Chapter 6
Securities Services: Settlement, Custody and Financing

Marc Robert-Nicoud

6.1 Introduction

Securities services, an essential and constant part of the capital market industry, have historically escaped the limelight. Securities service infrastructure has shown its resilience—and sheer importance—in the face of market upheaval during the financial crisis of 2008. And yet, in many important ways, securities services have recently taken center stage in the regulatory environment. Why this sudden and acute regulatory interest today?

Willie Sutton, the famous American bank robber of the 1930s, when asked why he robbed *only* banks, reportedly said, "That's where the money is!" The securities service infrastructure, in a similar way, is ultimately where the financial assets "are," and where these assets change hands. It must be safe, and it must be efficient.

The regulatory response to the last crisis has seen significant investments channeled into technologies and processes that are designed to reduce risks. These developments can also be leveraged to reduce banks' operating costs. Market harmonization initiatives like TARGET2-Securities (T2S)[1] and regulatory requirements add unprecedented momentum to the evolution of securities services.

This chapter starts with a brief overview of the fundamentals of securities services. We then turn to a review of the types of risks faced by market users, and to the unique role of securities service providers in mitigating these risks. A review of securities services follows, starting with the issuance of new securities, then settlement services with a focus on delivery-versus-payment models, and how settlement finality is achieved. Settlement naturally leads to securities financing, which is a driver of efficiencies and risk reduction. Securities under custody, whether used as

[1] See Sect. 6.5.4 for further details.

M. Robert-Nicoud (✉)
Clearstream Holding AG, 61 Mergenthalerallee, Eschborn 65760, Germany
e-mail: Marc.robert-nicoud@clearstream.com

R. Francioni, R.A. Schwartz (eds.), *Equity Markets in Transition*,
DOI 10.1007/978-3-319-45848-9_6

collateral, or as the object of a transaction, require servicing in relation to income payments and corporate events. An exploration of these custody services completes the review.

6.2 Basics

6.2.1 The Nature of the Business

Securities services are a natural consequence of any trade execution. This is the case regardless of whether the parties trade on an exchange, or over the counter (OTC); whether domestic or international securities; or whether the trade is part of the primary (new issuance) market or the secondary market. The most common securities are equities (shares) and fixed-income securities (e.g., bonds). Equities entail ownership in a company, and they document the rights associated with ownership. Fixed-income securities certify the right to obtain interest and redemption at maturity. Both bonds and equity trades require comparable securities services. The majority of equity trades take place on exchange; fixed-income instruments primarily trade OTC. Figure 6.1 shows the evolution of securities services from the traditional, such as settlement and safekeeping, to complementary value-added in markets around the world.

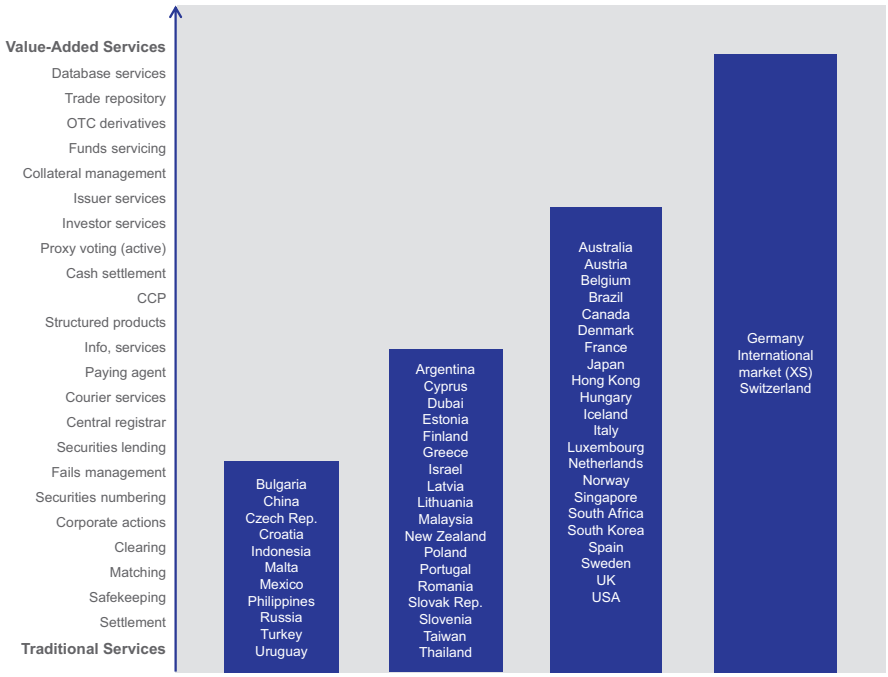

Fig. 6.1 Development of value-added securities services across markets (Thomas Murray Data Services: CMI in Focus - Value added services by CSDs, 2014. Available at: ds.thomasmurray.com/opinion/cmi-focus-value-added-services-csds)

For orientation, it is useful to connect some of these services together at the outset. Settlement services are required to execute the transfer of ownership and cash after a securities trade. Settlement can have several purposes: mainly a sale or purchase, but also the transfer of securities and cash in the context of primary issuance, collateral management, and securities lending. At any point during the life of a security, it will have to be safely kept (physically or electronically). The corporate events relating to the security will call for corporate action processing, also referred to as asset servicing. Safekeeping and corporate action processing together can be referred to as custody services. A number of ancillary banking services exist in conjunction with traditional securities services, specifically credit and cash management services.

At the heart of this chapter is the concept of a "security." The concept can have different definitions in different jurisdictions. This chapter adopts a functional approach that side-steps this mostly legal debate. The definition adopted by UNIDROIT (an intergovernmental organization based in Rome that focuses on the harmonization of private law between states), in its convention on substantive rules for intermediated securities, allows us to focus on this essential: "any shares, bonds or other financial instruments or financial assets (other than cash) which are capable of being credited to a securities account and of being acquired and disposed of in accordance with the provisions of this Convention."[2] In Sect. 6.4, the most common types of securities are described as part of the securities issuance process.

In summary, securities services exist to support securities markets across a wide range of areas, from the issuance of securities to their redemption or divesture. That latter area includes processing the rights and obligations that result from owning and transferring securities. Put simply, securities services are diverse, with some being at the core of the financial infrastructure.

Figure 6.2 shows where securities service providers are embedded in the financial market value chain. As elaborated on later in this chapter, a well-functioning securities market relies on securities services and on the accompanying providers to ensure issuer (sell-side) and investor (buy-side) protection. Securities service providers contribute to creating the best conditions for the supply and demand of the securities markets. Not surprisingly, well-functioning securities services are essential to stable, fair, and performing financial markets, given the importance of the securities market to the financial industry.

6.2.2 Market-Structure Development

Financial infrastructure is, in essence, local in nature. But in terms of reach, it is as global and far flung as the markets it serves. The most relevant securities markets are in the USA and Europe, and then there is also the international (Eurobond) market. Europe is the most sophisticated, and the most active cross-border market. Figures 6.3 and 6.4 show the level of internationalization in European and US debt holding structure.

[2] UNIDROIT, 2009. "Unidroit convention on substantive rules for intermediated securities." Available at http://www.unidroit.org/english/conventions/2009intermediatedsecurities/convention.pdf.

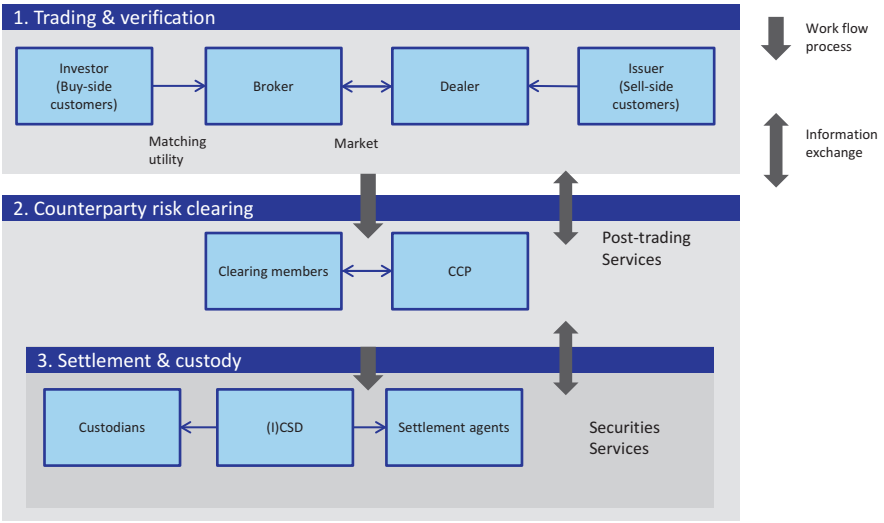

Fig. 6.2 Stylized illustration of the value chain and securities services

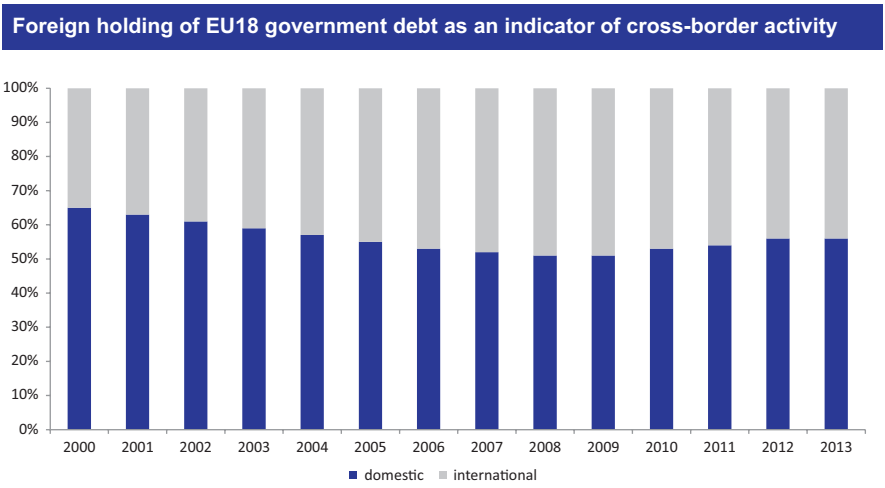

Fig. 6.3 Foreign holding of government debt as an indicator of cross-border activity (Accenture Research, 2014)

The European securities market is also among the most dynamic, undergoing a complete transformation of its settlement infrastructure with T2S. This chapter consequently pays greater attention to the European landscape while, at the same time, making frequent reference to the USA and the international market.

Securities services are tailored to the applicable legal environment, market practices, regulation, and taxes. Many of these factors weigh in favor of local specificities. Significantly among them is investors' preference for local investment, a preference sometimes referred to as a "home-bias."

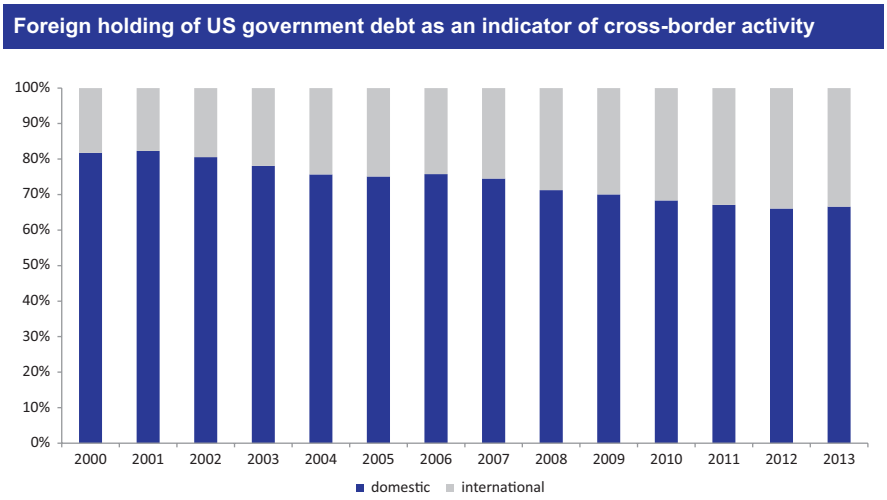

Fig. 6.4 Foreign holding of government debt as an indicator of cross-border activity (Bureau of the Fiscal Service, Department of the Treasury, 2014. "Treasury Bulletin." Available at http://www.fiscal.treasury.gov/fsreports/rpt/treasBulletin/b2014_4.pdf)

The European Union (EU), and especially the Eurozone, has pushed for a harmonization of trading, clearing, and securities services aiming to leverage a single market for securities. The UN, similarly, has sponsored global harmonization initiatives such as UNIDROIT's Convention on substantive rules for intermediated securities. A progressive harmonization of laws and regulation will certainly support the creation of regional, or even global, securities markets.

Harmonization also has a cost dimension. Securities services are generally delivered according to a scalable business model, and large investments in infrastructure are needed for securities services that satisfy market and regulatory standards. Average costs tend to be inversely related to volume: the larger the volumes, the lower the costs. For instance, large markets tend to have a lower cost of settlement than small ones, see Fig. 6.5. Harmonization between markets is a necessary first step to volume consolidation and the prospect for cost reduction that follows.

6.2.3 Securities Service Providers

The securities service industry is supported by a sophisticated intermediation structure to bring investors, issuers, and, more generally, trading parties together in the performance of specialized and complex processes. Numerous providers offer securities services—from central securities depositories (CSDs) and international central securities depositories (ICSDs), to custodians and other banks. These institutions compete for securities services although they do not necessarily have the same service scope, as shown in Fig. 6.6.

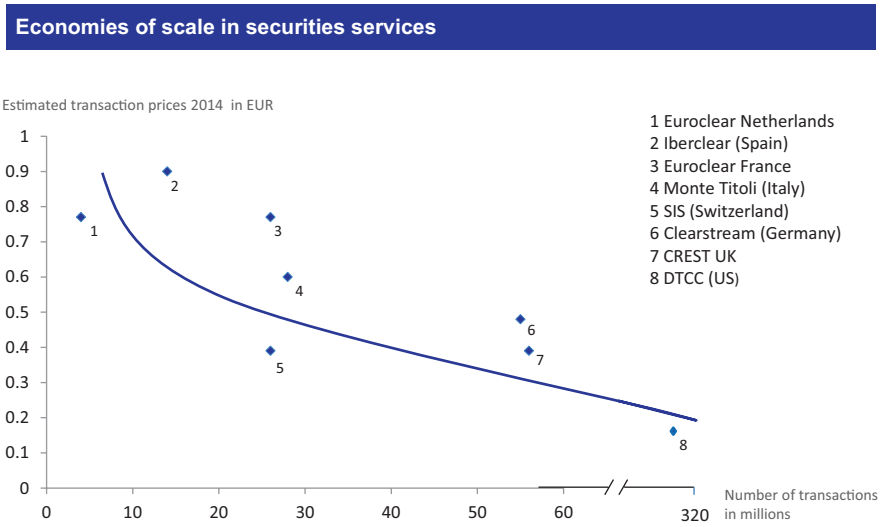

Fig. 6.5 Economies of scale in securities services

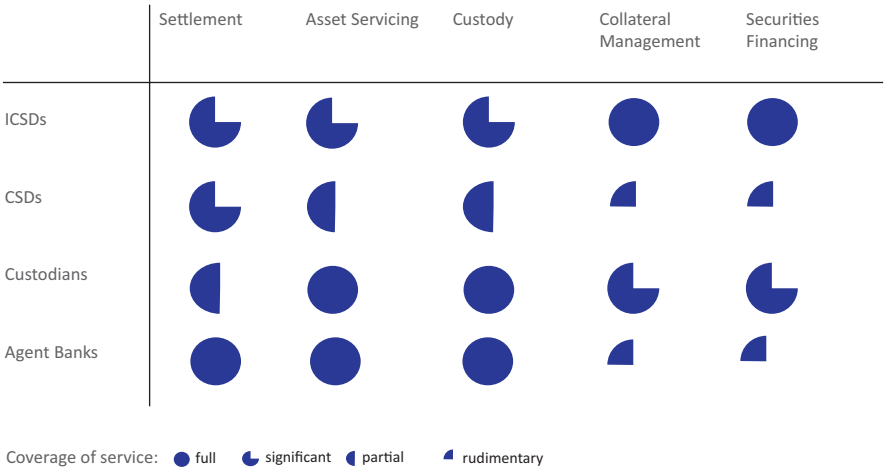

Fig. 6.6 Varying service scopes of securities service providers (Clearstream Research and Data, 2014)

The services are described later in this chapter. Notably, most of the institutions mentioned in this chapter are directly or indirectly connected to each other by the services they offer or receive. The very competitive nature of the securities service space does not diminish the partially complementary nature of the various offerings, as well as from their importance for the reliability of financial markets.

A short, simplified overview of some typical interaction between these securities service providers is useful to put in context the information later in this chapter. The interaction between these entities is best understood by following the settlement and custody process chains:

- Custody/security holding chain: An investor holds a position in a security. The investor may have physical possession of the security, or may have the position in deposit with a bank. The bank, in turn, can either have the securities in its own vaults, with a custodian, or with a central securities depository. The nature of the rights in a custody chain is a function of the legal jurisdiction of the holding, a matter that can sometimes lead to complexity in the case of cross-border holdings. Take the example of a French investor holding a US security in a French bank account. The bank may hold the position in the US security with a global custodian and its US sub-custodian, with an ICSD and its sub-custodian, with a local US custodian, or directly with the relevant US CSD. (The Federal Reserve Banks act as CSD for all marketable US Treasury securities, and the Depository Trust and Clearing Corporation or DTCC for other securities.) The choice is generally not the investor's, but lies with the investor's bank. The decision will be a function of cost, quality of access (e.g., market deadlines), relationship, counterparty location, and securities financing services.
- Settlement/security transfer chain: An investor seeking to buy a position in a security will likely leverage his or her retail bank to execute and settle a trade. The bank will either settle internally (if the counterparty uses the same bank) or will use a settlement agent or a custodian (if the counterparty uses a different bank). In the latter case, the two custodian banks will transfer the securities and the cash in a central securities depository. For the purpose of this settlement, the CSD also acts as a securities settlement system (SSS), and it will utilize a payment system. Depending on the security and the market, the trade may also be reported in a trade repository.

The term "custodian" typically refers to entities with different business models and service scopes. The services they offer are, however, comparable. In fact, they can also be compared to the services of CSDs and ICSDs (Fig. 6.7).

6.3 Review of Risks mitigated by Securities Service Providers

Securities services are generally reliable and safe. In fact, these services help market users to reduce and mitigate their risks. Safe and efficient securities service providers actually help reduce systemic risk. But, of course, providers are not entirely immune from risk. However, most service providers in this field are strictly regulated, and they adopt very low risk profiles. This is justified because their inability to perform could have significant and adverse effects on the markets they serve, and on the

Term	Description
Custodian	An organisation that holds securities and (usually) cash on its clients' behalf; and may effect settlement of trades on its clients' behalf. Custodians can also be split into varying degrees of scale: - Global Custodians: custodians that safekeep assets for their clients in multiple jurisdictions around the world - Sub-Custodian: a custodian within a global custodian's network of custodians
Central Securities Depositiory (CSD)	An organisation that holds securities, normally in *book-entry* form; usually the ultimate place of settlement, effected through book-entry transfer
International Central Securities Depository (ICSD)	A CSD that handles domestic and international securities. Only two organisation are recognised as ICSDs, namely Clearstream Banking and Euroclear Bank.
Settlement agent	An organisation that effects the exchange of securities and cash on behalf of ist clients; resultant securities and cash balances may or may not be held

Fig. 6.7 Definitions of certain securities service providers (Simmons, M.: *Securities Operations: A Guide to Trade and Position Management*, Wiley, 2002, p. 227)

broader economy in the event of an upheaval. Securities service providers that play an infrastructure role like CSDs and ICSDs typically do not assume principal risk in the execution of their customers' instructions (Fig. 6.8).

The importance of risk management in current financial policy initiatives calls for the topic to be discussed early in this chapter. Risks that are of relevance to securities services can be categorized as credit risk, liquidity risk, operational risk, and legal risk. Figure 6.9 outlines these risk categories, followed by a brief examination of how each impacts and is mitigated by market infrastructure such as CSDs and ICSDs. It is worth remembering these risks throughout the securities service descriptions that follow this section.

6.3.1 Credit Risk

Credit risk is the risk that a counterparty—that is, a participant or other entity—will be unable to fully satisfy its outstanding financial obligations at any time, or will otherwise fail to honor the terms and conditions of an agreement. Credit risk is inherent in all activities that depend on the counterparty's, issuer's, or borrower's performance. This risk typically arises each time funds are extended,

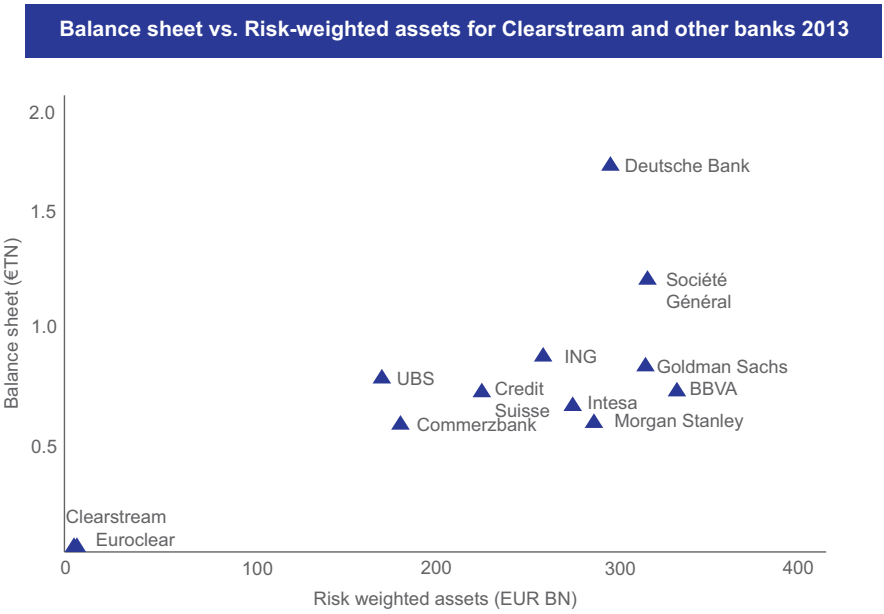

Fig. 6.8 Balance sheet vs. RWAs for ICSDs and various banks, 2013 (Clearstream Research and Data, 2014)

committed, invested, or otherwise exposed through actual or implied contractual agreements. Indeed, any trading party is subject to credit risk because the counterparty may default before delivering the cash or securities. If there is a failure to deliver cash or securities, additional costs may be incurred by the parties of the transactions.

In a number of ways, the services of securities providers help to reduce credit risk considerably. For instance, there is a risk of delivering securities without receiving payment, or paying without receiving securities in any trade. Many (I)CSDs in their capacity as SSS perform settlement in a delivery-versus-payment (DVP) arrangement. This means that the exchange of cash and securities can occur practically simultaneously in the books of the SSS.

In addition, many SSSs in Europe offer settlement in central bank money, the cash leg taking place in the books of a central bank. The risk of cash not being available is significantly reduced in this way. SSSs also typically apply a settlement finality rule, which mitigates the risk. Once final, a settlement cannot be reversed for the benefit of the creditors of a counterparty. In the collateral management area, some (I)CSDs offer tri-party repo services, as part of which the exchange of securities and cash also take place in DVP mode in the safe environment of a CSD. In most jurisdictions, CSDs do not own the securities of their customers, not even on their behalf. Consequently, if they default, securities cannot be used to satisfy any debt obligations of the CSDs.

	Source	Example causes	Emerging complexity drivers
Credit risk	Default by borrower, leading to loss of principal and/or interest	• Credit default risk • Country risk	• Agency models • Bilateral margining • Shift to central clearing
Liquidity risk	Lack of funds to support operations or inability to exit market position	• Funding liquidity risk • Market liquidity risk	• Withdrawal of repo capacity • Execution venues for new asset classes
Operational risk	Failure of internal processes, people and systems	• Process failures • Systems failures/IT risk • Damage to physical assets • Compliance/legal risk	• System outages • Interconnectedness • New technologies
Legal risk	Unexpected application of law or regulation	• Uncertainty of laws • Conflicting bodies of law	• Cross-border transactions

Fig. 6.9 Outline of four categories of risk (Oliver Wyman, 2014. "The Capital Markets Industry: The times they are a-changin'." Available at http://www.oliverwyman.de/media/The_Capital_Markets_Industry_-_The_Times_They_are_A-Changin.pdf)

6.3.2 Liquidity Risk

Liquidity risk is the risk that a counterparty will have insufficient funds to constantly satisfy its financial obligations anytime expected, notwithstanding the counterparty's ability to potentially do so in the future. Liquidity risk is the risk that the seller of an asset will not receive payment when due, and the seller may have to borrow or liquidate assets to execute other payments. It also includes the risk that the buyer of an asset will not receive delivery when due, the buyer having to potentially borrow the asset in order to execute onward delivery obligation. Thus, both parties to a financial transaction are exposed to potential liquidity risk on settlement date.

(I)CSDs and SSSs contribute to the mitigation of this risk by offering emergency borrowing services to lend funds or securities, for short periods, in anticipation of receiving delayed cash or securities. Generally, securities service providers have a very positive impact on market liquidity. That is because the efficiencies they create enable assets to move as part of faster and yet safer processes.

6.3.3 Operational Risk

Operational risk is the risk that deficiencies in information systems or internal processes, human errors, management failures, or disruptions from external events will result in the reduction, deterioration, or breakdown of services. These operational failures may lead to delays, losses, and liquidity problems. This risk is inherently present in all human activities. Both users and providers of securities services must continuously manage operational risk. There are some additional risk factors: different rules and conventions by markets; different types of securities, capital, or currency restrictions; availability and communication of timely and accurate information; and degree of automation in different markets. The automation of securities services in this field helps to mitigate the risk. But experience shows that errors in corporate action and settlement processing are common causes of losses.

These errors can be greatly mitigated by effective risk identification and control. Moreover, effective policies and procedures, a strong control environment, and efficient use of technology are essential risk management tools. Automation and use of straight-through processing (STP) significantly reduce operational risk.

6.3.4 Legal Risk

Legal risk is the risk of the unexpected application of a law or regulation, usually resulting in a financial loss. Legal risk can also arise if the application of relevant laws and regulations is uncertain. For example, legal risk encompasses the risk a counterparty faces from an unexpected application of a law that renders a contract illegal or unenforceable. Legal risk also includes the risk of loss resulting from a delay in the recovery of financial assets, or a freezing of positions resulting from a legal procedure.

In cross-border as well as some national contexts, different bodies of law can apply to a single transaction, activity, or participant. In such instances, the infrastructure and expertise provided by securities service providers substantially reduce the risk on market users. In addition, the depth of experience and expertise of securities service providers allow them to conduct detailed research into the impacts of regulatory initiatives, a matter that is useful for informing the legislative process.[3]

6.3.5 Conclusion of Risk Review

The most likely risk to materialize in securities services is operational risk. Still, the most prominent risks mentioned in industry circles are the credit and liquidity risks—probably because they are more closely associated with systemic risk. Put

[3] For example the standards developed by the International Securities Market Advisory Group, see the website of the International Capital Market Association for more. www.icmagroup.org.

differently, as the Committee on Payments and Market Infrastructures (CPMI) describes in its Principles for Financial Market Infrastructure, CSDs and other market infrastructure may face systemic risk caused by the inability of one or more participants in a market to perform as expected. Consequently, "knock-on" effects are possible.[4] Moreover, the complex links between market infrastructure can also cause disruptions passed from one market to another. Clearly, an inability of market infrastructure to complete settlement could have significant adverse effects on the markets it serves.

On the other hand, market infrastructure such as CSDs, in their function as SSS entities, contribute significantly to the mitigation of credit and liquidity risk. They do so by offering DVP settlement and by applying settlement finality rules, such as the Settlement Finality Directive in Europe.

As agents, securities service providers are not directly exposed to credit and liquidity risks. (I)CSDs providing ancillary banking services assume marginal principal risk, and are tightly regulated by prudential supervision. They are not party to the transactions they settle for their customers. The securities held by the (I)CSDs on behalf of their customers do not appear on their balance sheet since they remain legally owned by their customers.

There is no evidence, nor any suggestion, that CSDs contributed to the financial crisis of 2008. And many analysts would argue that theirs was a positive role: providing liquidity and safety when the markets were lacking both. Regardless, the critical part that CSDs play as securities settlement systems and as custodians has made a higher degree of scrutiny a legitimate issue.

In the aftermath of the financial crisis, regulators have put pressure on banks to ensure that they have credible recovery plans that do not require extraordinary governmental support. And they have put pressure on banks to also have "living wills"—plans for the orderly wind-down of their services. Market infrastructure is not immune to this requirement that the collapse of a single institution does not endanger the entire market. That is clear from reports such as the CPMI-IOSCO study of October 2014 on the Recovery of Financial Market Infrastructures.[5]

Pursuant to the report, the purpose of a recovery plan is the identification of the FMI's critical services, stress scenarios, and recovery triggers, as well as a substantive description of its recovery tools and tools to address structural weaknesses.[6] In essence, the report argues that by maintaining structured and realistic plans for covering these topics, market infrastructure are not just introducing steps to maintain their own resilience under extreme circumstances. More generally, under extreme circumstances, the steps also benefit markets that are reliant on these infrastructure services.

---

[4] Committee on Payments and Market Infrastructures, 2012. "Principles for Financial Market Infrastructures." Available at http://www.bis.org/cpmi/publ/d101.htm. N.b.: the Committee on Payment and Settlement Systems (CPSS) changed its name to the Committee on Payments and Market Infrastructures (CPMI), on 1 September 2014.

[5] Committee on Payments and Market Infrastructures, 2014. "Recovery of financial market infrastructures." Available at http://www.bis.org/cpmi/publ/d121.pdf.

[6] *ibid*, pp. 8–11.

6.4 Issuing Securities

Companies and governmental agencies seeking sources of financing can either ask banks for a loan or turn to the financial markets directly to raise capital. Those who raise capital through the creation and distribution of securities to investors are known as issuers. They can either sell part ownership in the company represented by shares or borrow cash from investors through bonds. Government entities, whether local or supranational organizations, can only issue bonds. In contrast, companies or corporations also issue shares (equity).

The majority of trades executed in regulated securities marketplaces around the globe on a daily basis are in outstanding securities (i.e., securities that have already been issued). Securities in this category are traded in the secondary market. In contrast, newly issued securities are traded and settled in the primary market (Fig. 6.10).

6.4.1 Methods of Issuing Securities

Bringing securities to the marketplace requires special skills to manage the process efficiently, an expertise an issuer of the securities (either a company or a government) does not generally possess. It is therefore common practice for issuers to appoint specialist agents who typically belong to the corporate banking and investment

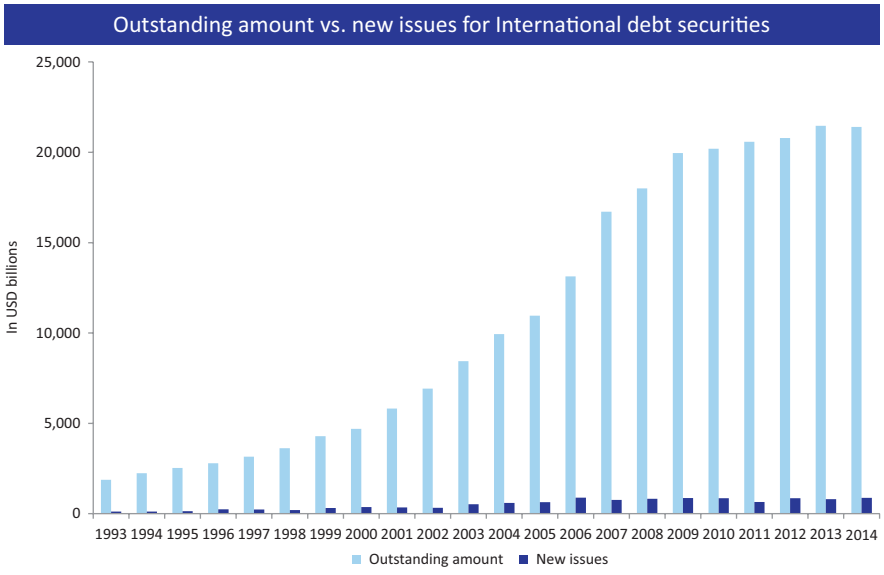

Fig. 6.10 Outstanding amount vs. new issues for international debt securities (bonds and notes) (Bank for International Settlement, Debt Securities Statistics. Available at https://www.bis.org/statistics/secstats.htm)

banking areas. These specialists coordinate the activities of numerous agents, from the calculation agent to the paying agent and the legal advisors to others. They will advise issuers, distribute the securities to investors, and ensure that the issuer receives the cash at the agreed time.

Securities can be issued by various methods for equity or debt, based on the market conventions where the issue is launched. In most cases, the issuer will publish a paper, sometimes called a prospectus or term sheet indenture, detailing the quantity of the issue and its price, as well as a description of the issuing company.

Bonds can be issued via either auction or syndication. In an auction, securities are sold to the highest bidders by, for example, central banks or funding agencies on behalf of their governments. In a syndication, the lead manager creates a consortium of banks and other market participants who work together to promote the distribution of the bond to investors.

Shares are usually issued via an initial public offering (IPO), advertised in the media and by a prospectus. A syndicate of market participants receives share allotments from the lead manager (on behalf of the issuer), and then allots some or all of these shares to their clients. Shares can also be issued in a restricted manner in a private placement by only offering the shares to a select group of institutional investors, among them pension funds and insurance companies.

Securities can be issued in registered or bearer form. The issuer or its agent keeps records of the holders in registered securities. Securities issues in bearer form are, theoretically, traded without any record of ownership, so physical possession of the security is the sole evidence of ownership. In practice, the majority of securities issued to the public, bearer or registered, are now immobilized and represented by electronic book entries in which the transfer of securities ownership is realized by crediting or debiting the seller's or purchaser's account without transferring physical certificates between counterparties.

6.4.2 Issuing via (International) Central Securities Depositories

Lead managers often turn to (I)CSDs to bring a security issue to the market because they possess the critical infrastructure for distribution, settlement, and safekeeping. Some (I)CSDs also provide value-added services such as the custody services described later in this chapter. That means that they can service a security throughout its entire lifecycle.

Clearstream Banking S.A., for example, offers the issuing community a wide range of products and services for debt, equities, investment funds, warrants, and structured products. Moreover, it provides the infrastructure for issuers to reach investors anywhere in the world.

Services offered by (I)CSDs include eligibility assessments, issuance, and distribution of domestic, foreign, and international new issues of global and domestic instruments: certificates of deposit, depository receipts, treasury bills, commercial papers, short-term and medium-term notes, bonds, equities, warrants, equity-linked notes, and investment fund shares.

(I)CSDs can also assist lead managers, lawyers, and issuing agents by reviewing issue structures. They can also provide additional information on operational procedures and the applicable documentation in the offering memorandum, prospectus, and agency agreement.

In the case of bond issuance, we can distinguish between securities issued to a domestic market, securities issued to a foreign market, and so-called international security types such as "Eurobonds."

6.4.2.1 Domestic Bonds

Domestic bonds are issued by resident borrowers in their own local market and currency, and held by their local CSD. An example is a US issuer issuing in USD via DTCC in the USA.

6.4.2.2 Foreign Bonds

Foreign bonds are securities issued in domestic markets by borrowers domiciled in foreign countries. They are normally denominated in the currency of their issuing market. These securities are held in the CSD of the domestic market where they are issued, and are often assigned colloquial names reflecting these (foreign) domestic markets (Fig. 6.11).

6.4.2.3 "Eurobonds"

CSDs handle domestic securities. ICSDs, on the other hand, are specialized in servicing foreign and international debt securities, known as Eurobonds. Peter Norman defines a Eurobond as "issued by a borrower outside its own country that may be denominated in a currency foreign to the borrower or to the purchaser, or both, and that is not subject to withholding tax or other legislation by the host country, in whose currency the bond is issued."[7] An example is a US issuer who might decide to issue bonds under UK law denominated in Euros to make its bonds more attractive to foreign investors.

[7] P. Norman, *Plumbers and Visionaries—Securities Settlement and Europe's Financial Market*, Wiley, 2007, p. 316.

Colloquial name	Currency	Issuer	Market
Yankees	USD	Non-US domiciled	USA
Bulldogs	GBP	Non-UK domiciled	UK
Matadors	EUR	Non-Spanish domiciled	Spain
Samurais	JPY	Non-Japanese domiciled	Japan
Pandas	CNY	Non-Chinese domiciled	China

Fig. 6.11 Common colloquial names for certain foreign bonds

The features of Eurobonds have resulted in ICSDs developing extensive distribution networks. As a result, this enables them to distribute new issues across multiple jurisdictions in the vast majority of currency denominations not subject to restrictions.

6.4.3 Identification of Securities

The International Securities Identification Number (ISIN) is the only internationally recognized standard for the unique identification of a security. The international reach is vast. ISIN is a key data field for cross-border trading that is used globally to identify securities, and it is recognized by many regulators as a mandatory data field for transaction reporting. When a CSD initially accepts a security, it is provided with an ISIN code and a Classification of Financial Instruments (CFI) code to permit its easy identification throughout its lifetime. The unique identification of a security is essential to the orderly trading and post-trading of any security. The rules governing the allocation of ISINs are set by the International Organization for Standardization (ISO) and the Association of National Numbering Agencies (ANNA).

An ISIN consists of three parts: a two-letter country code, a nine-character alpha-numeric national security identifier, and a single check digit. For example, SIX Financial Information is the official securities numbering agency in Switzerland (prefix CH), Liechtenstein (prefix LI), and Belgium (prefix BE). To this end, it provides ISINs for equities, bonds, and other financial instruments issued in Switzerland. US ISINs are allocated by CUSIP Global Services (CGS), which is managed on behalf of the American Bankers Association by S&P Capital IQ. ISINs for Eurobonds consist of the nine-digit code common to both ICSDs for the issue, preceded by "XS" and followed by a numeric check digit. ANNA provides complete and updated information on ISINs and numbering agencies. The CFI code allows the grouping of financial instruments in a consistent way throughout the industry compatible with ISO rules.

European Pre-issuance Messaging System
Clearstream Banking, Euroclear Bank, and Depository Trust and Clearing Corporation (DTCC) have a joint initiative to increase the speed and efficiency of ISIN and common code allocation for selected money market instruments. Launched in 2002, the European Pre-issuance Messaging System (EPIM) platform is an automated, secure system that uses standard messaging formats and a standard messaging protocol to disseminate issuance information between the relevant primary market participants. For more information, please visit www.clearstream.com/epim.

6.4.4 Closing and Distribution

Once an issuance is closed, i.e. terms and allotment are agreed, payment is made to the issuer and the securities are allotted to investors. After a CSD or an ICSD (the typical place of a primary deposit) confirms receipt of the security from the issuer, they distribute their respective holding to the accounts of investors to whom the securities are to be allotted. Distribution to the issuer or his or her agent is then confirmed.

All subsequent trades of these securities will now take place in the secondary market, regardless of whether owners choose to sell the securities immediately, or to hold them. The secondary market for bonds is limited in that it comes to a close with the maturity of the bond. The secondary market for equities ceases only as a result of an event that causes the shares to no longer exist (i.e. a takeover, or a company bankruptcy).

6.5 Settling Transactions

6.5.1 Settlement and Finality

A number of securities service firms provide settlement services to their customers. At banks, this usually refers to contractual settlement (a contractual right against the bank which, in turn, will have to secure a true settlement), that is, unless the transaction is internalized by the bank. At this point, the primary market for the security no longer exists. This is because the securities are brought to the marketplace and the issuer has received cash in exchange for them (Fig. 6.12).

Ultimately only SSSs provide final settlement to effect the definitive transfer of property between buyers and sellers of intermediated securities. SSSs ensure and clearly define the moments of enforceability and irrevocability of transfer orders,

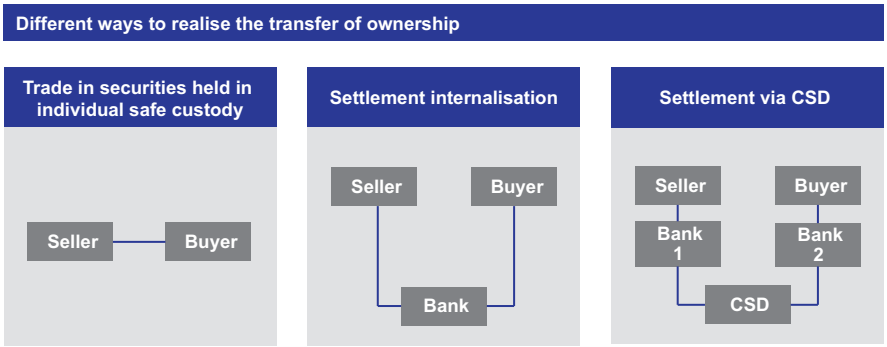

Fig. 6.12 Different models for effecting the transfer of ownership (Deutsche Boerse: The European Post-Trade Market, 2005, p.23. Available at: https://deutsche-boerse.com/blob/2534550/34b8a2d88a8b8e8bf6621fdf8513bc80/data/the-european-post-trade-market-0205_de.pdf)

and the final settlement of securities transfers. This situation is referred to as "settlement finality," a legally defined moment marking the point(s) in time at which transactions are irrevocable. Settlement finality, a key element in cases of bank insolvency or bankruptcy, is especially important in relation to the management of credit and liquidity risk.

Settlement activity can be measured by the number of transactions and/or the turnover amount (i.e., the total value of the settled trades). Figure 6.13 shows the number of transactions and total value of settled trades of CPMI countries by geographical region.

The European Central Bank (ECB), a thought leader in the field of settlement, makes use of three distinct definitions of settlement finality on settlement harmonization:

- *Settlement Finality I* is the moment of entry of a transfer order into the system, or the moment when a transfer order is protected against insolvency procedures.
- *Settlement Finality II* is the irrevocability of a transfer order (and not of the transfer itself) according to the rules of the system.
- *Settlement Finality III* is the moment of irrevocability of transfers (bookings in securities and cash accounts) according to the rules of the system.[8]

Harmonized standards for settlement finality are necessary to ensure efficient and safe cross-border trade and post-trade environments.

6.5.2 Types and Models of Settlement

Settlement is commonly executed according to one of the two alternative processes: firstly, by delivery free of (without) payment. This is a delivery of securities with no corresponding payment of funds. Two linked, free of payment instructions, can be referred to as "delivery versus delivery."

[8] European Central Bank. Harmonization. Available at https://www.ecb.europa.eu/paym/t2s/harmonisation/activities/html/index.en.html.

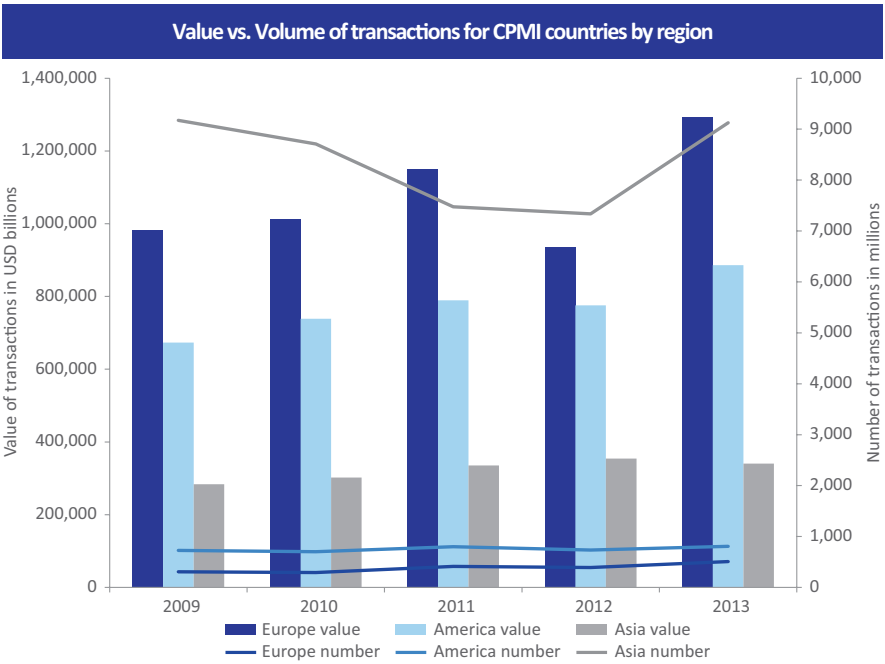

Fig. 6.13 Value and number of settlement transactions processed by CPMI CSDs by region (Bank for International Settlement, 2014. "Statistics on payment, clearing and settlement systems." Available at http://www.bis.org/cpmi/publ/d142.htm)

The second type is DVP, mentioned as a mitigant to credit risk in Sect. 6.3.1. DVP implies a link between a securities transfer system and a cash transfer system that ensures that delivery occurs if, and only if, payment occurs.

DVP usually takes the general form of a basic three-step process: First, the SSS blocks the underlying securities in the account of the seller, and then requests a transfer of funds from the buyer's bank to the seller's bank in the payment system (PS). Finally, it delivers the securities to the buyer if (and only if) a confirmation of settlement of the cash leg from the settlement bank is received (Fig. 6.14).

The CPMI report of the G-10 Central Banks, "Delivery Versus Payment in Securities Settlement Systems," published in 1992, identifies three approaches applied by SSSs to achieving DVP:

- *DVP model 1* are systems that settle transfers of both securities and funds on a gross (or obligation-by-obligation) basis. The final (irrevocable and unconditional) transfer of securities from the seller to the buyer occurs at the same time as the final transfer of funds from the buyer to the seller. The advantage is that transfers become final as they occur. That reduces exposures among users during the settlement day.

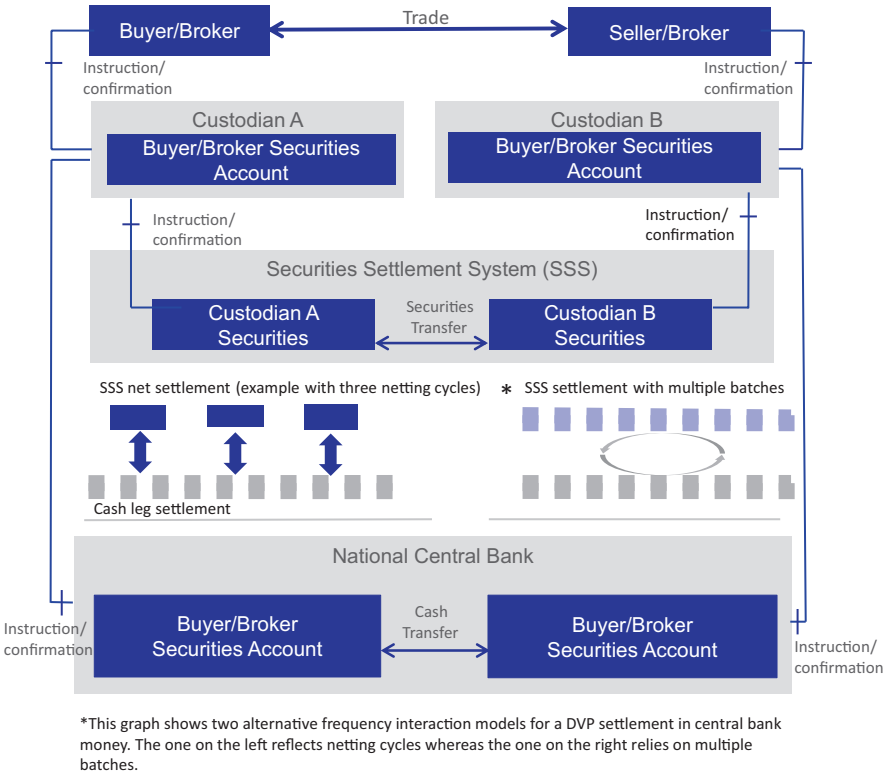

Fig. 6.14 The DVP process (Adapted from: European Central Bank: The use of bank money for settling securities transactions; ECB; 2004. Available at: https://www.ecb.europa.eu/pub/pdf/other/useofcbmoneyforssten.pdf)

- *DVP model 2* are systems that settle securities transfer obligations on a gross basis. The final transfer of securities from the seller to the buyer occurs throughout the processing cycle, but settles fund transfer obligations on a net basis. At the end of the processing cycle, the final transfer of funds from the buyer to the seller occurs. The advantage is that less cash liquidity is required as a result of the netting among users.
- *DVP model 3* are systems that settle transfer obligations for both securities and funds on a net basis. Final transfers of both securities and funds occur at the end of the processing cycle. The advantage is a reduction in the required cash and securities liquidity in contrast to models 1 and 2.[9]

The chart below shows the adoption of the different DVP models by geographical region (Fig. 6.15).

[9] Committee on Payments and Market Infrastructures, 1992. "Delivery versus Payment in Securities Settlement Systems." Available at http://www.bis.org/cpmi/publ/d06.pdf.

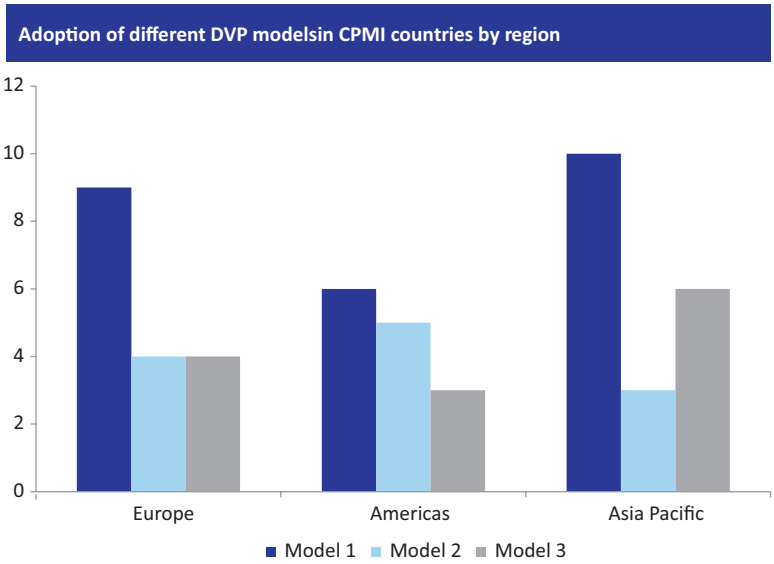

Fig. 6.15 Regional breakdown of DVP models, 2014 (Bank for International Settlement. Payment, clearing and settlement in various countries, September 2014. Available at: www.bis.org/cpmi/paysysinfo.htm)

6.5.3 Choice between Two Qualities of Settlement Funds

Simply put, DVP, as the term implies, is the transfer of cash against securities. Two distinct kinds of cash or money can be used. Firstly, there is central bank money, or money which is considered a liability of a central bank. Settlement in central bank money typically calls for the discharge of settlement obligations on the books of a central bank. Secondly, there is commercial bank money, or money which is considered a commercial bank liability, and is represented by the deposits held at the bank. Commercial bank money settlement carries a risk: settlement funds may not be available in the event of the insolvency of the commercial bank that is providing the settlement services. This risk is a function of the financial health of the commercial bank at stake.

6.5.4 Cross-Border Settlement in Central Bank Money: TARGET2-Securities

Launched in 2015, T2S is an ECB project to create a single European settlement platform. This platform is for the settlement of all securities executed in Euros, in central bank money, on a real-time gross settlement (DVP model 1) basis. The

so-called integrated model will allow both securities accounts held by CSDs and dedicated cash accounts (DCAs) opened on the books of national central banks to be managed directly on the same T2S platform. The single platform is intended to overcome differences in national rules and requirements and remove technical, legal, and fiscal barriers that today prevent efficient cross-border clearing and settlement in the EU. The participating markets represent almost all Eurozone settlement activity.[10]

We next consider the general mechanics of the platform: buyers transfer cash from their real-time gross settlement accounts (TARGET2 for the Euro) to dedicated cash accounts (DCAs) held with their national central bank.

Trades can then be settled DVP, with instructions being validated and matched on the T2S platform. Payment takes place via the DCA of the buyer, provided that there are sufficient funds in this account. The trade can settle if the securities are available.

At the end of the day, any cash still in the DCAs is swept back to the RTGS account. Several optimization tools are also in place to improve liquidity levels and enhance settlement efficiency.

Payments in T2S are, therefore, effected by the individual member's national central bank in central bank money, that is, provided that the buyer has sufficient cash or collateral deposited there. Payments and the related collateral movements can be effected during the TARGET2 working hours (07:00–18:00 CET). All central bank money operations of the European System of Central Banks (ESCB) that provide liquidity necessitate the deposit, by the counterparty of the operation, of adequate collateral value in the form of securities. The deposit is made at the respective central bank, via a national or an international clearing system (Fig. 6.16).

Thanks to the economies of scale from consolidating settlement volumes from many platforms onto a single platform, T2S aims to reduce settlement fees in Europe. In addition to cost savings, the dynamic effects of T2S are also expected to shorten the custody chain and to facilitate a greater mobility of collateral. T2S will, therefore, also offer market participants a number of new opportunities.[11] A 2014 study by Oliver Wyman that was commissioned by Clearstream outlined the T2S benefits that banks

[10] AS Eesti Väärtpaberikeskus (Estonia), Bank of Greece Securities Settlement System (BOGS), BNY Mellon CSD SA/NV (Belgium), Centrálny depozitár cenných papierov SR, a. s. (Slovakia), Clearstream Banking AG (Germany), Depozitarul Central S.A. (Romania), Euroclear Belgium, Euroclear Finland Oy, Euroclear France, Euroclear Nederland, Iberclear—BME Group (Spain), Interbolsa (Portugal), KDD—Centralna klirinško depotna družba, d.d. (Slovenia), Központi Elszámolóház és Értéktár Zrt.—KELER (Hungary), Latvijas Centrālais Depozitārijs (Latvia), Lietuvos centrinis vertybinių popierių depozitoriumas (Lithuania), LuxCSD S.A. (Luxembourg), Malta Stock Exchange, Monte Titoli S.p.A. (Italy), National Bank of Belgium Securities Settlement System (NBB-SSS). Oesterreichische Kontrollbank Aktiengesellschaft (Austria), SIX SIS Ltd. (Switzerland). VP Lux S.a.r.l. (Luxembourg), VP Securities A/S (Denmark).

[11] PricewaterhouseCoopers AG Wirtschaftsprüfungsgesellschaft, 2013. "The 300-billion-euro Question: Survey on the Benefits of TARGET2-Securities." Available at http://www.clearstream.com/blob/6220/fea603b397e51f16a0256b31fda02ad2/migrated-9b3hc6580nsgden-t2s-pwc-paper-pdf-data.pdf.

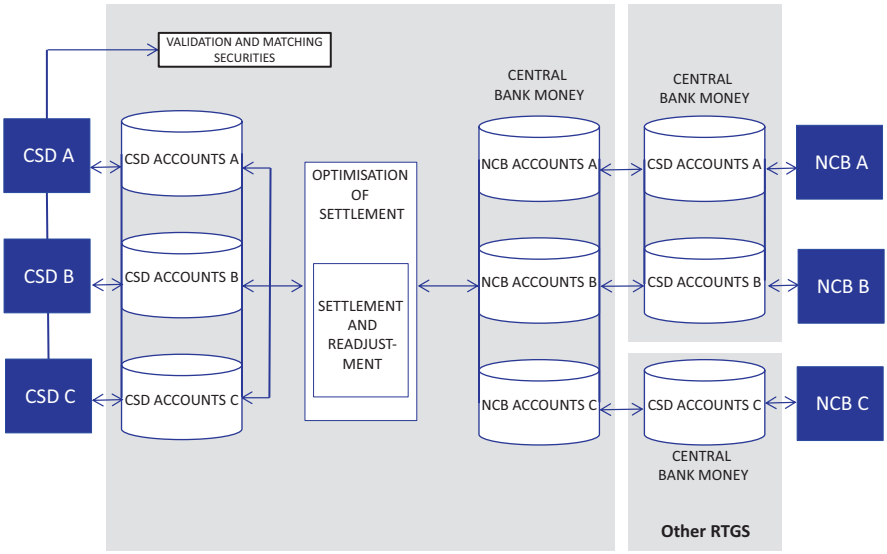

Fig. 6.16 The T2S settlement model (Banque de France. TARGET2-Securities. Available at www.banque-france.fr/en/financial-stability/payment-systems-and-market-infrastructure/target2-securities.html)

can unlock by consolidating their securities and cash holdings in Europe directly in CSDs and central banks.[12] According to the study, by so doing, banks are able to:

- Remove settlement-related exposures by interacting directly with market infrastructures and central banks, and also benefit from the self-collateralization of transactions and so reduce their credit needs.
- Pool collateral for settlement purposes and tri-party repo transactions (see Sect. 6.6.3 for further details) to reduce collateral buffers currently fragmented across markets.
- Net more cash settlements by using fewer central bank cash accounts to fund activities across markets.
- Simplify operations by leveraging a single CSD to access T2S markets.

Case studies reveal that banks can realize significant capital, funding, and operating cost savings thanks to direct market access and asset consolidation. The study estimated the savings potential in three high-level case studies, based on conservative assumptions.

In addition to cost efficiencies, a more consolidated T2S model can provide further benefits to banks, increasing stability and reliability of securities service

[12] Oliver Wyman, 2014. The T2S Opportunity: "Unlocking the hidden benefits of TARGET2-Securities." Available at http://www.clearstream.com/blob/68228/9f9261051598b77e44bddf291d655859/t2opportunity-pdf-data.pdf.

operations, and reducing operational complexity and risks. To take full advantage of these benefits, banks need to fundamentally reconsider and alter their current operating models, especially with settlement, in the securities service area.

In addition to T2S, the CSD Regulation[13] introduces a T + 2 EU settlement cycle. This means that the settlement period will be harmonized, set at a maximum of 2 days after the trading day for securities listed on stock exchanges, or other regulated markets. Market participants that fail to deliver their securities on the agreed settlement date will be subject to penalties, and will have to buy those securities in the market and deliver them to their counterparties. Europe, as a region, has therefore taken the lead globally in making settlement a standardized process with significant market benefits.

6.6 Securities Financing

6.6.1 Regulatory Momentum

In the aftermath of the financial crisis, regulators rushed to strengthen rules and regulations to take risk out of the financial market and to strengthen banks. The Basel III and Dodd–Frank regulations require banks to increase their equity levels to improve their solvency in the event of a crisis. Accordingly, these regulatory requirements result in an increased demand for so-called high-quality liquid assets (HQLA). Access to these securities, possibly via a third party, has become a key securities service. Securities financing is a key tool to fully utilize increasingly scarce HQLA.

6.6.2 Basics of Securities Financing

Securities financing is the ability to borrow or to lend cash or securities against collateral. In securities financing, collateral comprises assets given as a guarantee by a borrower to secure a securities loan, and it is subject to seizure in the event of default. Collateral management is the handling of all tasks related to the monitoring of collateral posted by a borrower to meet an exposure (optimization, substitution, settlement instruction, reporting, processing of margin calls and returns, notification of corporate events, etc.).

[13] EUR-Lex. "Regulation (EU) No 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories and amending Directives 98/26/EC and 2014/65/EU and Regulation (EU) No 236/2012 Text with EEA relevance." Available at http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0001.01.ENG.

Securities financing is generally used to enhance yield, enhance settlement, or access liquidity. Eligibility criteria will vary, but collateral typically includes cash, bonds, shares, and certain mutual funds. Collateral management is a securities service that combines analyses of collateral needs and availability and settlement operational capability. The aim is to transfer the collateral to where it is needed. The best performing collateral management systems use algorithms to ensure the most efficient use of collateral (i.e., to use the cheapest acceptable collateral to meet an exposure).

Securities lending agreements and repurchase (repo) agreements are the main securities financing transactions. Both agreements resemble collateralized loans. Still, under bankruptcy law, their treatment is more favorable to collateral takers who can simply sell the collateral and avoid delays. Repo and securities lending agreements contain key information, including the size of the transaction, the interest rate, the type of eligible collateral, the haircut, the maturity date, and the counterparties. The haircut is of particular interest in the context of collateral management. The haircut corresponds to the difference between the value of the collateral and the value of the cash. For example, €100 of securities as collateral for €96 in cash means a 4 % haircut. The magnitude of a haircut is mainly a function of the quality and liquidity of the collateral.

The financial intermediaries that participate in repo and securities lending transactions can be divided in two groups: (a) custodians and (I)CSDs who act as securities service providers for the repo and securities lending markets and (b) the securities dealers. The second group are customers of the first. The focus here, consistent with this chapter, will be the services by the custodians and (I)CSDs.

6.6.3 Securities Services supporting Securities Financing

Firstly, let us look at services supporting the repo markets. It is helpful to distinguish between bilateral and tri-party repos. Bilateral repos are repurchase agreements between two institutions, usually with DVP settlement. The cash giver may access a custodian or (I)CSD to receive, track, value, and account for the securities. In a tri-party repo transaction, a third party—the tri-party agent—provides a suite of collateral management and settlement services. These include settling the repos on its book, valuing the collateral (haircut), and ensuring that the lender's collateral eligibility criteria are satisfied.

Settlement occurs in the books of the tri-party agent, who performs the collateral management. Bilateral repos are mostly used to obtain specific securities and to raise cash against these securities. Tri-party is more suited to general collateral transactions. In the USA, the role of the tri-party agent is assumed by JPMorgan Chase and the Bank of New York Mellon. Outside the USA, the role of tri-party agent is assumed by the ICSDs.[14]

[14] The European Repo council states in its 2014 biannual report that more than 90 % of repo in the USA are tri-party, versus slightly more than 10 % in the EU.

Cash givers with a tri-party repo agreement have this cash upside: instead of using their cash, they can reuse the collateral they receive from the cash taker as collateral for OTC-derivative exposures they have with other counterparties. This benefit is important because newly enacted legislation (such as EMIR in the EU) has specific collateral-exchange requirements for OTC derivatives not cleared by a central counterparty. Cash givers could also reuse the collateral to undertake a repo to obtain cash financing, or to support liquidity or treasury lines.

Secondly, an institution may also want to borrow a security to avoid "failing" on a settlement delivery. Fails lending brings significant market benefits. It increases settlement efficiency by manually or automatically lending securities to enable a settlement where insufficient securities were available for transfer to the seller's account. The securities are borrowed against collateral, i.e., cash or securities in the account of the seller. Under the fails lending programs offered by (I)CSDs, the borrower is charged a fee split between the (I)CSD and the lender, that is, typically another customer of the (I)CSD. Securities lending can also serve more strategic objectives and investment strategies. The process is similar.

Thirdly, as mentioned in the settlement section, some securities service providers, including the ICSDs, facilitate access to central bank money operations. Customers can use their eligible assets as part of their comprehensive services for accessing EUR and USD central bank liquidity, via collateral pledges, to the relevant central banks. Customers can use this service for central bank discount window borrowing, and to participate in tender offers and auctions. The ICSD acts as a neutral tri-party agent throughout the collateral management life cycle, all the way from instruction matching to collateral allocation, valuation, and substitution. The principal relationship remains between the central bank and the borrower.

The bottom line is cost savings. The combined effect of using securities as collateral in repo transactions as well as the lending of securities results in reduced overhead and, therefore, increased income for the market participant. The securities are being made to work instead of sitting inactive in accounts at CSDs and other custodians. This enables the market participant to make the most of their assets.

Indeed, lending and borrowing securities enhances market liquidity and settlement efficiency. Many anticipate that the increasing demand for the collateralization of exposures will lead to a relative scarcity of HQLA. Therefore, collateral management service providers are developing collateral management solutions their customers can use to mobilize their collateral across markets. A group of CSDs worldwide have formed the Liquidity Alliance to advance common solutions to the challenge of global collateral. (See box for further information.)

6.7 Custody Services

Custody services include safekeeping and asset servicing, or, as this is sometimes called, corporate action processing. These are traditional securities services that have evolved in complexity, and that remain essential to a secure and efficient

Liquidity Alliance
The Liquidity Alliance was established in January 2013 as a platform for CSDs to collaborate on collateral management. This group of CSDs offers members an opportunity to discuss key developments, identify business opportunities in collateral management, and share individual market experience. At the same time, the Liquidity Alliance promotes studies and industry research. Liquidity Alliance members are from different regions of the world, a fact that brings together a unique pool of global insight and expertise.

securities market. Custody services are also a critical part of any integrated securities service. Without custody services, the other securities services are of limited value; once issued or settled, securities must be held in a custody account and serviced. Similarly, efficient collateral management services are impossible without the ability to service the assets used as collateral.

6.7.1 Safekeeping

The majority of securities these days are immobilized within the (I)CSDs and are, in fact, dematerialized. Put differently, they are no longer represented by physical certificates, but instead by data entered into the systems of these (I)CSDs.

To be sure, it would be logical to conclude from these two facts that the need for the services of custodians is greatly reduced. However, this notion would overlook some of the key features of the securities service landscape. Some reasons why custodians are still used include:

Ineligibility: some market participants may be unable to hold an account directly with a CSD, because they do not fulfill the CSD's account-opening requirements. Many CSDs offer standard services to a limited number of locally based financial institutions. Requirements could also be based on operational capability—with some market participants unable to invest in the technological solutions to connect directly with the CSD.

Expertise and economies of scale: custodians, by holding the securities of a number of investors, are able to leverage economies of scale. Moreover, specialized custodians will also have expert working knowledge of the CSD and local market practices, a scenario which may be advantageous to market participants.

Specialized services: custodians often provide additional value-added services related to the custody of securities. These services can include additional reporting for a certain group of market participants.

By choosing to hold their securities via a custodian, market participants are taking a significant step: they are choosing to outsource asset servicing activities to an entity that can complete these tasks better—and cheaper—than the market partici-

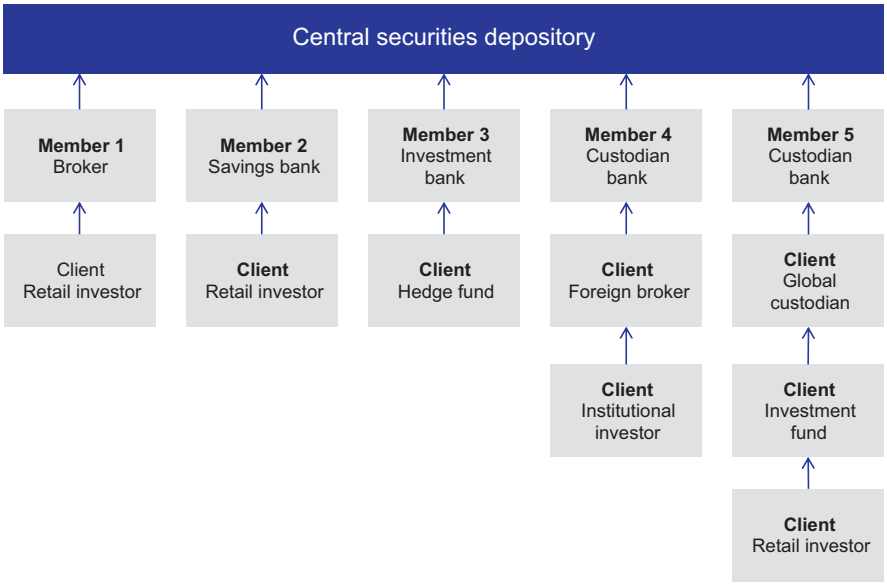

Fig. 6.17 Examples of multitiered intermediation in securities custody (Chan, D et. al.: The Securities Custody Industry, ECB Occasional Paper Series No 68, 2007, p.11. Available at: https://www.ecb.europa.eu/pub/pdf/scpops/ecbocp68.pdf)

pants themselves are able to do. Moreover, this decision on whether or not to keep asset servicing activities "in-house" results in multitiered intermediation in securities custody (Fig. 6.17).

In each tier, a choice is made on the account structure—whether to hold the fungible assets of different clients together without separating out ownership, or to hold the assets of individual clients in individual segregated accounts. Generally speaking, we can define three separate models for holding securities at the local market level; they are detailed in Fig. 6.18.

Lower levels of segregation reduce transparency, which makes it more difficult to identify the beneficial owner of securities. On the other hand, higher levels of pooling in less segregated accounts can offer significant economies of scale by netting and the aggregate processing of corporate actions. The importance of the economic efficiency of nonsegregated account types is demonstrated by the continued high levels of omnibus account structures around the world. This is especially the case for larger, more sophisticated markets like the USA, Germany, and the UK (Fig. 6.19).

The 2008 financial crisis ushered in an increased regulatory focus on greater levels of transparency in account structure, particularly in the USA and Europe. In an earlier 2004 paper on client identification, the International Organization of Securities Commissions (IOSCO), did not require that custodians examine the

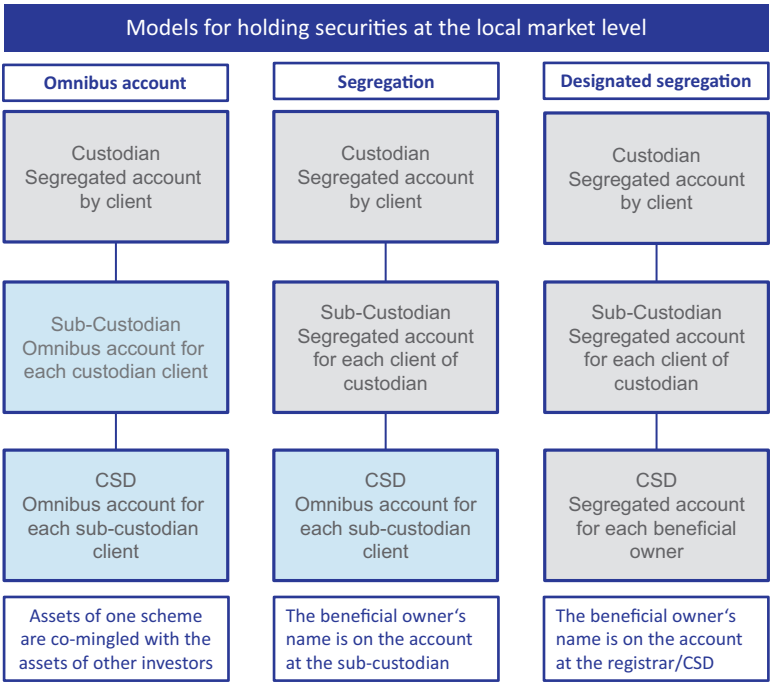

Fig. 6.18 Models for holding securities in the local market (Thomas Murray Data Services: CMI in Focus: Asset Segregation in CSDs, 2013. Available at: http://ds.thomasmurray.com/opinion/cmi-focus-asset-segregation-csds)

owners behind omnibus accounts.[15] And, until 2009, official guidance from the Financial Crimes Enforcement Network (FinCEN, a department of the US Treasury) stated that financial intermediaries were not required to look beyond their immediate counterparties either.

The balance between economically efficient account structures on the one side and transparent account structures on the other is likely to be a key regulatory topic in the coming years.

6.7.2 Asset Servicing

Asset servicing includes the handling of dividends for equity, and of income and redemptions for bonds, as well as the processing of corporate action events. In addition, various ancillary services are available, including withholding tax reporting services and proxy voting services.

[15] IOSCO: "Principles on client identification and beneficial ownership for the securities industry." Available at https://www.iosco.org/library/pubdocs/pdf/IOSCOPD167.pdf/.

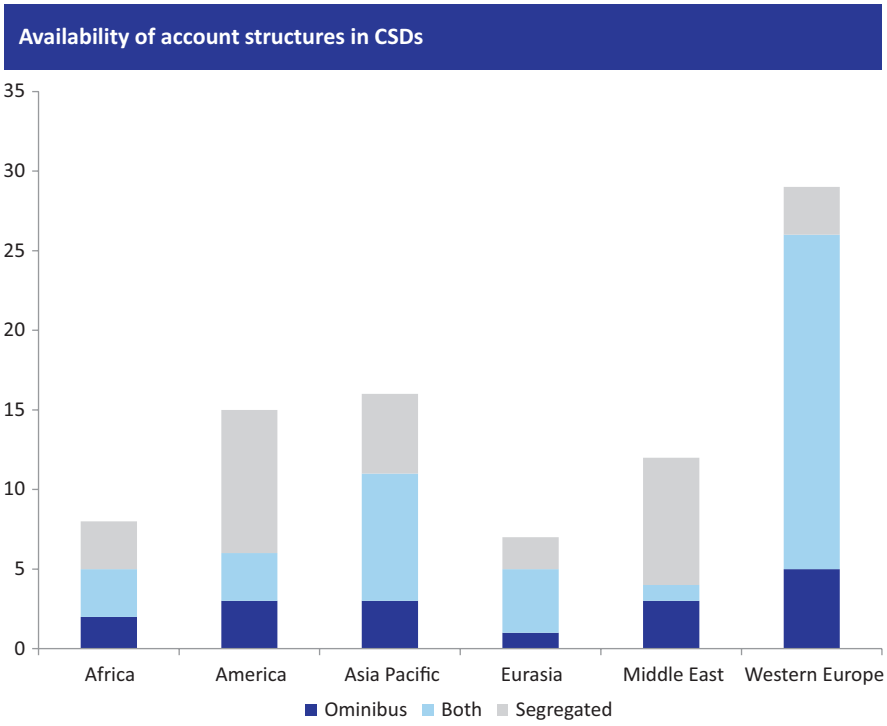

Fig. 6.19 Availability of account structures in CSDs (Thomas Murray Data Services, 2013. "CMI in Focus: Asset segregation in CSDs." Available at http://ds.thomasmurray.com/opinion/cmi-focus-asset-segregation-csds)

6.7.2.1 Income Payment

Interest paid to the bond holders is also referred to as income and coupon payments. Coupons are presented to the issuer for payment. Following the receipt of funds from the issuer, the proceeds are credited to holders' accounts on payment date, after deduction of applicable withholding taxes. Payments are usually made in the original payment currency as determined by the issuer.

Given that securities may be sold, or become part of a collateral management or securities lending transaction, the record date is important; it is the date on which the relevant system operator (e.g., the CSD) establishes which holders are recorded in the system as eligible to receive the coupon, or other entitlement, on a security. In the international market, the record date is usually the close of business, one business day before the payment date of the coupon (or other entitlement). For domestic securities, the record date varies for different security types according to domestic market practice. After the record date, securities movements are processed ex-coupon or ex-dividend.

6.7.2.2 Redemption Payments

Bonds are issued for a finite duration, unlike equities which have no predefined maturity date. The termination of a bond—that is, when it ceases to exist and the final payment is made by the issuer to the investor—is referred to as redemption. Redemption can be either total or partial. A total redemption can happen earlier than the final date, but a total redemption is a straightforward process—payment is made to holders provided that the issuer is not in default. Partial redemptions are slightly more complex as they require a level of "fairness" among holders. Some of the methods used to achieve this are described below.

In the drawing process, an algorithm is typically applied to distribute the total amount to be drawn from each account participating. In a redemption on nominal value, an equal part of all notes of a security is redeemed, the denominations being reduced accordingly. In a partial redemption with a pool factor, an equal part of all notes of a security is redeemed but the initial face value is not reduced accordingly. A ratio (the "pool factor") is assigned to the security, reflecting the face value of principal still to be redeemed. For each interest payment, the amount of interest payable is then calculated on the basis of the outstanding amount of principal, not on the basis of the denomination of the security.

Redemption proceeds provide important funds for settlement. Prompt payment is, therefore, crucial and is sometimes anticipated at the various levels of the custody chain. Intermediaries may, however, depending on the creditworthiness of the issuer, make payment conditional on receipt of funds from the issuer.

6.7.2.3 Corporate Action Processing

A corporate action refers to the processing of any event that impacts the rights of a company, its shareholders or bondholders, excluding income events like interest or dividend payments. It may be initiated by the issuer, a third party, or holders. For some corporate action events, holders must respond by selecting from a list of possible actions.

Corporate events can be divided into two broad families:

- Predictable events: events foreseen in the security's documentation (such as the terms and conditions), including wording around the event timing and deadlines. Examples of predictable events are conversion options, put options, or warrant exercises.
- Unpredictable events: events not foreseen in the security's documentation. They are announced and described in additional documents by the issuing company's management. Examples of unpredictable events include repurchase offers or stock splits.

Both predictable and unpredictable events can be subdivided into three main categories. These categories are based on whether the holder of the security has to take action on the event:

- Mandatory events: participation and consequences are compulsory, applicable to the whole outstanding amount held. No instruction from the security holder is required. Examples of mandatory events are stock splits, rights distributions, and mergers.
- Mandatory events with choice: participation and consequences are compulsory and apply to the whole outstanding amount held. However, a choice or option is available to the security holder. An instruction is only required if the security holder does not want the default option applied. Examples of a mandatory event with choice include mergers with choice or non-automatic bonuses.
- Voluntary events: participation and consequences are at the holder's discretion. An instruction is required if the security holder wishes to participate. The issuer will usually inform all holders of the event about to occur. Sometimes this notice is provided in the original offering documentation for the security. If no action is taken by the holder, the default action, as stated in the notification, is applied. Purchase offers, conversion options, or subscription offers are examples of voluntary events.

Some complex corporate actions may involve mandatory events tied with subsequent voluntary events (two leg events), for example, a mandatory rights distribution followed by a subsequent voluntary subscription offer. The entitled holding is fixed on the record date, or on the actual date, according to the terms and conditions of the relevant corporate action. A non-exhaustive list of corporate events is included in the annex to this chapter.

6.7.3 Straight Through Processing and Automation

Corporate action information must be collected and disseminated to relevant participants before it can be processed. This is relatively simple for mandatory corporate actions. Normally, it only requires that participants are informed of the event and notified that the corporate action is processed. The process is more complex for voluntary corporate actions that require choices from investors down the holding chain. Here, the level of automation in the communication between the involved parties becomes critical for reducing the risk of human error, and in increasing the speed and efficiency of corporate action processing.

Markets utilize different communication media to transfer information related to corporate action events. These media require different levels of manual processing. Channels requiring more manual input include, for example, fax, e-mails, or even conventional mail. There are also fully electronic systems that are mostly automatic. They are, therefore, capable of handling straight through processing (STP), or the elimination of any manual intervention between an event announcement and the action taken.

In many markets, participants now mostly communicate via SWIFT messages. SWIFT, the acronym for Society for Worldwide Interbank Financial

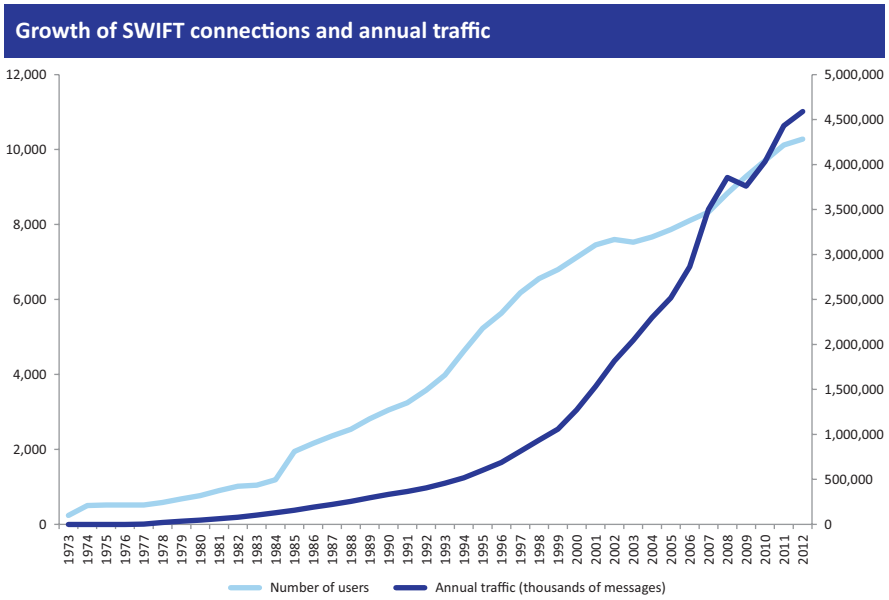

Fig. 6.20 Growth of SWIFT connections and annual traffic (Society for Worldwide Interbank Financial Telecommunication. SWIFT History. Available at https://www.swift.com/about-us/history)

Telecommunication, was initially established by banks to manage the secure transmission of payments internationally (Fig. 6.20).

SWIFT is the most widely used network for exchanging electronic financial messages. In 2014, more than 10,500 financial institutions and corporations in 215 countries were using the network. SWIFT enables its customers to automate and standardize financial transactions, a process that lowers costs, reduces operational risk, and eliminates inefficiencies from their operations. Transactions include payment, securities, and treasury activities.

SWIFT essentially provides an electronic, worldwide messaging service which enables financial institutions to exchange data quickly, reliably, and securely. The use of standardized messages enables financial institutions to automate their data processing. Many financial institutions and CSDs also develop their customer connectivity so that it is SWIFT and ISO compatible. SWIFT develops and maintains formats (e.g., ISO 15022 or 20022) that are strictly followed by financial institutions to ensure compatibility and interoperability. These formats are also the basis for the global, industry-owned association Securities Market Practice Group's market practice guidelines for how the messages are to be used globally in a harmonized manner.

The SWIFT network and standardization efforts represent a significant contribution to the harmonization and safety of financial communications.

Risks in the processing of corporate actions can be very significant. They can result in huge losses when there are errors in any of the links in the chain. Yet, so far, there has been relatively little progress in developing international standards for corporate action processing. The notable exceptions are CPMI-IOSCO principles and the CSD Regulation in Europe.

STP greatly reduces the risk of error caused by the number of intermediaries in corporate actions. STP also has a distinct advantage in ensuring that the complexity of the corporate events is handled in an efficient manner. Not surprisingly, new developments such as the SWIFT ISO 20022 format aim to reduce the amount of manual processing required to an absolute minimum.

6.8 Conclusion

In his speech before the European Parliament on 15 July 2014, Jean-Claude Juncker, the then candidate for President of the European Commission, said: "I believe we should complement the new European rules for banks with a Capital Markets Union. To improve the financing of our economy, we should further develop and integrate capital markets. This would cut the cost of raising capital, notably for SMEs, and would help reduce our very high dependence on bank funding."[16]

The integration of capital markets, on a European or global level, has many dimensions. Of top importance, harmonization of market rules and standards fuels market integration.

This chapter has covered securities services with a view to demonstrating their importance to safe and efficient capital markets. Removing friction from settlement or custody services is a key part of this agenda. This means the ability to buy, hold, and sell securities without friction from cross-border settlement or custody services. This also means the ability to use collateral in one market to meet exposure in another. A number of market initiatives (public and private) are promoting the harmonization of settlement and collateral management services. However, the much more heterogeneous market practices applying to custody services remain somewhat overlooked.

This chapter has also provided a basic description of securities services and the related infrastructure. Efficient issuance, settlement, securities financing, and custody services are critical to reducing risks for markets and their participants. Harmonization of securities services is also a prerequisite for efficient markets. Efficient markets, rather than the most convenient markets, is where capital can best be invested, and they are the most likely to create growth.

In 2001, the Lamfalussy Committee issued a powerful statement on the benefits and challenges of an integrated securities market: "The EU has no divine right to the

[16] "A New Start for Europe: My Agenda for Jobs, Growth, Fairness and Democratic Change," Opening Statement in the European Parliament Plenary Session, 15 July 2014.

benefits of an integrated financial market. It has to capture those benefits by building an integrated European market—in many areas starting from a very low level."[17]

Europe illustrates the integration that needs to take place at a global level. In the years between the two above statements, progress has been slow. The last financial crisis of 2008 acted as a catalyst to risk reduction and standardization of market practices. Most are driven by regulation; some are driven by industry initiatives. Securities services, like the markets they serve, are truly in transition.

Acknowledgment The author would like to acknowledge the valuable contribution of Ms. Ann-Kathrin Treis, Ms. Brenda Nolden, and Mr. Christopher Hollifield and thank them for their continued support.

[17] Lamfalussy Committee, "Final Report of the Committee of Wise Men on the Regulation of European Securities Markets," 15 February 2001, p. 8.