain. In the US, FinCen has adopted enhanced customer due diligence requirements applicable to private companies, trusts and similar vehicles. These enhanced due diligence rules require that information be collected with regard to:

- Each individual, if any, who, directly or indirectly, through any contract, arrangement, understanding, relationship or otherwise, owns 25 percent or more of the equity interests of a legal entity customer;
- A single individual with significant responsibility to control, manage, or direct a legal entity customer, including:
    - An executive officer or senior manager (e.g., a Chief Executive Officer, Chief Financial Officer, Chief Operating Officer, Managing Member, General Partner, President, Vice President, or Treasurer) or
    - Any other individual who regularly performs similar functions.

These developments are in some ways along the lines of those required by FATCA and other tax reporting developments. They are also related to sanctions in the US because the FinCen enhanced due diligence requires that the names procured through the due diligence process be run through sanctions screening established by the US Office of Foreign Assets Control.

1.4.2 Sanctions

The area of international sanctions has been significant for new developments over the last few years. The sanctions regimes have been an increasing challenge for reasons including:

- The increasing number of sanctions and countries invoking sanctions;
- Possible disparity among sanctions regimes including those of the United Nations, European Union, United States and China;
- Increasing complexity of issues surrounding coordination and application of sanctions regimes.

1.4.3 Tax Reporting

The full implementation of measures such as FATCA and the Common Reporting Standard (CRS) will require continuing attention for services providers.In this area, there has been a paradigm shift from local withholding and reporting to global tax transparency regimes:

- Foreign Account tax Compliance Act (FATCA) in the US;
- Common Reporting Standard;
- United Kingdom Crown Dependencies and Overseas Territories Act:
- IMF, OECD, U.N. and World Bank Platform for Tax Collaboration.

While there has been a considerable amount of standardization in the scope and transmission of reporting requirements under these regimes, there are still divergences that require service providers' attention. The lack of common definitions and terminology, staggered deadlines for reporting, inconsistent reporting protocols and bespoke data schemes and technical support established are ongoing challenges in this area of concern.

In addition, many jurisdictions have implemented voluntary reporting and disclosure programs for their tax residents and these will entail further efforts on the part of service providers. Service providers will also have to consider implementation measures that will flow from Model Mandatory Disclosure Rules derived from the OECD BEPS Action 12 Report. These are slated for effect in 2020 and may require enhanced due diligence for service providers to more fully understand the employment of legal entities and other special purpose vehicles and structures.

1.4.4 Digital Services Taxation.

Developments continue surrounding the implementation of the OECD Base Erosion and Profit Shifting principle number one, regarding the appropriate taxation of the digital economy. Recently, the EU has made a two-fold proposal for an interim tax on such activities and a proposal for defining a taxable digital presence in a tax jurisdiction. The first of these is perhaps of less concern to service providers, but the second one, which defines taxable digital services as follows will bear monitoring by service providers as they develop digital responses to the many issues discussed in this paper.

> "Services which are delivered over the Internet or an electronic network and the nature of which renders their supply essentially automated and involving minimal human intervention, and impossible to ensure in the absence of information technology."

While ISSA is confident that these provisions were not meant to capture the automation of core servicing of investments, the industry should attend to the appropriate application of any developing digital services tax on secondary services that involve the processing, retention and transmission of client data in response to ongoing regulatory and market infrastructure developments.

1.5 New Regulatory Requirements for Other Categories of Market Participants

Lastly, new regulatory requirements for other categories of market participants have been a major driver for adaptation of securities services providers. As described in Report 1, new regulatory requirements have emerged for all types of financial market participants.

In Europe, these enhanced requirements include safekeeping and asset protection provisions that affect UCITS and AIFMD funds as well as MiFID firms. In the US, safekeeping and asset protection schemes have been extended to apply to assets held by authorized investment advisers for their clients.

Broadly throughout established financial markets, and notably in both the EU and North America, regulators have also imposed liquidity, diversification, asset quality and similar requirements on collective investment schemes. These new regulations impose significant monitoring and reporting requirements and have created needs and opportunities for securities processors to support these efforts through data and data processing relating to the accounts that they maintain for collective investment portfolios.

In that context, securities services providers are best placed to assist their clients on several aspects and thus develop a number of new services. First of all, they have access to large amounts of data on their clients and on the operations performed by their clients. Re-use of these data (subject to data protection legislation) to produce a number of reporting services is therefore a natural evolution of services that can be offered to end-investors. Secondly, the key role they play in the holding of assets of their clients have put them in the best position to address key concerns of end-investors in both collateral and liquidity management. Thirdly, they benefit from the volumes effect which allows them to generate economies of scale in a context where required IT investments are paramount.

As a result, the range of new solutions developed by securities services providers addresses many of financial participants' expectations. As further described in section 2 of this report, they mainly cover new reporting solutions and collateral and liquidity management arrangements, for all types of financial participants. Section 2 also covers the development of outsourcing services, which are seen by many players as a way to focus on their core activities, but also as a means to reduce their costs to offset increasing pressure on margins.

These new added-value services have become real differentiators between securities services providers.

They also provide two main benefits for all of them:

- Access to more choice when selecting their providers and the types of services they pay for, and
- More competitive conditions as a result of new transparency requirements and the prohibition of certain practices. An example is the requirement for unbundling of services under MiFID2 / MiFIR.

2. The Industry has also Developed New Solutions as Response to this New Framework

The new regulatory framework has substantially modified the way financial participants can operate and the conditions under which they can perform their activities. As mentioned in section 1, securities services providers have been naturally seen as well placed to assist their clients in the development of new solutions to address the new regulatory expectations.

Securities services providers have also integrated other trends in their development of new solutions for their clients. They have been participating in their clients' expansion programs (as in China) and have been instrumental in the effective roll out of new market models. In parallel, the emergence of new technologies, even if still in their very early stages and not yet submitted to a common and stabilized regulatory framework, has been fully embarked in the securities services development strategies for the next several years. Those providers are fully aware of their potential disruptive nature and have engaged a huge range of initiatives to identify most relevant use cases and define the best approach for effective deployment. The corresponding actions are presented in more details in section 3 of the Report.

Clearly, the capacity to offer new types of solutions and address major expectations of clients is not an option for all players. Provision of such solutions and their articulation with traditional core services are crucial to create differentiation in a quite competitive environment.

The following areas have been selected as quite illustrative of how the securities services industry has introduced new solutions to assist its clients in the compliance with the new regulatory framework adopted in the aftermath of the financial crisis:

- Reporting Solutions
- Development of Collateral Management Solutions
- Outsourcing Solutions
- Access to New Markets (e.g., China).

2.1 Development of Reporting Solutions

All major categories of market participants must now comply with quite detailed reporting obligations. They are also in many cases subject to internal compliance obligations, such as portfolio compliance monitoring. These new requirements indirectly affect securities processors through the need and opportunity to provide support for these new obligations.

Directly with regard to services providers, enhanced disclosure is required through the processing chain to end-investors and regular reporting to regulators encompasses an increasingly wide range of information.

Services providers are either required to be in compliance with new regulation and industry practice or they are a necessary or desirable resource for their clients' compliance. They can assist their clients by leveraging the valuation and custody information they maintain to address new reporting and compliance monitoring duties. Many efforts representing enhanced processing and transmission of data relating to holding and transactions have been deployed in response to these developments and these efforts will continue to contribute to the emergence of entirely new service offerings. The range of services provided can vary from just transferring the data to be used for construction of reporting to a fully-fledged reporting solution for the clients. It is essential to address specific client's demands,

some of which entail support of components of a process, while other demands look to an end-to-end solution.

Below are some key illustrations of solutions developed to address new reporting requirements:

2.1.1 Reporting to Trade Repositories

With a view to mitigation and monitoring of systemic risks, mandatory reporting of OTC derivatives transactions to trade repositories was imposed as a G-20 requirement in the Pittsburgh summit in 2009. As a consequence, any OTC derivative transaction is to be reported to a trade repository, with extension to all derivatives in some cases (as in Europe where EMIR provisions include listed derivatives in its scope of application of the reporting obligation). Regulators and the industry have made significant strides and trade reporting regimes are in place across jurisdictions globally that host major derivative markets (as detailed in Report 1 – section 1.1.1, page 9).

As a result, trade repositories have been set up all around the globe to collect the corresponding data and report them to competent authorities. Authorities within those jurisdictions have now access to more data than ever before, which is critical to market surveillance and the identification of counterparty risk.

A number of existing FMIs have positioned themselves for the provision of the trade repository services, in continuity of services they already provided to their clients (as in the United States where the concept of "golden record" was already in place for one type of asset class). In Asia and Europe, everything was to be built from scratch in a quite swift way to be compliant with the stringent timeline imposed by authorities. In addition, most supervisors requested to have a domestic (or regional) trade repository, which is authorized and supervised locally (although there are notable exceptions – including Canada and Australia – where off-shore but locally licensed trade repositories operate). Today there are globally numerous FMIs offering trade reporting for some asset classes and in some jurisdictions.

In response, some intermediaries have developed new services in relation to the trade repository reporting. As the scope of application of the reporting obligation is very wide, connection to the trade repositories has been quite challenging for some categories of players who have made the choice to designate a third party for the completion of this duty (this is notably the case in Europe where double-sided reporting has been imposed under EMIR on a systematic basis). Intermediaries are indeed well placed to offer this type of assistance as they maintain a large amount of data and records, which are to be transferred to a trade repository. In addition, complexity and scale of investments required to develop an efficient reporting solution have deterred many financial participants to rely on a proprietary arrangement. At the same time some players have decided to develop in-house solutions due to confidentiality aspects.

Reporting to trade repositories will remain in the forefront in the coming months as the European SFT Regulation has also introduced reporting to trade repositories for all securities financing transactions (start date was initially scheduled in April 2018 with a phase-in implementation up to January 2019). As with EMIR, a double-sided reporting will apply with a very wide scope for both transactions and counterparties. Regulatory and implementing technical standards are still under consultation (ESMA issued its final report in April 2017, delegated acts by the European Commission are still pending). As for reporting of derivatives, the amount of data to be reported and the high frequency of reporting may cause operational and technical issues for counterparties that will probably seek to rely on a third party in many circumstances.

In brief, recent global activity is quite positive and the quality of data has significantly improved. However, additional work is needed to further provide global and domestic regulators with appropriate access to high-quality standardized data critical to market surveillance and systemic risk oversight, as described in Report 1 in section 2.3.1 – page 38.

2.1.2 Reporting Obligation for Asset Owners (Insurers and Pension Funds)

In Europe, the Solvency II Directive has set capital controls on insurers' leverage and liquidity and has dictated new risk and governance requirements. The revised framework is completely new to insurers and requires a huge amount of data and information to be produced and reported to regulators. It is worth noting that asset managers within insurance firms are also asked to populate greater amounts of data fields to feed the new modeling tools.

A number of service providers have developed a set of services aligned to Solvency II to support insurers in the transition to the new regulatory regime. They offer their assistance to collect, enrich and consolidate data in an automated, timely, exhaustive and accurate manner. Expertise in risk modeling and computation of the various Solvency II risk metrics are used to provide insurers with key services such as Market Solvency Capital Requirement (SCR) calculation, SCR market risk stability factsheet and data to set up the Solvency II process (including accurate look-through data management). Data management and reporting are also part of the services provided to insurers and asset managers to help them in being compliant with the Pillar 3 on Disclosure.

Although this new framework is specific and limited to Europe so far, some discussions at international levels are also taking place – in particular in the context of defining insurance companies which are Systemically Important Financial Institutions (SIFIs). In addition, the review process of Solvency II has been launched recently in the European Union (as mentioned in the Solvency II Directive in Article 36) and may lead to further disclosure requirements from insurers. In that context the support from securities services providers will remain central and will require the buildup of much more sophisticated solutions which can address insurers' demands for more global data management and data aggregation.

In the US, ERISA plans require significant annual reporting that must be filed on an automated basis with the Internal Revenue Service. While there have not been huge changes with regard to this area as has been the case with other service customer types, this reporting has specialized requirements with regard particularly to significant counterparties and transactions with entities that have a fiduciary relationship to a retirement plan or a pooled investment vehicle containing significant retirement plan assets. Service providers that are trustees of retirement plans and custodians for such parties must monitor and respond to continuing developments in the administration and content of this reporting.

2.1.3 Reporting for Investment Funds

New pieces of legislation for investment funds have also introduced much challenging rules in terms of reporting.

In Europe, the Alternative Investment Fund Managers Directive (AIFMD) has established a number of detailed reporting requirements that all authorized and registered AIFMs are required to submit to their national competent authorities. These are referred to as the Transparency Requirements under the AIFMD and require information to be provided on both the AIFM and the AIF(s). The disclosure and reporting requirements under the AIFMD can be split into these groups:

- Initial disclosures to investors,
- Support of portfolio compliance duties,
- On-going disclosure requirements,
- Information to regulators.

Hence, the reports aim to capture the complexity of various portfolios driven by different investment strategies and to provide a full picture of the risks taken by the investment vehicles. It also means that the reports require the collection and compilation of various types of data (such as risk figures, operational data and legal obligations information), coordination between many stakeholders and ultimately dissemination to the regulators. All this creates a significant operational burden for AIFMs.

Once again, securities services providers are best placed to assist asset managers in the design and production of these reports given the amounts of data available on their side and their expertise in calculating a number of complex metrics. Many of them have therefore developed reporting solutions which notably include classification of assets in positions held and traded using specialized AIFMD taxonomy, calculation of a variety of value at risk (VaR) and market risk metrics and portfolio-level valuation capabilities. Service providers have also established flexible offerings ranging from provision of data required for AIFMD reporting up to full coverage of the reporting production.

EU money market fund reforms have established new and more stringent requirements that affect reporting, investor disclosure and portfolio composition. Redemption gates and similar restrictions also have a secondary effect on services providers in their role as transactions processors.

In the US, similar measures have been adopted with respect to investment funds registered for public distribution. These measures vary depending upon the nature of the fund, and money market funds are most affected. Similar to the EU, new regulations affect:

- Portfolio composition and liquidity,
- Portfolio compliance monitoring and reporting,
- Investor communications and disclosure.

2.2 Development of Collateral Management Solutions

Mandatory clearing for liquid and standardized enough OTC derivatives and margin requirements for OTC derivatives contracts which cannot be cleared creates a huge demand for high quality collateral that can be pledged to CCPs or posted to the other counterparty to the contract. A number of other legislative initiatives (as Basel III at the international level or MiFID in Europe) have also contributed to the further monitoring of collateral aspects. Migration to the T2S platform supported by the Eurosystem for the Eurozone is another major component in the way collateral management can be enforced by all types of participants involved.

Collateral management is not only about the quantity of collateral to be delivered by the various parties. Questions around eligible collateral, collateral mobility and velocity, collateral protection and operational handling have added complexity to the efforts required in this area. The list below demonstrates the wide array of activities around collateral management:

- Management of margin payments in response to exposure requests from a clearing house and / or bi-lateral counterparties,
- Monitoring of client positions to determine whether margin calls are required,
- Management of disputes of margin calls and escalation of outstanding calls,

- Application of initial margins,
- Application of terms of collateral agreements and net collateral held against exposure,
- Application of haircuts to collateral held,
- Determination of margin excess or deficit,
- Collateral reporting to counterparties, CCPs and other Self-Regulatory Organisations, trade reporting warehouses or trade data repositories,
- Monitoring / management of collateral substitution,
- Notification of corporate events (relating to collateral assets held),
- Processing of securities transfers on behalf of the client (when required to post or receive collateral),
- Ensuring that sufficient collateral is in place for the positions held (including collateral held with Central Securities Depositories [CSDs] and as a result of tri-party agreements),
- Calculation of interest and coupons payable to clients,
- Booking additional collateral or return of collateral (including substitutions),
- Issuance of instructions for collateral movements and receiving confirmation of settlement of transfers,
- Monitoring of collateral to ensure maturities and dividend payments are managed, issuer downgrades are reflected in collateral liquidity and collateral type conforms to policies (including concentration limits),
- Cash collateral re-investment (where permitted).

The complexity inherent in the development of an efficient and transversal solution (with completely new requirements for a large number of financial counterparties) has clearly encouraged the need for financial market infrastructures (FMIs) and participants to provide new services in view of facilitating customers' needs as regards the movement and management of collateral. Hence, both FMIs and intermediaries have extended new services to meet their clients' needs by providing enhanced collateral optimization services and collateral transformation where an over-collateralized, lower quality basket of securities owned by a party seeking CCP-eligible collateral is exchanged for higher quality collateral from a lender.

Custodians are well placed to provide those types of services as their clients do not need to move their assets to a third party for collateral exchange. In addition, custodians have a global view on clients' assets which enables them to optimize it efficiently. FMIs have also positioned themselves for these types of services by providing a platform for enhanced services of collateral exchanges, transformation and optimization.

Two different models exist for collateral management: The bilateral collateral management model and the tri-party collateral model. Bilateral collateral management is based on the concept of managing in-house the complete life cycle of the collateral management activity against counterparties, based on collateral management applications developed internally or acquired from a specialized software vendor. Under this model, clients are required to capture the necessary data and trade feeds, calculate and issue their margin requirements against each other in line with the governing legal documentation, signed on bilateral basis (usually via a Credit Support Annex, GMSLA and others). Bilateral collateral management, where the collateral mobility is managed by a Custodian Agent Bank, provides the highest level of clients' involvement in the collateral management process to the extent that the client is required to maintain a complete string of front, middle and back-office staff to oversee the activity (although these activities could be outsourced to an administrator). The extent of decision-making flexibility when it comes to selection and instruction of

collateral to be mobilized needs to be weighed against the cost aspect of the respective approaches.

Triparty collateral management is an outsourced end-to-end collateral management activity by the parties of the transaction to a third-party acting as neutral agent. A triparty agent offers different levels of services tailored to the underlying business requirements of each business area, as well as a bilateral agent. Triparty structures have long been used for repo and securities lending in global markets and currently services are leveraged to meet the requirements of the uncleared derivatives margining activity. A tri-party agent aims at offering high degrees of automation, settlement, margin maintenance, safekeeping and monitoring services and to provide tools to efficiently manage the collateral across different underlying business lines.

The choice of collateral model depends on various factors which need to be taken into consideration after careful due diligence. Some of the factors to be reviewed from an individual perspective are the business models of the customer, the type of risks to be covered through collateralization, variety and diversification of asset type as collateral and the level of collateral servicing expected by the customer.

In parallel, "collateral pool" offerings have emerged in recent months. Financial institutions need to have a view across their products and markets when different pools of collateral co-exist in many CSDs and custodians and across different regulatory jurisdictions. These offerings aim at reducing the fragmentation caused by the different pools to enable the mobilization of collateral to the right place at the right time. More concretely, they provide the ability for customers to mobilize collateral both domestically and internationally without triggering any cross-border transfers, irrespective of underlying asset type and location.

Many aspects remain challenging regarding collateral management, notably in terms of mobility and velocity. Discussions are still on-going with policymakers and across the industry to define how collateral management can be enhanced from an operational and business perspective and ensure that unnecessary restrictions are not added to the current framework. Extension and further standardization of SWIFT messages used for collateral transactions is currently under review in the context of work conducted by the T2S Harmonization Steering Group. The objective is to introduce further harmonization in this area and facilitate as much as possible transfers of assets posted as collateral.

2.3 Outsourcing Solutions

All actors are confronted with significant compliance and investment costs resulting from regulation demand. At the same time, they face a strong pressure on margins caused by various market developments and have to cope with complex new investment requirements. As a result, focus on core activities prevails and a willingness to outsource functions that provide little or no proprietary advantage is frequently observed across the financial industry.

Demand for sell-side outsourcing will get further momentum. On one hand, increased capital costs trigger restructuring. On the other hand, electronic platforms and potential direct market access by the buy-side narrow spreads and fragment liquidity. Investment banks are therefore looking at the provision of middle and back office services that may be undertaken by commercial providers or in some cases by utilities (FMIs). Such services should be attractive to second-tier brokers / banks lacking scale and efficient operating systems and perhaps to some larger firms as well.

Buy-side clients may accelerate an earlier trend to outsource middle office services to custodians. Compliance with regulations such as FATCA or mandatory CCP clearing for OTC

derivatives creates significant operational complexity that buy-side clients may have difficulty coping with. Many players are searching providers who have the capacity to offer a full-service platform with an integrated solution. In parallel, all topics around data management have created new expectations. Securities services providers are investigating how to leverage on data for the benefit of their clients and assist them in better decision making.

Previous experience has demonstrated that a key factor for successful deployment of such outsourcing solutions is a high level of standardization of processes used with limited exceptions from the standard offerings. However, it is quite interesting to note that some clients are also demanding for customized solutions to address their specific needs. Expectations differ from one segment to another and lead to the emergence of tailored products, tools and processes.

Hence, all securities services providers, as any other categories of financial participants, have to make a strategic decision for the design of their future business models. They must better allocate their investments and resources depending on their global strategy: Do they intend to integrate the whole chain with an offering of highly standardized activities? Or do they choose to exit some segments to concentrate their efforts on niches or specific ranges of clients? Or any other option? For sure, the status quo is unlikely to be an acceptable option for any player. Every entity has to elect a strategic direction and take concrete actions for effective achievement.

2.4 Access to New Markets

Interoperability of CSDs and other market infrastructures have the potential to change the shape of administration of cross-border investment. Key illustrations on the way securities services providers play a fundamental role in successful access to new markets are the latest developments in the Chinese market with the Stock Connect and Bond Connect initiatives.

China has undertaken considerable efforts to make its financial markets more accessible to foreign investors via a number of government-backed investment schemes, including relaxed quotas of the Qualified Foreign Institutional Investor (QFII) and Renminbi Qualified Foreign Institutional Investor (RQFII) schemes as well as the China Interbank Bond Market (CIBM). Mutual market connectivity programs like Stock Connect – linking Hong Kong with the Shanghai and Shenzhen stock exchanges – facilitate new channels for foreign investors to enter Chinese domestic markets.

Chinese officials attempt to increase liquidity levels by encouraging foreign investment in Chinese bond, stocks and futures markets – not least in order to cope with the market volatility of recent years. China's liberalizing efforts by further deregulating its capital markets offer promising opportunities for the international securities services industry. Cross-border trading and settlement schemes connecting Chinese domestic markets with the rest of the world contribute to the growing importance of China's capital markets.

Offering established custody and connectivity infrastructures and value-added services by global market players, in combination with quota-free access for overseas investors, will encourage further activity in one of the largest markets of the world. Participants are eagerly supporting the internationalization of the Renminbi (RMB) as a key part of their strategic offshore models, e.g., via the issuance of RMB-denominated bonds and attractive new service offerings to trade Chinese products. The same applies to the funds market, where foreign fund processing platforms enable access to China-domiciled funds, and vice versa, through special partnerships.

The above examples demonstrate that greater collaboration between Chinese and foreign securities services providers is a promising path to help enable the momentum of global economic growth. Frontline supervision and international regulatory coherence are key prerequisites in that regard to ensure stability and market order. Compatibility with international standards, first and foremost via observing the CPMI-IOSCO Principles for Financial Market Infrastructures (PFMIs), is a critical factor for the efficiency and stability of these cross-border activities.

The two boxes below describe in more detail the China Stock Connect and the Bond Connect initiatives.

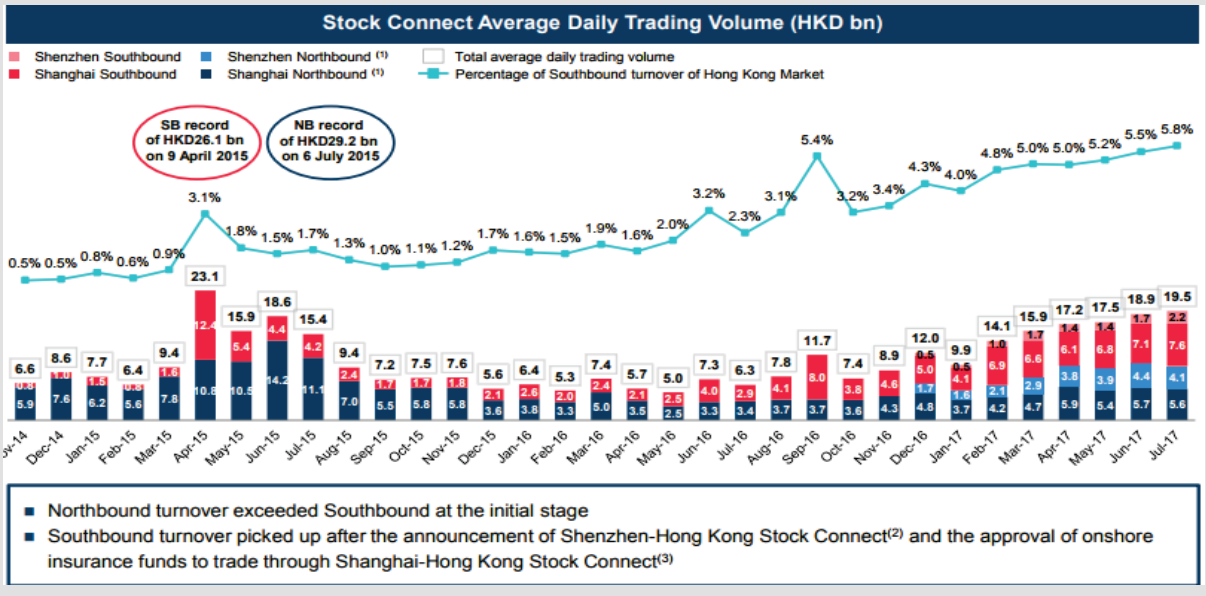
BOX 1 – CHINA STOCK CONNECT PROGRAM

In Asia, the China Stock Connect Program launched in 2014 opened up access to mainland China by allowing international investors to trade Shanghai listed shares via the Hong Kong market and also allowed mainland China-based investors to trade in Hong Kong listed shares via the Shanghai market. For the first time, investors can directly trade between the markets, and international investors can access China without the need to obtain regulatory approval from the Chinese authorities. Subsequent to the Shanghai-Hong Kong Stock Connect launch, regulators in these two regions also launched the Shenzhen-Hong Kong Stock Connect in December 2016 with positive response.

Stock Connect increases the overall strength of mainland China's capital markets. It deepens co-operation and communication between the stock markets in Shanghai, Shenzhen and Hong Kong, and expanded cross-boundary investment channels will enhance the competitiveness of the respective markets. Stock Connect further consolidates the position of Shanghai, Shenzhen and Hong Kong as financial centers, and enhances the attractiveness of the markets to international investors. It is expected to improve the investor profile of SSE, SZSE and the SEHK, and to reinforce Hong Kong's position in particular, in its development as a destination for mainland investors. Stock Connect should also help to promote the internationalization of the RMB and development of Hong Kong as an offshore RMB business center by enabling mainland investors to directly participate in the Hong Kong stock market using RMB. It also expands investment channels for offshore RMB funds and facilitates an orderly flow of RMB funds between the markets[1].

Below is a graph which illustrates the uptick of trading volume since Stock Connect was launched in January 2014[2].

[1] https://www.sfc.hk/edistributionWeb/gateway/EN/news-and-announcements/news/doc?refNo=14PR41
[2] http://www.hkex.com.hk/-/media/HKEX-Market/News/News-Release/2017/1708092news/1708092news.pdf



Securities servicers have played a central role in making the China Connect Program become a reality by working with regulators, exchanges and market participants in addressing documentation needs, trading requirements and ensuring operational readiness such as pre-trade checking requirement, timely settlements, funding, managing quota arrangements, and checking on restrictions on off-exchange transfers to name a few.

With discussions around the future inclusion of Exchange Traded Funds (ETFs) as eligible products through Stock Connect as early as 2018 and inclusion of China A shares in global indices starting June 2018, securities services providers will inevitably continue to play a key role as China continues its effort to open up its market for foreign investment. Given time zone differences, it is essential for securities services providers to provide integrated front to back operating models and seamless global teams to offer round the clock support to manage settlement and custodian services promptly within the Asian time zone to best serve investors' requirements.

BOX 2 - THE BOND CONNECT PROGRAM

The RMB is fast becoming an attractive global currency and the China bond market has gained its international position in terms of bond issuance and trading volume. Effective 1st Oct 2016, RMB is included as the third-largest currency in the IMF SDR currency basket with a 10.92% weighting [3], a significant step for RMB internationalization.. China's onshore bond market is the world's third largest with an estimate of US$9.6tn in outstanding debt, only after US and Japan.

In July 2017, Hong Kong and Mainland China launched the Bond Connect scheme which allows international investors to trade debt on China's interbank bond market directly through Hong Kong Exchange. Eligible Foreign Institutional Investors (FII) include commercial banks, insurance companies, securities firms, fund management companies and other asset management institutions and their investment products. They also include other mid-term or long-term institutional investors recognized by People's Bank of China (PBOC), such as pension funds, charity funds, endowments, as well as institutional investors based in Hong Kong, Macau and Taiwan.

Prior to Bond Connect, foreign investors could buy and sell bonds through the People's Bank of China Eligible-Institutions scheme in the interbank bond market, known as the CIBM scheme as well as through Qualified Financial Institution Investor (QFII) schemes. But the adaptation of Bond Connect removed the need for foreign investors to go through a lengthy account opening process, applying for yuan quotas and finding a clearing agent. Offshore investors can trade directly with eligible onshore dealers through a request for quote of established electronic bond trading platforms.

The launch of the China Connect Program overall is a significant milestone in connecting the two financial markets together and an important step in liberalizing China's capital markets internationally.

[3] https://www.imf.org/en/About/Factsheets/Sheets/2016/08/02/19/35/Review-of-the-Special-Drawing-Right-SDR-Currency-Basket

3. Securities Services Providers have also to Face New Challenges in that Context

As presented previously, securities services providers have substantially contributed to adapting to the new post crisis regulatory framework. On one hand they have adapted their own internal organization and processes to the new requirements and have also become much more resilient. On the other hand, they have been instrumental in enabling their clients to meet the changes required at their level through providing the right connections when needed and even setting up totally new solutions.

At the same time, it is also obvious that securities services providers have also faced unintended consequences of the roll out of new rules. In some cases, these adverse effects are material and may reduce the added value of new measures, for both securities services providers themselves, but also for all market participants. In parallel, securities services providers are faced with new challenges resulting from the further developments of new rules but also from the emergence of new parameters as described in the first Report. This section focuses on these two areas that need to be adequately assessed for remaining competitive in the future environment.

3.1 Unintended Consequences of the Post-Crisis Regulatory Program

3.1.1 Concentration Risk

The move of the overwhelming majority of securities and derivatives transactions into trading venues and central counterparties raises the level of concentration risk in those infrastructure organizations. It is arguable that OTC trading could still have been carried on at or between well-capitalized and governed banks and other institutions, but regulators decided for reasons including transparency, liquidity, financial robustness and supervision, that centralization of trading on specialized venues is preferable.

Similarly, clearing of trades (including netting and acting as counterparty) could have continued between well-capitalized banks, but the activity has been centralized. Initial and variation margins must be posted, and trades that continue to be cleared outside central counterparties (CCPs) are subject to higher rates of margining.

The failure of a major trading venue would present major issues for the authorities and markets. Trading venues operate, however, off-balance sheet and do not use their own capital (unlike a MiFID systematic internalizer, which does). Accordingly, a failure of a trading venue would be a largely operational matter, with trades to be concluded, rather than a loss-creating event in itself.

Central counterparties, on the other hand, operate off their own balance sheets. A CCP has low capital by comparison to a major bank. The failure of a major CCP would cause significant market disruption, as has been widely noted, and CCPs are accordingly required to implement a wide range of measures to mitigate risk, including the holding of large default funds.

The use of CCPs increases the extent of netting achieved amongst the clearing members compared to the netting available under bilateral clearing, and this can reduce the amount of margin to be posted. Netting can however conceal the danger of net positions becoming gross positions again in the event of a crisis – a €1m net receivable from an insolvent counterparty can for example be grossed up to a say $9m liability which must be paid away, and a $10m receivable which will never be collected. The widespread implemen-

tation of close-out netting helps limit this danger, but close-out netting between asset classes is still not widely achievable.

For clearing, this argument is at base a balance between the relative risks of a large number of well-capitalized and independent banks acting as counterparties to each other for their own and clients' business, but with risk of contagion, compared to the concentration risk presented by a small number of relatively lowly capitalized (when compared to G-SIBs) CCPs acting as counterparty for an immense market-wide volume of transactions.

The legislative answer so far has been to take the second route using CCPs, reinforced by effective risk management and recovery and resolution planning. As noted earlier, the post-crisis regulatory program has moved transaction volumes into infrastructures and has left the proprietary capital of banks and insurers as risk-buffers to the financial system. More detailed plans have therefore been evolved for the resolution of both banks and CCPs in particular. In the case of resolution, the legal entity is liquidated, but the critical functions of the business must be preserved. It has taken some years to create workable resolution plans for CCPs that allow enough time to preserve critical market functions, whilst critical support factors for the business remain in place. Such factors may include secured term-lending to the entity, trade creditors not exercising rights, and employees and the tax authorities being paid as required. It is to be hoped that practical solutions are feasible.

3.1.2 Cost of Implementation

Post-crisis legislation and regulation has largely been implemented in order to mitigate systemic risk and improve investor protection. The cost of the legislative and regulatory program to those affected in the industry (and amongst the regulators) has not been a major consideration. In many ways the European Securities and Markets Authority has done a remarkable job in managing its huge input of legislation with a comparatively small workforce.

The implementation costs to the industry have been vast however. These costs are either borne by the intermediaries (reducing banks' earnings and capital in most cases) or by the investors in those cases where the costs are passed on. It is ironic that the costs of implementing a program of legislation designed to mitigate systemic risk and improve investor protection have fallen upon banks and investors, but it is hard to propose an alternative.

3.1.3 Data

Many pieces of post-crisis legislation and regulation require extensive reporting to regulators, either directly or through trade repositories. The reporting of this data produces specific issues including:

- The ability to transmit, handle and store vast quantities of data,
- The ability to keep the data secure,
- Managing any personal data under privacy rules including the EU General Data Protection Regulation (since 25 May 2018),
- The ability of regulators to analyze the data in order to identify market problems,
- The willingness of regulators to use the analyzed data to intervene when a market problem has been identified. Failure to intervene when necessary could be seen by the public as moral hazard for the regulators, given that the regulators hold data on relevant market transactions.

3.1.4 Timing of Implementation

The main impact of the financial crisis struck in 2007 / 2008. The USA's program in response comprised primarily the Dodd-Frank Act and Volcker Rule, both of which were written, agreed and implemented within 3 years. The EU's program has taken longer –

MiFID2 did not go live until early 2018, and the implementation of Securities Financing Regulation, CSD Regulation, Money Markets Fund Regulation, CCP resolution and elements of the Shadow Banking reform are going into 2019 and beyond.

The main building blocks of a safer financial system are now hopefully in place, but more needs to be done rapidly to complete the structure. It also appears that some rules defined in recent years may no longer be fully aligned with the market environment, as when coming into force, the relevant activities or products are no longer used on the same scale, or have been revisited by the industry itself to address end-investors' concerns.

These factors need to be properly addressed in the definition of future rules, in particular with the review of several pieces of legislation scheduled in the near future. In Europe, a long list of legislative texts is already on the table for negotiations, as the AIFMD, the CSD Regulation, and Solvency II. New recommendations from the Basel Committee on the various categories of risks and use of internal models for risk assessment (the so-called Basel 4 accord) will also have to be transposed worldwide in the various regions.

In brief, it is key that regulators have a reasonable approach in future revisions and definitions of new rules in terms of feasibility and timeframe. This is the best way to ensure that the expected outcome will be attained instead of creating unnecessary burden and missing the objective of further protection.

3.1.5 Other Countries

The G20 requirement of 2009 for central trading, clearing and reporting of OTC derivatives extends of course to all G20 members, not just Europe and North America. In Asia Pacific, Hong Kong, Singapore and Australia have largely implemented these requirements. Other countries will undoubtedly follow, but it must be emphasized that the 2007 / 2008 crisis was mainly a European and North American problem.

3.1.6 Articulation and Consistency between the Different Sets of Rules

This point has also been mentioned earlier in several instances. In some cases, regulations have been adopted in silos without ensuring the smooth articulation between different provisions. The inconsistency between new requirements on mandatory clearing and prudential requirements for banking institutions is a very good illustration of this occurrence. Some provisions in MiFID2 have also proved to impede liquidity in financial markets instead of improving it as initially planned.

The European Commission consultation on the cumulative impact of the financial reform in the context of the Capital Markets Union (CMU) project - launched in December 2015 - was a major step and strong positive development in addressing the negative impacts resulting from this non-coordinated approach. This exercise should be reproduced on a regular basis, in particular to consider real impacts of new rules when entered into force. In addition, it should of course prevail as a major driver for adoption of any new legislative package in the future.

Another example is the AIFMD, which is due for review by the European Commission in 2018. In July 2017, ESMA published a set of proposals in its Opinion on asset segregation and the application of depositary delegation rules to CSDs ("ESMA Opinion"). From there, the Commission launched its official legislative review in March 2018 on two fronts: (1) a comprehensive regulatory impact assessment and (2) a proposal for measures to reduce regulatory barriers to cross-border distribution of investment funds in the EU (in the form of a Directive and a Regulation).

In order to potentially devise a more relevant and coherent AIFMD (II), one that brings added value for the EU and third countries accessing EU investor capital, EU policy makers will need to make sure that existing and well-functioning regulatory frameworks and infrastructure initiatives are not impaired. As one of the key objectives of the CMU initiative is to create coherence and consistency across all financial regulations, it will be indeed crucial to consider the cumulative impact of regulatory reforms and the risks associated with it, if not assessed properly. One must keep in mind that, when recalibrating rules, these are in full accord with the existing frameworks. Otherwise, it might raise the risk of creating more confusion and inefficiencies across regulatory dossiers and thus increase the systemic risk across EU financial markets, rather than improving the regulatory frameworks.

Lastly, it is essential that this type of coordination prevails in the approaches adopted by the different regions. Even if there is general agreement on the spirit of new rules to be introduced at the international levels, final provisions may differ significantly from one jurisdiction to another. This lack of consistency represents a major hurdle for international players who have to comply with different regulatory frameworks and then are submitted to a huge compliance burden. In this respect coordination at the international level is to be reinforced and further analysis is to be conducted on how to implement high level principles. Once again permanent dialogue with the industry is key and is the best way to ensure adequate design and timely implementation of new requirements.

3.2 Real Effects of New Regulation are still to Happen

As explained earlier, securities services providers have already significantly revisited their traditional business models to cope with the new regulatory framework and answer to the new expectations of their clients. At the same time, it is also obvious that many pieces of regulation have not been fully implemented and that a lot is to come in the near future. As a result, real impacts of new rules are still to be assessed and may lead to different occurrences.

T2S and the CSD regulation are very good illustrations of this situation. At this stage, many players are still in a "wait and see" posture and have not made their final choice of their targeted operating model. In parallel, most CSDs have been mainly focused on the compliance with new requirements imposed by the CSD Regulation over the last months. As a consequence, structural changes that may result from the new environment in the settlement space will probably happen later on and may lead to concentration across the industry due to increasing competition (for both CSDs and custodians).

Effective impacts of the clearing obligation are also to be further identified. Today, the buy-side community is not yet covered by this new rule and is still looking for the best way to comply with this new demand (for both clearing and collateral management). The same applies for margin requirements for non-centrally cleared OTC derivatives as the entry into force is phased in up to 2021. Financial participants have to make structural choice in this area while adopting a holistic view on their whole business.

Another example is new reporting obligation. In some cases, existing solutions are to be improved especially regarding quality of data. Scope of application is also under discussion as some proportionality could be introduced to reduce the burden on small players. In other situations, final rules are still to be adopted (as for the SFT Regulation), there is still uncertainty on which players will position themselves to offer their services to end-counterparties who intend to delegate the reporting to a third party.

Finally other parameters, not present when the rules were designed, will have to be combined with the new post-trade environment. One example is the emergence of new technologies, including cloud computing, Distributed Ledger Technology (DLT), Machine Learning and Artificial Intelligence.

3.3 Further Structural Evolution may Arise from Other Trends

As referred to earlier, the emergence of new technologies may well be the biggest game changer for the post-trade industry and has the potential to re-shape the post-trade landscape.

Big data analytics, artificial intelligence, robotics, regulatory technology, cloud solutions, Application Programming Interfaces (APIs), cyber security and DLT are just a few buzzwords that currently frame global trends in the financial sector. The growth of computing power combined with broader accessibility, decreased costs and higher levels of intermediation have led to disruptive financial technologies (FinTechs) emerging from almost every direction – creating new and transforming old industries in relatively short periods of time.

For instance, automated portfolio management services, so-called robo-advisors, are demonstrating how algorithms can be used to build and rebalance investment portfolios without any or only limited human interference. Robo-advisory is a good example for FinTech possessing all characteristics to be classified *disruptive*, even though it is still in its infancy stage. Originally brought up by tech startups, robo-advisors did not remain unnoticed in the securities domain and large investment management firms have already built or bought their own robo-advisory solutions – aiming at transforming the economics and scalability in the investment advice sector, by keeping human and operational costs low, while allowing for greater reach to customers through automation.

Generally, the use of robo-advisors is expected to lead to better user experiences through low-cost, diversified and mobile-enabled investment portfolios tailored to the clients' needs. However, one can only guess the implications of such developments for key policy objectives of investor protection, financial stability and fair and transparent markets. Concrete problem areas regarding conflict of interests are apparent, for example in situations where the algorithm is being programmed in a way that directs the investor to investment vehicles favored by the firm, rather than by the investor himself, due to higher compensation rates. There is also great risk of investor education, in that the firm's clients are not brought into the position to properly understand the underlying logic of the investment plans produced by the algorithm. Complexity could become especially dangerous in cases of algorithmic errors, where flawed designs lead to failing client investments.

Another key area of interest are distributed ledgers and specifically innovations around permissioned and shared distributed ledgers. Service providers are exploring the use of permissioned distributed ledgers for new business opportunities and user experiences. Noteworthy proofs of concept (POCs) have already been unveiled in the securities industry, for instance for situations where service providers make use of Blockchain-enabled solutions to enable private companies to manage electronic records of ownership of pre-IPO shares digitally. Other firms are looking to increase efficiencies of corporate action processes via so-called 'smart contracts' that would allow fully automated value changes of securities held by investors after corporate actions (such as stock splits, dividend payments, etc.). Further, Blockchain-based e-voting systems can facilitate shareholder voting processes for listed companies.

DLT solutions are also expected to bring transformational change to the post-trade space, for example in cases where a permissioned DLT is used to re-engineer post-trade operations like clearing, settlement and asset servicing for exchange-traded equities and OTC derivatives – facilitating close to real-time settlement in situations in which it is desired by both counterparties. Moreover, OTC derivatives could be programmed in form of 'smart contracts', settling cash flows via the use of distributed ledgers and streamlining the exchange of information and cash.

Other areas of use include more efficient loan syndication processing, enhanced transparency of repurchase agreement transactions and re-hypothecation, faster and more standardized transaction processes of short-term debt instruments like commercial papers, as well as automation of KYC / AML compliance procedures among financial institutions.

All of the above are just some of the highlights how DLT / Blockchain-based technologies could lead to a seismic shift in the securities services sector. Most DLT-based solutions are generally expected to enable cost reductions, increased settlement speed, better reliability and traceability of records, automated filings to regulators and a mitigation of operational and compliance risk through the standardization of data and the immutability of DLT databases. However, the technology is still in its infancy stage and broad-based application not yet in reach, with the legal status and regulatory implications of these innovations remaining unclear. Close private and public-sector cooperation is required to take advantage of these opportunities in a fair and responsible manner.

4. Conclusions

This Report, as a complement to the Report 1 ("Progress Made in Various Regulatory Initiatives Undertaken in the Aftermath of the Financial Crisis") has been designed to present a global picture of main changes experienced by the securities services industry over the past few years as a result of regulatory developments. Its purpose is to explain how these changes have led to a wide range of benefits for all financial participants, while exposing as well the challenges faced by the industry in this new context.

As a summary, the main benefits from these various moves are:

- Globally, end-investors benefit from better protection of their assets with new protection mechanisms and also enhanced transparency on where the assets are held. They also receive more information on the risks associated with their investments and operations and on the risks that may result from stressed situations.
- The system as a whole is much more resilient and much better equipped to face the failure of one or several participants and avoid contagion effects. Introduction of recovery and resolution plans and better risk management principles have been designed to reinforce the overall resilience of the financial system.
- In parallel, real efforts in terms of harmonization and standardization have contributed to improve the overall efficiency of post-trade and consequently, of all the value chain. These efforts should facilitate cross-border investments with the removal of some local barriers and national specificities.
- At the same time, monitoring of risks and enhanced safety have required the development of new operational processes, further access to financial market infrastructures and provision of additional disclosure. In that context, securities service providers play a key role in facilitating the effective deployment of such new models and their articulation with existing market practices. Handling the complexity of the new framework is also one issue where assistance of securities services providers is recognized as a real benefit for their clients.
- Finally, securities services providers are key partners for the development of new added services which assist their clients in being compliant with the new regulatory framework. In this area securities services providers have been quite innovative in the deployment of new solutions which are presented in more details in Section 2.

In parallel, implementation of the regulatory program has been (and still is) expensive, and the costs have largely fallen upon banks' earnings and capital and end-investors themselves. Many aspects of the new legislation have not yet been tested by events. Depositary liability, use of market data by regulators to intervene in markets, CCP resolution and the containment of contagion now have rules, but whether or how they will work in a crisis is not known. The likelihood is that the new methods are (at a cost) an improvement of the situation before 2008, and it is fervently hoped that it will be many years before the new rules are tested for real.

Lastly, there are other new trends that also represent major challenges for the post-trade industry. The role of new technologies and their potential to revolution the traditional landscape is huge. To what extent this will happen and the exact timeframe for these changes are still uncertain, but it is obvious that the status quo is not an option for any firm.

Some parameters have not been detailed in this report as the objective is to focus on those having the most impact from a post-trade perspective. There is however no doubt that some further changes will be needed as a result of developments including Brexit and the end of the low interest rate environment. The most successful players are likely to be those who manage to embrace all the major structural developments in an articulated and consistent way so as to define the most relevant business models for the future.

5. Working Group Members

Laurence Caron-Habib, BNPPSS (Lead)

Thomas Andrew, Brown Brothers Harriman & Co.

Italo di Lorenzo, Clearstream

Bill Hodash, DTCC

Maria del Pilar Jacome, Deceval

Javier Jara, DCV Chile

Irene Mermigidis, Clearstream / Regis-TR

Henry Raschen, HSBC

Urs Staehli, ISSA