4. Financial market infrastructures – (I)CSD sector

There are currently three central securities depositories (CSDs) active in Belgium. Two of them provide custody and settlement services primarily for the Belgian securities market; i.e. NBB-SSS (fixed-income debt) and Euroclear Belgium (equities). The third one, Euroclear Bank, is an international CSD (ICSD) whose custody and settlement services cover international debt securities, such as eurobonds, and domestic securities issued in local markets around the globe[1].

The year 2015 marked a new turning point for the (I)CSD[2] sector in Europe. First of all, TARGET 2 Securities (T2S), the common securities settlement platform developed by the Eurosystem, was launched with a first wave of European CSDs migrating their systems in June and August 2015. From a regulatory point of view, ESMA and EBA submitted at the end of 2015 a set of draft regulatory technical standards (RTS) and implementing technical standards (ITS) established under the CSD Regulation (CSDR) to the Commission. This new set of rules, which aims to harmonise prudential supervision of (I)CSDs in Europe, is expected to be endorsed by the EU decision-making bodies during the course of 2016. While revenue sources will fall off due to the outsourcing of settlement activity to T2S, costs for (I)CSDs to reach compliance with CSDR, including capital requirements, will increase. For those (I)CSDs providing ancillary banking services, intraday credit and liquidity risks will also have to be covered by additional capital, on top of existing CRD/CRR capital requirements. When aimed to promote competition between (I)CSDs, regulatory challenges can open up opportunities for (I)CSDs that are able to take advantage of the new environment. CSDR provisions on the freedom to provide services, which allow issuers to select any (I)CSD of their choice to issue securities, have already been in force since 2014 but it may take some time to change current market practices.

(1) See also Financial Stability Report 2015, Financial market infrastructures – (I)CSD sector overview.
(2) The term (I)CSD is used to cover both CSDs and ICSDs.

Other legislation like the Securities Financing Transactions Regulation (SFTR) adopted end-November 2015 that aims to improve transparency of securities financing transactions, such as repos and securities lending, by obliging market counterparties to report transactions details to a trade repository, also conditions the re-use of collateral processed in (I)CSDs' books.

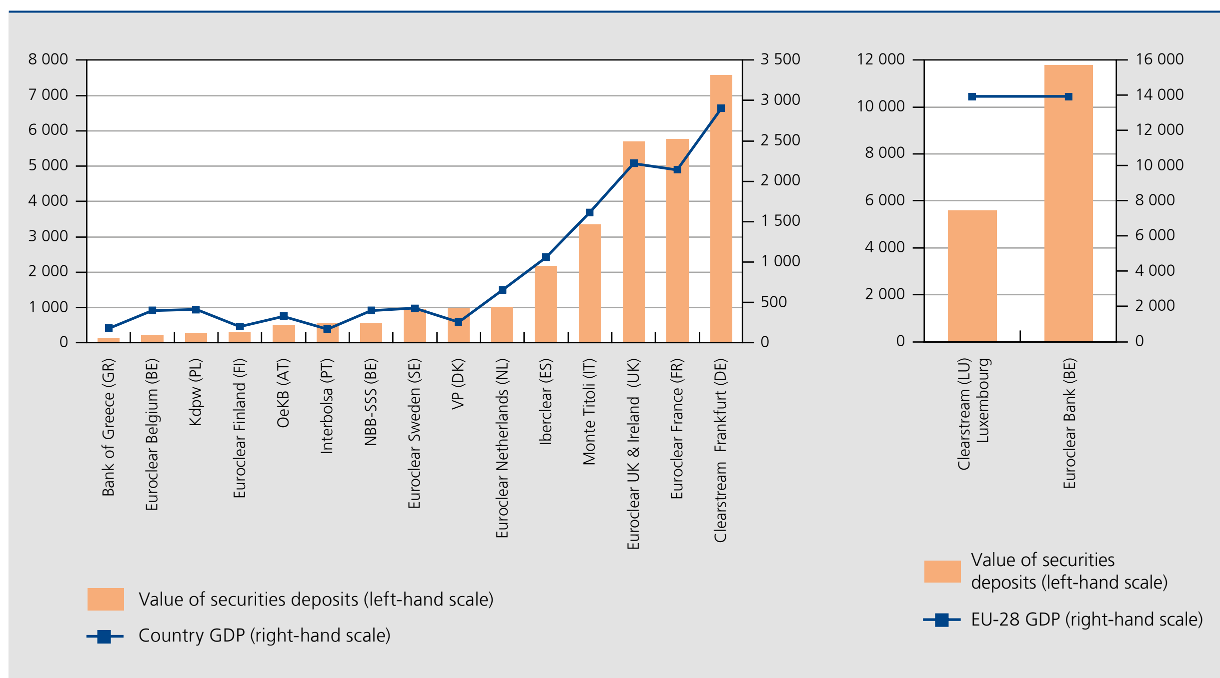
Competition between (I)CSDs is expected to grow in response to other regulations, not specifically targeting (I)CSDs but other financial market infrastructures or market participants, such as the European Market Infrastructure Regulation (EMIR) clearing obligation or new Basel III requirements on liquidity. The expected boost in the financial sector's demand for collateral management services is leading (I)CSDs to develop value-added services in this field, either on their own or by joining forces with other service providers. Regulation targeting the break-up of so-called vertical silos in the post-trade landscape, which limit participants from clearing or settling transactions via the market infrastructure of their choice, will also drive competition. The updated Markets in Financial Instruments Directive (MiFiD 2), effective as of 2018 and which aims to improve the functioning and transparency of financial markets by promoting trading on regulated trading venues rather than over-the-counter (OTC) trading, includes provisions for central counterparties (CCPs) to provide non-discriminatory access to market participants for cleared financial instruments regardless of the trading venue on which a transaction is executed. A similar level playing field is required in the CSDR which states that CSDs should be provided with transaction feeds from CCPs and trading venues upon request by the CSD. CCPs often have important interrelationships with (I)CSDs to settle cleared transactions or to manage margin collateral provided by CCPs' clearing members.

The number of challenges the (I)CSDs face and the strategic options they need to consider in order to capitalise potential business opportunities are quite significant. Economies of scale might be a decisive factor for (I)CSDs in that respect. The ICSDs Euroclear Bank and Clearstream Luxembourg, as well as CSDs in large countries in terms of GDP, often with liquid and deep public debt securities markets, may have some advantages in that respect[1] (Chart 32). Because of their distinct business profiles, the (I)CSDs established in Belgium will each respond to these and future challenges from their own perspective.

(1) In terms of employment, (I)CSDs are relatively small within the financial sector. (I)CSDs in Europe employ about 7 800 people, of which 6 400 in CSDs established in the EU. The average CSD has about 100 employees. The ICSDs, Euroclear Bank and Clearstream Luxembourg, have respectively 2 850 and 1 080 employees (Source: ECSDA, CSD Factbook, 2014).

CHART 32 SIZE OF (I)CSD SECTOR IN EUROPE IN TERMS OF SECURITIES DEPOSITS COMPARED TO NATIONAL (TOP-15 CSDs) OR EU (ICSDs) GDP

(at the end of 2014, in € billion)



Sources: NBB, ECB Blue Book and Eurostat.

The NBB is currently responsible for the prudential supervision – including the issuance of authorisations – vis-à-vis settlement institutions (CSDs) in Belgium. It also acts as overseer of Belgian securities settlement systems operated by Belgian settlement institutions to ensure that systems operate properly and that they are efficient and sound. Settlement institutions that have credit institution status, such as Euroclear Bank, are also regulated and supervised as credit institutions. Following the Royal Decree of 11 June 2015, the NBB has been confirmed as sole competent authority for the (I)CSDs established in Belgium under the CSDR and is therefore responsible for their authorisation and supervision. As overseer of securities settlement systems, the NBB has also been recognised as relevant authority within the CSDR framework.

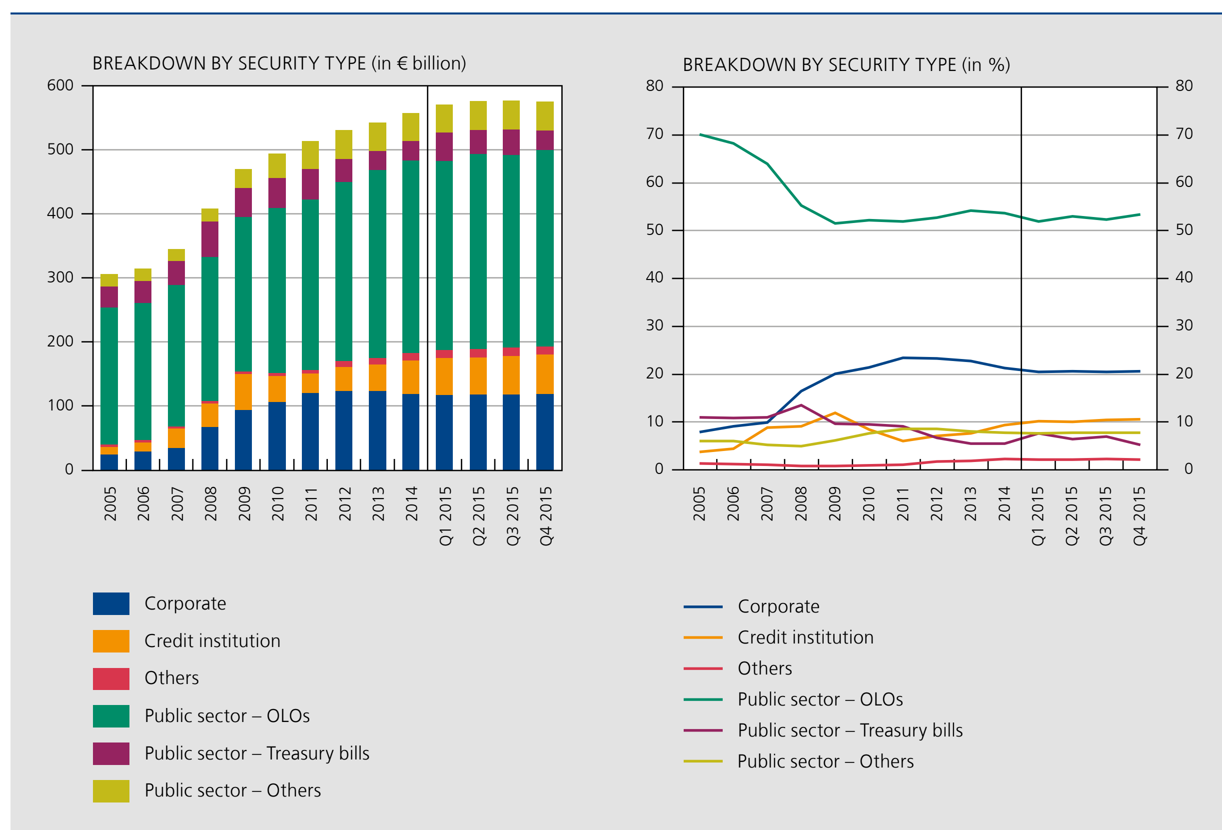
4.1 Activity of (I)CSDs in Belgium

The sub-section below provides an overview of the Belgian (I)CSDs' activities in terms of securities deposits, new issue activity and settlement turnover.

NBB-SSS

NBB-SSS acts as the register ("issuer CSD") for both Belgian public and private sector fixed-income debt. Public sector debt includes securities issued by the Belgian federal government and by regional or local governments. Private sector debt registered in NBB-SSS can be issued by corporates, credit institutions or other entities. End 2015, total outstanding securities deposits in value amounted to € 575 billion, a 3 % increase compared to 2014. Total public sector debt securities (OLOs, Treasury bills and others) represent about 65 % of total securities deposits, their lowest share so far (Chart 33). OLOs represent the largest category of securities in NBB-SSS; i.e. 53 % of total securities deposits or about 80 % of total public sector debt.

CHART 33 VALUE OF SECURITIES DEPOSITS IN PRIVATE AND PUBLIC SECTOR DEBT IN NBB-SSS
(end of year or quarter)



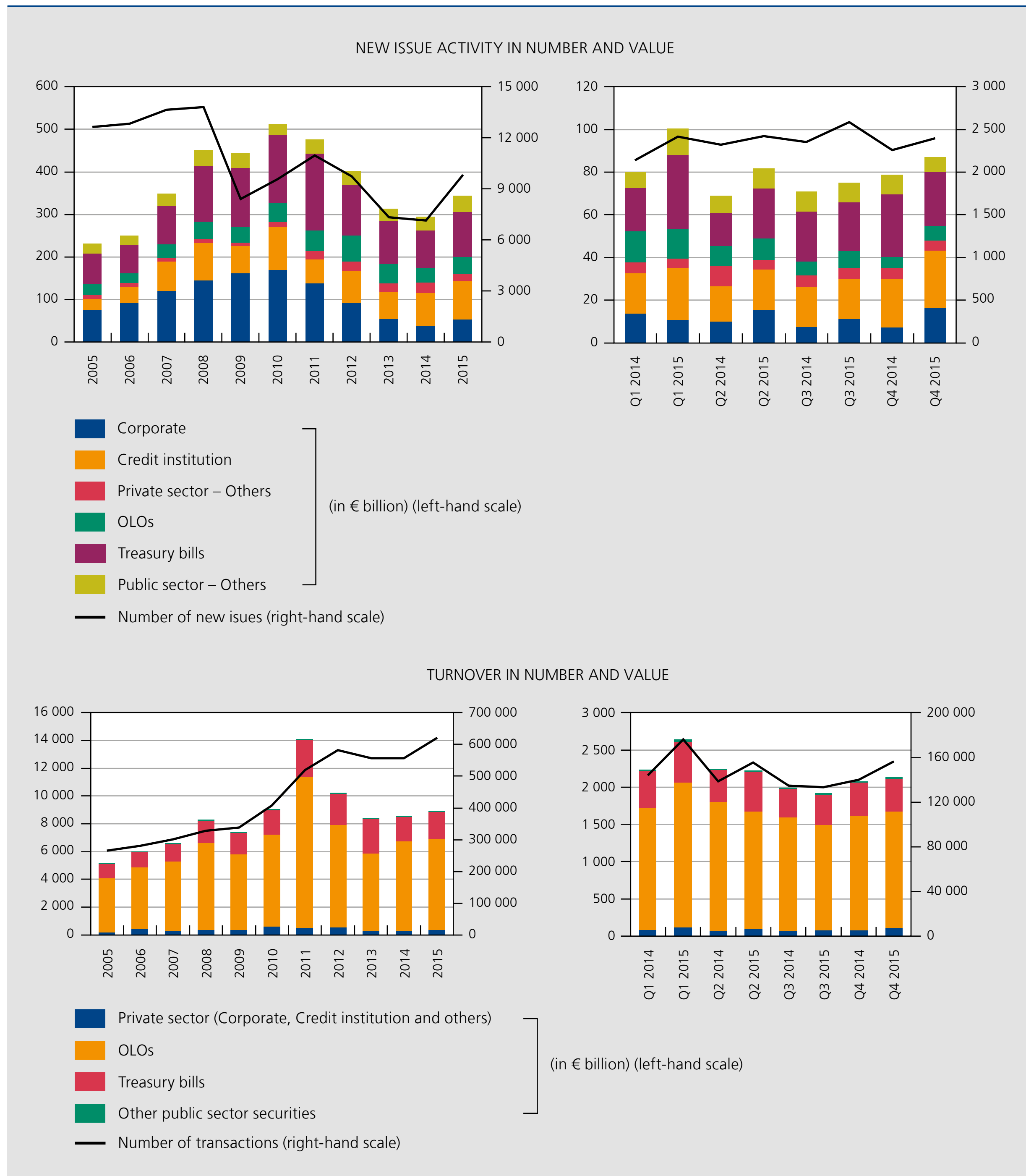
Source : NBB.

In 2015, the value of new issues settled in NBB-SSS rose with 16 % in value and 35 % in number compared to 2014 ; a first increase since 2010 (Chart 34, top panel). New issue activity in public sector debt (53 %) slightly outweighs the one in private sector debt (47 %). The majority of private debt securities (in value) have been issued by credit institutions (55 %) and corporates (33 %). Public debt is mainly issued as Treasury Bills (58 %) or OLOs (21 %).

In terms of securities settlement turnover (Chart 34, bottom panel), the number of transactions settled in NBB-SSS in 2015 increased by 12 % to more than 600,000 transactions ; i.e. about 2,300 transactions on average each day. This increase

CHART 34 NEW ISSUE ACTIVITY AND SETTLEMENT TURNOVER IN PRIVATE AND PUBLIC SECTOR DEBT IN NBB-SSS

(yearly or quarterly total)



Source : NBB.

was mainly due to the number of transactions settled in private sector debt (+40 %). Settlement turnover in value reached almost € 9 trillion, up by 4 % compared to previous year. Such increase was mainly due to strong activity in Q1 2015, with settlement in OLOs rising nearly 20 % compared to Q1 2014. In March 2015, when the ECB launched its public sector purchase programme (PSPP), markets showed high volatility with euro area government bonds yields going up considerably. More than 70 % of settlement turnover is still in OLOs, ahead of Treasury bills (25 %). Settlement turnover in value in private debt, although increasing almost 35 % year-on-year, remains marginal compared to public debt.

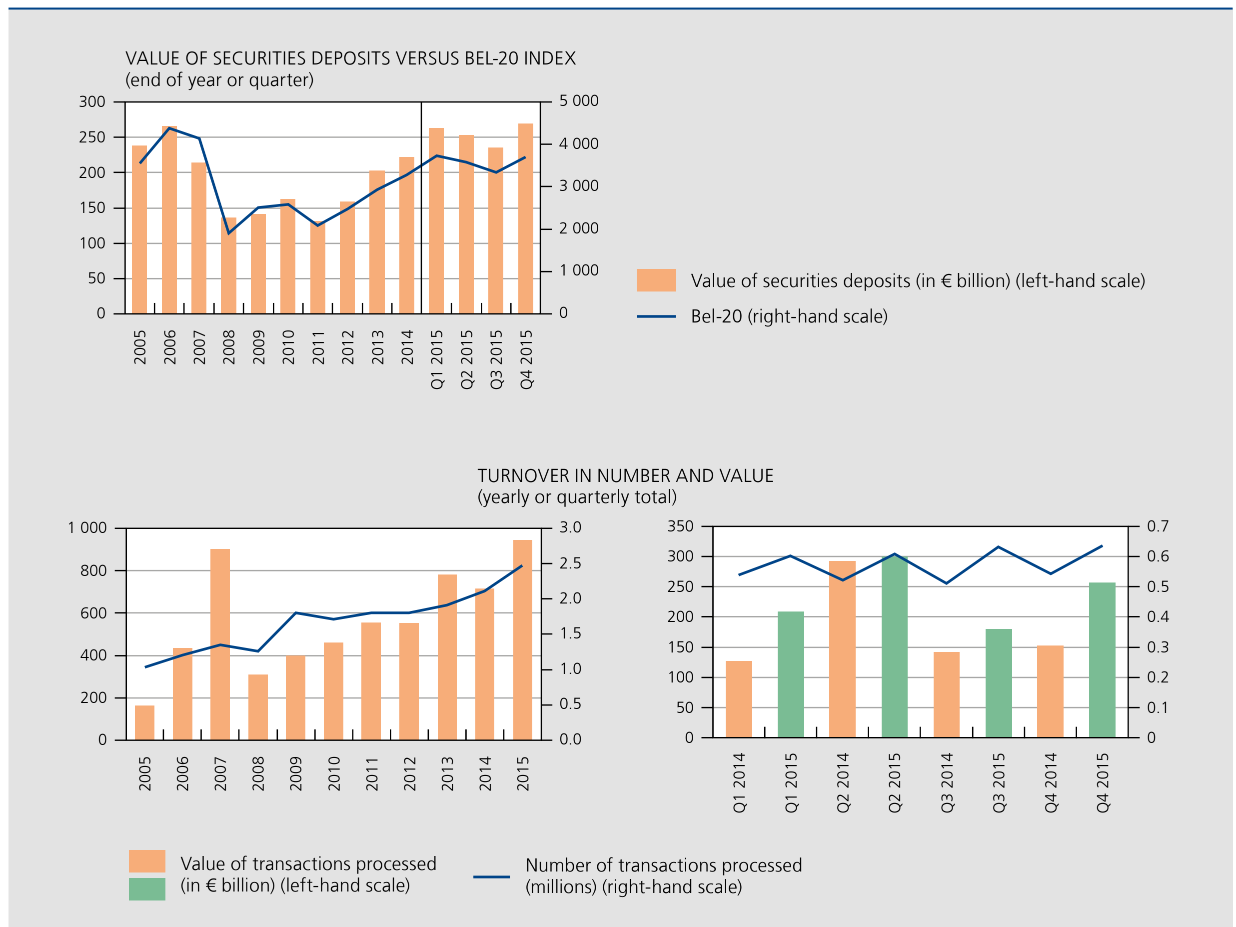
EUROCLEAR BELGIUM

As 99 % of securities deposits held in Euroclear Belgium are in equities and valued at market prices, the value of securities deposits fluctuates with market volatility. At the end of 2015, total value of securities deposits held in Euroclear Belgium stood at € 269.4 billion (up +/- 20 %). Since about 80 % of total securities deposits in Euroclear Belgium are BEL-20 equities, the value of securities deposits closely follows trends in the BEL-20 index (Chart 35, top panel). New issue activity in Euroclear Belgium is limited (1) whereas, at the same time, two companies left the Brussels stock exchange in 2015 (2). Turnover in Euroclear Belgium increased in 2015, both in number (up to +/- 2.5 million, +17 % compared to 2014) and in value (€ 0.9 trillion, +32 %) (Chart 35, bottom panel). Compared to the previous year, growth in turnover (in value) was mainly in Q1 and Q4 2015. The main part of the settlement

(1) In the course of 2015, there were few IPOs on Euronext Brussels (excluding Alternext segment) including Xior Student Housing NV (Real Estate), Bone Therapeutics (Biotechnology), Mithra (Pharmaceuticals), TINC Comm. VA (Investment Services), Biocartis Group NV (Health Care Providers) (Source: Euronext).

(2) CMB (Maritime transport), Vision IT (Consulting).

CHART 35 SECURITIES DEPOSITS AND SETTLEMENT TURNOVER IN EUROCLEAR BELGIUM



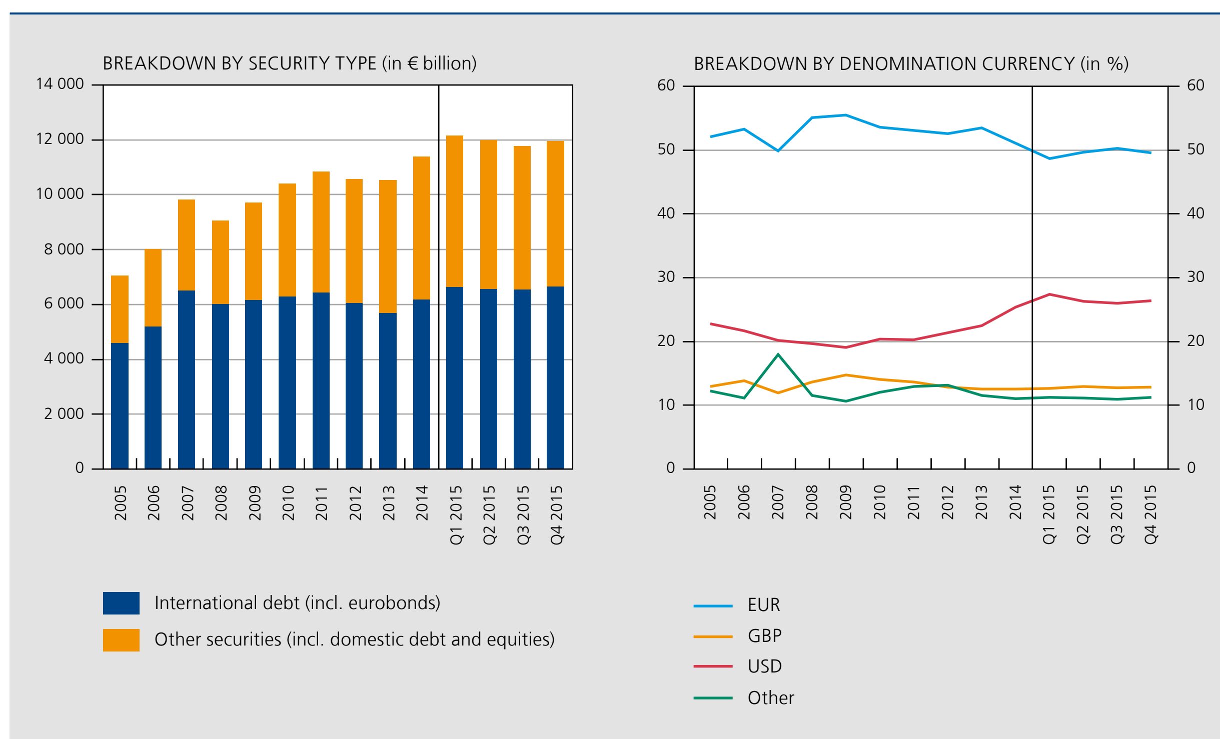
Source: Euroclear.

value (75 %) comes from over-the-counter (OTC) trades. Stock exchange transactions are settled in Euroclear Belgium after netting ; i.e. after the central clearing by the Paris-based CCP LCH.Clearnet SA. Since settled securities are nearly all equities, volatility in their market value is reflected in the value of settlement turnover as well.

EUROCLEAR BANK

The value of securities deposits held in the books of Euroclear Bank on behalf of its participants has increased by 5 % to nearly € 12 trillion equivalent (Chart 36, left-hand panel)[1]. A narrow majority (55 %) of securities deposits are in international bonds, such as eurobonds. Euroclear Bank and Clearstream Luxembourg are the "issuer ICSD" for such securities for which issuers can choose the currency or country of issue, aiming to attract international investors ; i.e. ICSDs' main client base. Unlike for domestic securities where only one CSD generally acts as the primary place of deposit, a specific structure exists for eurobonds where the two ICSDs in the EU act as notary. More than 60 % of total issuance in eurobonds is held in Euroclear Bank[2]. Securities held by participants in the books of Euroclear Bank can be denominated in more than 50 currencies. After EUR (50 %), USD is the main denomination currency (26 %). The appreciation of the USD FX rate (vis-à-vis EUR) has contributed to the rise in the outstanding value (in EUR equivalent) of securities deposits (Chart 36, right-hand panel).

CHART 36 VALUE OF SECURITIES DEPOSITS IN EUROCLEAR BANK
(end of year or quarter)



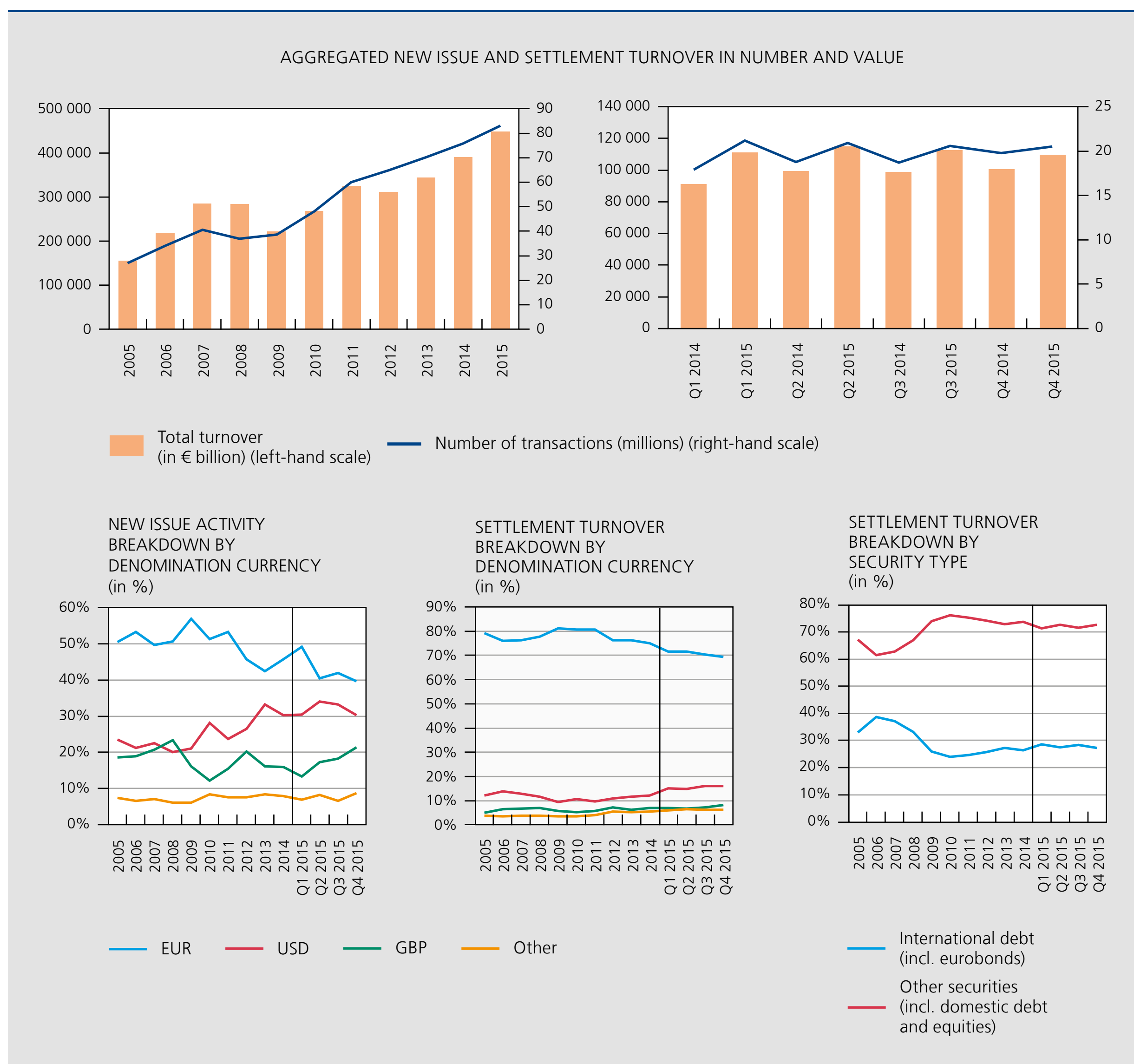
Source: Euroclear.

Regarding aggregated new issue activity and securities settlement turnover (Chart 37, top panel), the number of transactions settled in Euroclear Bank amounted 83.3 million in 2015, up by more than 10 % compared to 75.2 million in 2014. In value terms, this represents € 442.6 trillion for 2015 (+12 % from € 394.6 trillion in 2014). The number and value of transactions settled in Euroclear Bank reached a historical peak in March 2015 : on one single day, more than 370 000 transactions were settled with a value slightly above € 2 trillion. Strongest growth in settlement activity was in Q1 2015 whereas growth

(1) Excluding funds.
(2) Source: ECB Blue Book.

rates slowed down towards the end of the year. New issue activity in Euroclear Bank is relatively small (€ 2.5 trillion, up almost 13 %) compared to settlement turnover. The relative share of the USD has grown throughout the years, at the expense of EUR activity (Chart 37, bottom-left). A similar trend, but far less pronounced, can be observed in the relevant share of denomination currencies in settlement turnover. In 2015, about 70 % of settlement turnover, free of payment and against payment transactions are in EUR, 16 % in USD and 7 % in GBP (Chart 37, bottom-middle). In terms of settlement turnover per security type, compared to securities deposits, international debt accounts for about 30 % of settlement turnover while the main part is composed of other security types such as domestic debt and, to a lesser extent, equities or exchange-traded funds (ETFs) (Chart 37, bottom-right). The role of Euroclear Bank and the relative importance of its funds business, both in ETFs and mutual funds, are described in box 1.

CHART 37 NEW ISSUE ACTIVITY AND SETTLEMENT TURNOVER IN EUROCLEAR BANK
(yearly or quarterly total)



Source: Euroclear.

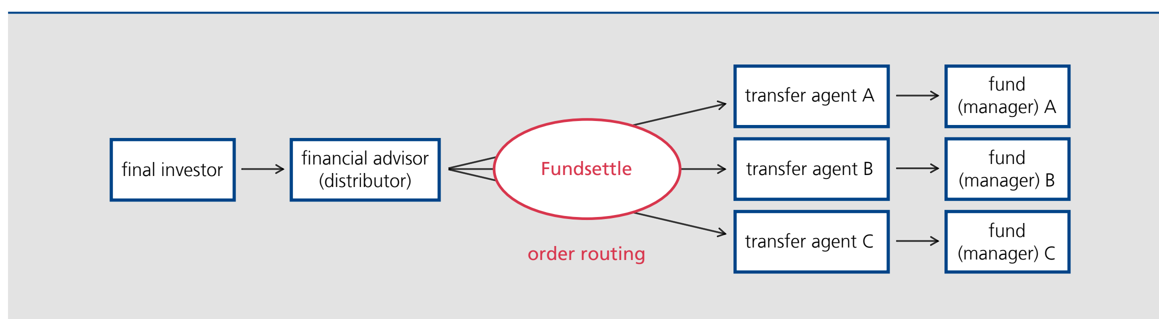
Box 1 – Fund settlement explained

The way funds are bought and sold depends on whether the funds are stock market listed or not. Mutual funds, a basket of stocks, bonds or other financial instruments in which a group of investors has invested, are not listed and are to be bought directly from the fund itself. Such funds are actively managed by fund managers with the aim of outperforming a selected benchmark; i.e. a stock or bond index. On the other hand, exchange-traded funds (ETFs) can be bought and sold by (retail) investors on the stock exchange, like common stock. ETFs usually track a stock, bond index, currencies or commodities.

MUTUAL FUNDS

As mutual funds are not listed and are to be bought from the fund itself, transactions in such products are processed differently than other types of securities and do not follow, as a consequence, the standard trading, clearing and settlement process. Unlike other securities, cross-border mutual funds are not registered in a (I)CSD. Instead, funds' transfer agents are selected by the fund manager to maintain the shareholders' register. Funds' distributors (i.e. sellers of funds to final investors) used to contact each transfer agent for each fund separately. Due to the complexity of this (often manual) process, intermediary order routers have been developed to send funds orders automatically to the relevant transfer agents. Euroclear Bank's FundSettle is an example of such order router (Chart below). FundSettle processes about 90,000 funds and connects with over 900 fund administrators (transfer agents) worldwide. At Euroclear Group level [1], the volume of fund orders routed in 2015 reached 12.7 million, up 13 % compared to previous year. The value of funds processed at the end of 2015 increased with more than 13 % from € 1.5 to 1.7 trillion. Different linkages for mutual funds exist between Euroclear Bank and other CSDs such as Euroclear Sweden and Euroclear UK & Ireland. It allows investment firms from the countries were these CSDs are located to access a larger number of foreign funds covered by Euroclear Bank or, alternatively, Euroclear Bank clients to access local fund markets. In September 2015, Euroclear Bank connected with the Hong Kong (HK) CSD to provide its participants' access to HK and China domiciled funds [2].

ROLE OF EUROCLEAR BANK'S FUNDSETTLE IN MUTUAL FUNDS



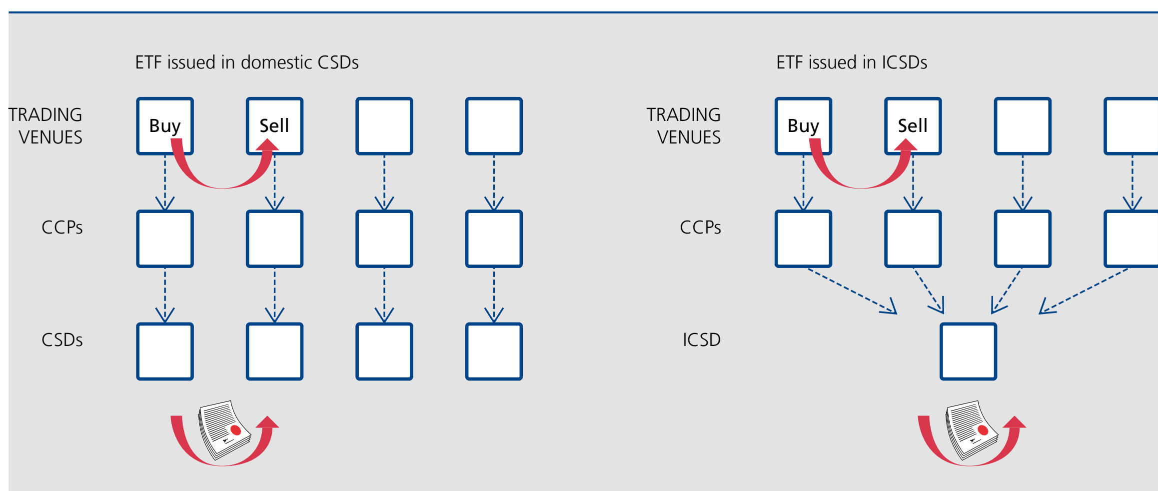
Sources: Euroclear, NBB.

(1) The Euroclear Group includes the ICSD Euroclear Bank and the CSDs Euroclear Belgium, Euroclear Finland, Euroclear France, Euroclear Netherlands, Euroclear Sweden and Euroclear UK & Ireland.
(2) Following the implementation of the Mainland China-HK Mutual Recognition of Funds initiative for allowing HK-domiciled funds to be sold to retail investors in China, while Chinese funds will be made available to HK investors.

EXCHANGE-TRADED FUNDS (ETFs)

As a rule, ETFs tracking an international or other index primarily attract an international investor audience. In Europe, ETFs are traditionally listed and traded on different stock exchanges. Due to the existing, still fragmented, post-trading landscape in Europe, they are cleared and settled in different central counterparties (CCPs) and CSDs. As a result, funds purchases and sales between investors from different countries need to be transferred between national CSDs (chart below, left-hand panel). Changes made by the ICSDs, including Euroclear Bank, now allow issuance of ETFs in an international structure, similar to eurobonds. Such international issued ETFs are held on the account of an ICSD instead of being spread among different national CSDs. Trades in ETFs can therefore be executed on different stock exchanges and settled in one settlement location (chart below, right-hand panel). This development is in line with the existing situation on the US funds market where there is one CSD (DTCC) to settle ETFs traded on different stock exchanges. Recently, ETFs have succeeded in attracting growing flows of investor funds. (I)CSDs open the possibility for both domestic and international investors to broaden their investment opportunities and choices, geographically and in different currencies. One example is the RMB-denominated ETF market, whose first launch in an international structure was supported by Euroclear Bank in 2015. From the NBB's perspective, ETFs' registration and settlement in ICSDs have to comply with the same principles as for other types of securities. The international structure of ETFs supported by the ICSDs is a positive evolution as it reduces the number of transfers between CSDs and thereby the potential operational risks.

ISSUANCE STRUCTURE ETFs



Sources: Euroclear, NBB.

4.2 Role of (I)CSDs in collateral management

Due to the commoditisation of settlement services with the launch of T2S and the resulting loss of revenues generated from settlement fees, CSDs will have to develop and expand other value-added activities and move up the value chain. Collateral management could be one such activity. The ICSDs, Euroclear Bank and Clearstream Luxembourg, have already been major providers of collateral management services for many years.

REGULATORY TIMELINE

With the aim of promoting financial stability, new sets of regulations have been adopted targeting not only financial institutions, but also FMIs such as CCPs and (I)CSDs, and even corporates. A common denominator in most of these regulations is the required use of high-quality collateral to cover exposures or to preserve sufficient liquid asset buffers. In October 2015, the liquidity coverage ratio (LCR) has come into effect, which requires banks to have sufficient high-quality liquid assets to withstand a 30-day period stress scenario. Although other jurisdictions have arranged a phase-in period (to reach full compliance in 2018), the new rule became fully binding for Belgian financial institutions as of October last year (replacing the NBB liquidity ratio). Other regulation will be implemented during the course of 2016. Following the publication of the relevant technical standards in December 2015, the EMIR mandatory CCP clearing of OTC interest rate derivatives – the largest segment of all OTC derivatives – is to start as from June 2016. The clearing obligation will apply to a first set of certain classes of interest rate swaps (1) and counterparties (2). The next clearing obligations will cover other interest rate swaps as well as credit default swaps, for which ESMA submitted draft regulatory technical standards to the Commission in October and November 2015 respectively.

Within a longer time horizon, regulation will also target exposures derived from non-centrally-cleared derivatives and the related requirements on the bilateral exchange of collateral. Applicable draft technical standards were published in March 2016. A phase-in period is envisaged until 2020. Following current provisions, the possibility of re-using collateral will in some cases be constrained for risk mitigation purposes (i.e. the re-use of non-cash collateral put forward as initial margin will no longer be allowed). Specific rules on collateral re-use have also been covered in the Securities Financing Transactions Regulation (SFTR). As from July 2016, SFTR requires prior consent from the counterparty that initially provided the collateral before it can be re-used.

DEVELOPMENTS IN COLLATERAL MANAGEMENT SERVICES

Due to greater demand for (high-quality) collateral and the increased complexity of allocating the right collateral at the right time and place, collateral management services dominate several (large) (I)CSDs' strategies. In particular, triparty collateral management services whereby collateral management tasks (including collateral selection, valuation and substitution) are taken over by the (I)CSDs from market counterparties.

(I)CSDs themselves have the option of building their own legacy collateral management systems or of relying on the expertise of an external party. The Euroclear Group CSDs (outside Euroclear Belgium which mainly holds equities) make use of the triparty collateral application of Euroclear Bank. Participants of Euroclear Group CSDs are able to transfer collateral assets between Euroclear Group entities, making use of the same technology. Eurobonds, for example, can be exchanged between ESES (i.e. the joint settlement platform of Euroclear Belgium, Euroclear France and Euroclear Netherlands) and Euroclear Bank to meet a participant's financing needs in either central bank (in ESES) or commercial bank money (in Euroclear Bank). The joint venture with the Depository Trust & Clearing Corporation (DTCC) – DTCC-Euroclear GlobalCollateral Ltd – will ultimately also connect both DTCC and Euroclear Bank pools of collateral, making use of the latter's triparty collateral application. The first phases of the project are expected to be delivered in the course of 2016.

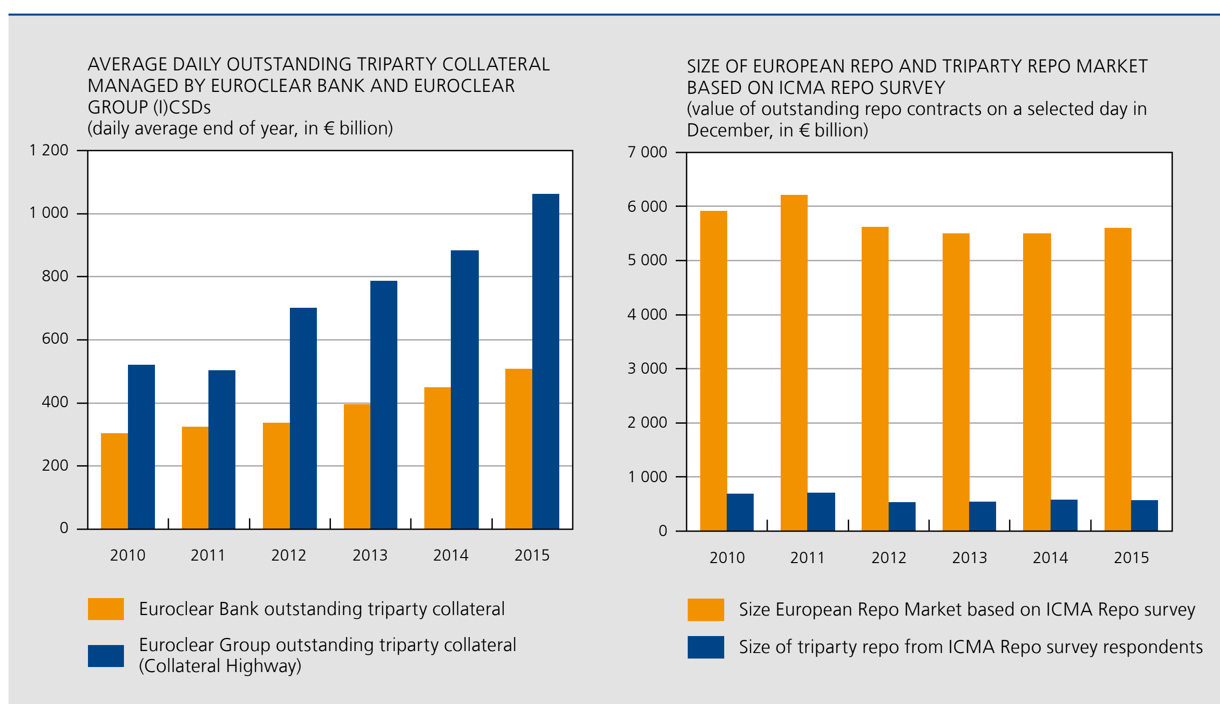
By the end of 2015, the average daily value of triparty collateral managed by the Euroclear Group (I)CSDs (the so-called Euroclear Collateral Highway) had reached € 1 068 billion; a 20 % increase on the € 887 billion in 2014 (Chart 38, left-hand panel). The share of triparty collateral managed by Euroclear Bank amounted € 508 billion, from € 450 billion in 2014. These figures can be put into perspective against those of the semi-annual ICMA repo survey (3) covering more than 60 financial institutions in Europe. The estimated European repo market as a whole has stagnated at a level around € 5.6 trillion, which is still far (almost –10 %) from the peaks since 2010 (€ 6.2 trillion in December 2010). According to ICMA, such stagnation is due to banks' deleveraging their balance sheets as a result of new capital adequacy and

(1) Fixed-to-float interest rate swaps (plain vanilla), float-to-float swaps (basis swaps), forward rate agreements and overnight index swaps, denominated in EUR, GBP, JPY and USD.
(2) CCPs' clearing members are the first type of counterparties to comply with EMIR.
(3) Semi-annual survey conducted by the European Repo Council (ERC) of the International Capital Markets Association (ICMA).

liquidity requirements (preventing them from lending out highly-liquid assets through repos), as well as the excess liquidity in the market as a result of central banks' quantitative easing measures (Chart 38, right-hand panel).

The share of triparty repos of financial institutions taking part in the ICMA repo survey compared with overall repo activity remains constant at about 10 %. The fact that collateral managed by triparty agents such as Euroclear Bank did increase relates partly to their international participant base outside Europe as well as to the arrival of new players on the collateral buy-side spectrum. Non-banking institutions such as corporates, which are not covered by the ICMA repo survey, have moved into the market for collateral management services in increasing numbers due to changes in their investment strategies. Cash-rich corporates tend to seek alternatives for short-term cash investments, such as bank term deposits or money market funds (see also section on interdependencies below).

CHART 38 TRIPARTY COLLATERAL MANAGEMENT SERVICES



The Collateral Highway launched in July 2012 mobilises collateral from sources within and outside the Euroclear Group. The ICMA survey collects information on outstanding repo contracts at the close of a particular day in June and December each year. Only data for December is shown in the graph.
Sources : Euroclear, ICMA.

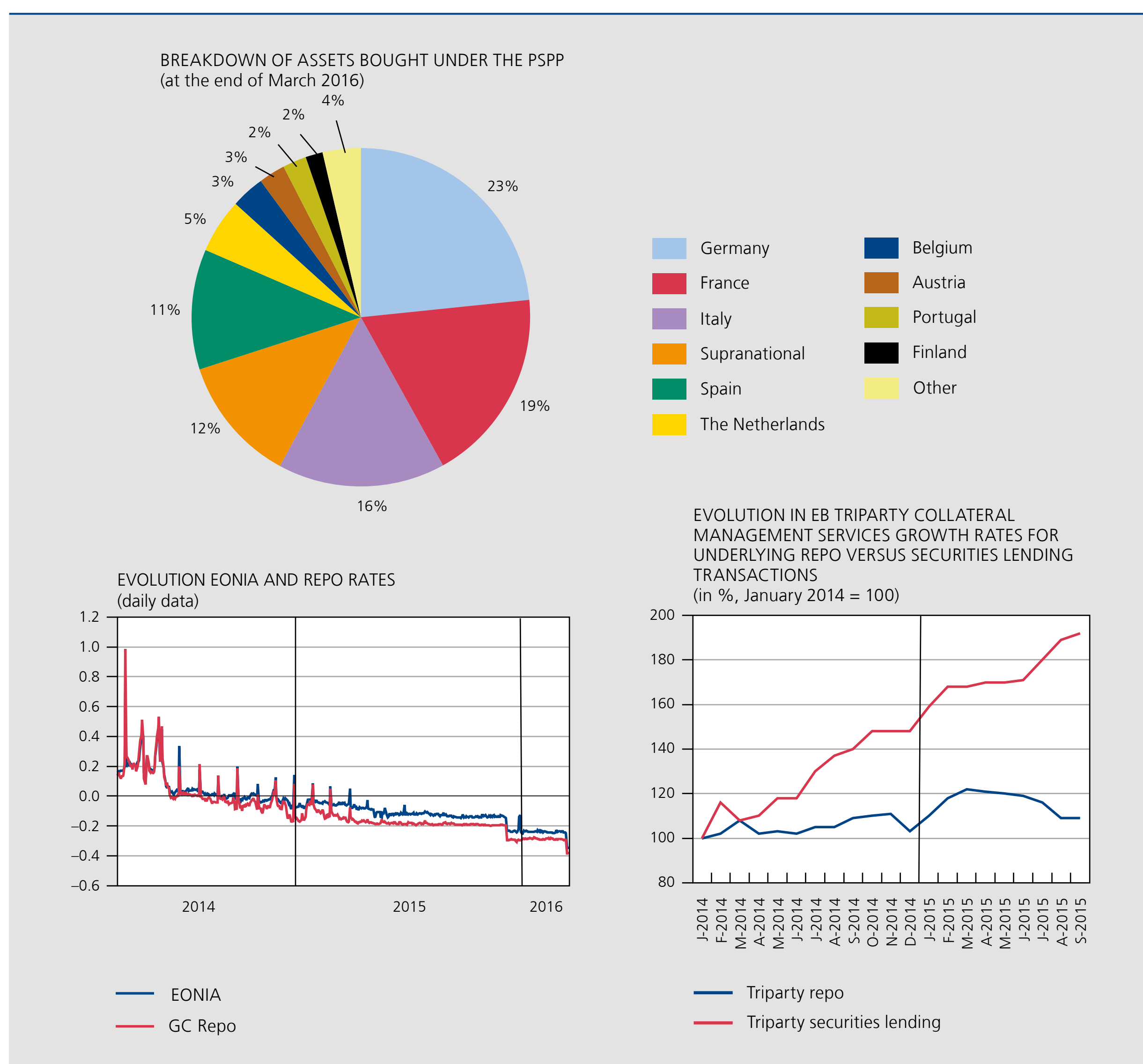
There are potential indications that market participants are facing growing needs to source specific (high-quality) assets which tend to be in shorter supply on the market than before. In the framework of the expanded asset purchase programme (APP)[1], Eurosystem central banks have been purchasing € 60 billion of public and private sector assets each month since March 2015, and have decided to further extend this programme to € 80 billion in 2016. By the end of March 2016, cumulative purchases of assets under the public sector purchase programme (PSPP), the main part of APP, totalled about € 650 billion with German and French securities covering more than 40 % of this amount (Chart 39, top panel). The widening spread between the EONIA interbank interest rate for unsecured lending transactions and benchmark repo indices such as the GC repo rate[2] may indicate higher demand for specific collateral assets (Chart 39, bottom-left). As illustrated by the movement in repo rates (which are below EONIA), collateral takers in the repo market tend to offer cheaper cash in exchange for assets they need in their collateral portfolio. To minimise

(1) APP consists of the public sector purchase programme (PSPP), the third covered bond purchase programme (CBPP3) and the asset-backed securities purchase programme (ABSPP).
(2) General collateral (GC) represents a basket of (high quality) assets that is generally accepted by counterparties in the repo market. The individual collateral assets that comprise this basket can be substituted for each other.

potential adverse effects on market liquidity in bond and repo markets, purchased bonds under PSPP can be lent out by the Eurosystem via selected (I)CSDs' securities lending and borrowing programmes, such as Euroclear Bank's. Based on anecdotal information, reliance on the Eurosystem's securities lending programmes seems to have increased for some types of assets.

Other developments in securities financing transactions can to some extent also be read from (I)CSDs' books. In Euroclear Bank, for example, growth rates of triparty collateral management services in support of underlying repos and those in support of securities lending transactions have further diversified in the course of 2015 (Chart 39, bottom-right). Growth in outstanding triparty collateral managed on behalf of Euroclear Bank participants' repo transactions is limited, and

CHART 39 RISING DEMAND FOR SPECIFIC COLLATERAL ASSETS?



Sources: ECB, NBB, Euroclear.

declines as from March 2015, due to ample liquidity available in the market as a result of the Eurosystem's long-term refinancing operations as well as the start of the PSPP programme. On the other hand, growth in outstanding triparty collateral in support of underlying securities lending transactions, such as collateral swaps or collateral transformation trades (i.e. exchanging lower-quality assets for higher quality collateral), is much stronger.

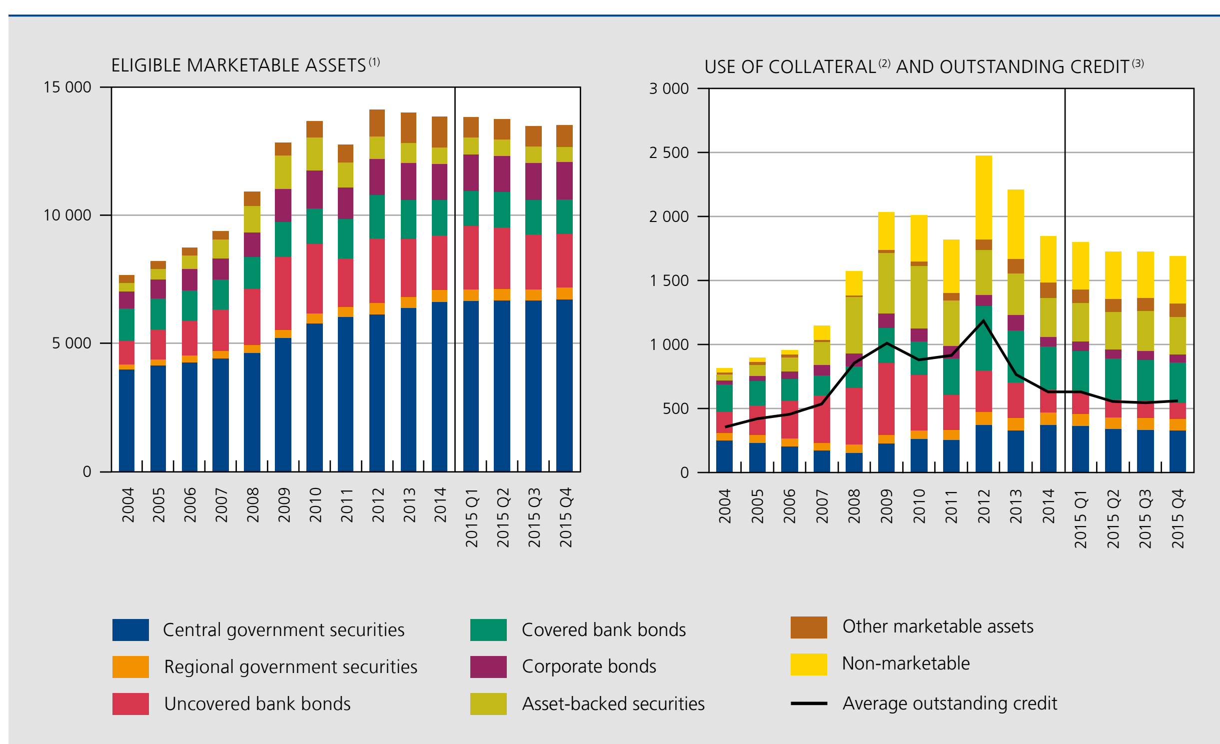
In general, a bank's decision to get secured funding via the interbank money market or through central bank liquidity goes hand in hand with the allocation of different types of assets as collateral. This "collateral arbitrage" includes, from a cash borrower's (or collateral provider) perspective, the analysis of possible opportunity costs in the selection of the type of assets as collateral, taking into account the eligibility of collateral in interbank markets and central bank operations, as well as the possibility of maximising returns in collateral management (e.g. availability of collateral re-use facilities). As of 2014, cash borrowers can also rely on triparty agents to make such arbitrage for Eurosystem monetary policy and credit operations.

Eligible marketable assets, use of collateral & outstanding credit

The list of asset types eligible as collateral by the Eurosystem allows euro area banks to make use of a wide range of collateral. By the end of 2015, total eligible marketable assets equalled € 13.5 trillion (Chart 40, left-hand panel). While central government bonds represent 50 % of total eligible marketable assets, they only account for about 20 % of assets actually used, after non-marketable assets such as credit claims (Chart 40, right-hand panel). Still, the share of central government bonds was lower in the period 2008-2011, ranging between 10 %-15 %. The relative share of (un)covered

CHART 40 **EUROSYSTEM ELIGIBLE MARKETABLE ASSETS, USE OF COLLATERAL & OUTSTANDING CREDIT**

(in € billion)



Source: ECB.

(1) Eligible assets: marketable assets, nominal amounts, averages of end of month data over each time period shown.

(2) Use of collateral: both marketable and non-marketable assets, after valuation and haircuts, averages of end of month data over each time period shown.

(3) Outstanding credit: averages based on daily data.

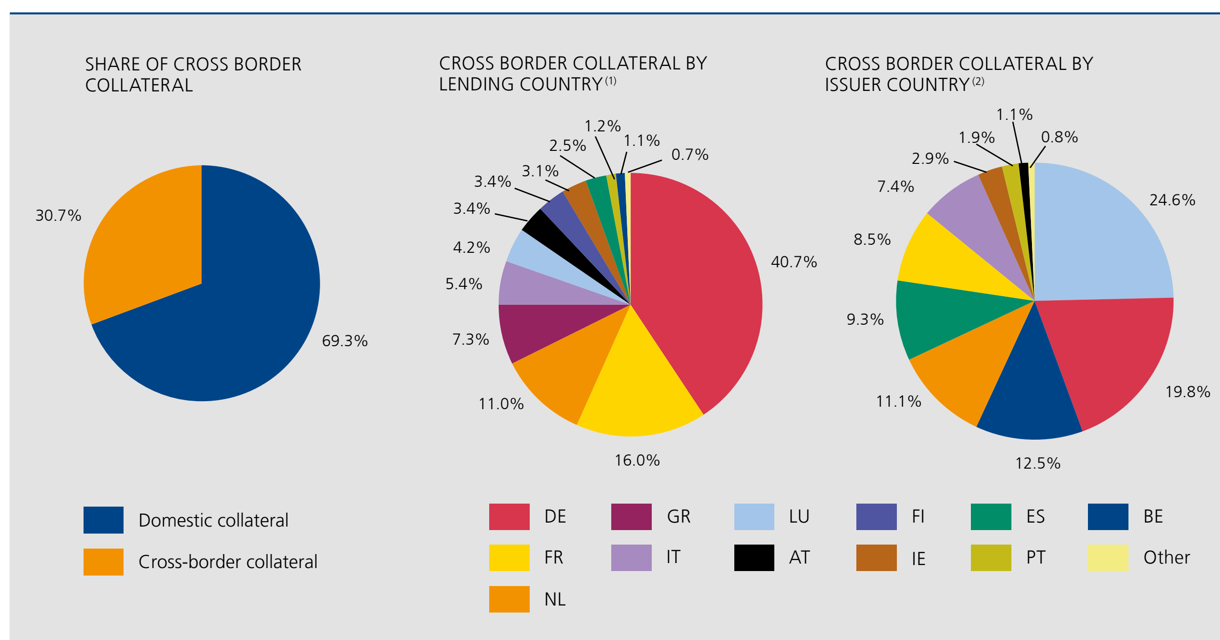
bank bonds, asset-backed securities and non-marketable assets has, on the other hand, gone down. The amount of collateral the Eurosystem receives, as collateral taker, is primarily used to cover refinancing operations; the surplus can be allocated to counterparties' intraday credit line. The actual average outstanding credit provided by the Eurosystem is about € 530 billion (Q4 2015) which is close to pre-crisis levels and illustrates the scale of available liquidity in the market due to quantitative easing measures.

Role of Belgian (I)CSDs in the mobilisation of cross-border collateral

Eurosystem counterparties can only obtain credit from the central bank of the country in which they are established, i.e. their home central bank. Collateral lodged by Eurosystem counterparties can be qualified as either domestic or cross-border collateral: whether the collateral is issued and safekept in the domestic (I)CSDs of the Eurosystem counterparty (domestic collateral) or not (cross-border collateral). Domestic collateral is always mobilised via the domestic (I)CSD of the Eurosystem counterparties. Cross-border collateral, on the other hand, is mobilised through linkages between (I)CSDs and central banks. The Eurosystem aims to facilitate the mobilisation of cross-border collateral. In that perspective, Eurosystem counterparties have since 2014 been able to rely on (I)CSDs acting as triparty agent (on behalf of the Eurosystem and its counterparties) for the mobilisation of collateral. Euroclear Bank can adopt such a role both for domestic and cross-border collateral [1]. The launch of T2S is also expected to further promote the use of cross-border collateral. Today, two of the Belgian (I)CSDs – NBB-SSS and Euroclear Bank – can be used in monetary policy and credit operations and play an important role in the mobilisation of cross-border collateral by Eurosystem counterparties.

In 2015, cross-border collateral represented on average about 30 % of total collateral held in custody by the Eurosystem (Chart 41, left-hand panel). Based on the distribution per lending country (i.e. the country of the central bank in which

CHART 41 CROSS-BORDER COLLATERAL MOBILISED FOR EUROSYSTEM MONETARY POLICY & CREDIT OPERATIONS
(average 2015, based on holdings on the last Wednesday of each month)



Sources: ECB.
(1) Lending country is the country of the central bank in which the Eurosystem counterparty is located.
(2) Issuer country details which countries supply the assets that are used cross-border.

the Eurosystem counterparty is located) German, French and Dutch counterparties rely most on cross-border collateral. Belgian counterparties make far less use of cross-border collateral (only 1.1 %) as they prefer to use domestic as well as non-marketable assets (Chart 41, middle panel). On the other hand, non-Belgian counterparties do rely to a large extent on collateral issued in either NBB-SSS or Euroclear Bank. Collateral assets issued in a Belgian (I)CSD represents 12.5 % of total cross-border collateral mobilised on behalf of the Eurosystem (Chart 41, right-hand panel).

(1) As Euroclear Bank is Belgian resident, eurobonds are considered domestic collateral in the case of Belgian credit institutions. A full list of triparty agents can be found on https://www.ecb.europa.eu/paym/coll/coll/triparty/html/index.en.html.

Regulatory focus

In response to regulatory changes, such as the clearing obligation for OTC derivatives, collateral management services have become a critical function of (I)CSDs, similar to the registration or settlement of securities. They are vital, not only to financial institutions in meeting new regulatory requirements, but also for CCPs and central banks that primarily act as collateral takers. As year-on-year growth in such services is significant, due attention will further be paid by the NBB to monitor the related operational and strategic risks. Particular focus will be paid to future trends in collateral re-use and collateral transformation as well.

4.3 Risk environment

As market utilities, (I)CSDs can reduce risks (and costs) for their participants. However, if not well managed, operational, credit or liquidity risks in the systems they operate could create potential systemic risks with contagion effects through interdependencies with other market participants or financial market infrastructures, such as CCPs. Given their critical role in the functioning and stability of the financial system, preserving a low risk profile of (I)CSDs is key from a regulatory perspective. The share-out of regulatory authorities' responsibilities in the framework of the CSD Regulation (CSDR) and – for some (I)CSDs with banking status – the single supervisory mechanism (SSM) is explained in box 2.

OPERATIONAL RISK

Operational reliability is a primary concern to all (I)CSDs' operators. Deficiencies in information systems or internal controls can cause severe hick-ups in the daily processing of financial markets transactions. Apart from day-to-day operational risk management, project management risk is also a potential source of major operational risk. Large projects, such as the migration to TARGET2-Securities (T2S) or CSDR compliance, may put strong constraints on (I)CSDs' available IT or risk management resources. T2S was launched on 22 June 2015 with a first wave of CSDs migrating to the new platform including the Maltese, Greek, Romanian and Swiss CSDs (eurobusiness only), later joined by the Italian CSD (Monte Titoli) end of August 2015. For the period September-December 2015, after the migration of the Italian CSD, T2S settled, on average, 1.87 million transactions per month. The daily average value of transactions was slightly above € 200 billion.

The Belgian CSDs that decided to join the T2S platform (i.e. NBB-SSS and Euroclear Belgium as part of ESES) were scheduled for the second wave of migrations end of March 2016, together with the Portuguese CSD (Interbolsa). The NBB-SSS did successfully migrate as scheduled. To prepare its migration to T2S, NBB-SSS had already adopted a new settlement platform with many new T2S features in February 2015. As announced in October 2015, the migration of Euroclear Belgium, together with the other ESES CSDs (i.e. Euroclear France and Euroclear Netherlands) was postponed.

Another type of operational risk which is high on the financial sector's agenda is cyber resilience. The digitalisation of many financial services has expanded the potential for cyber attacks, while at the same time the risk of such attacks occurring has increased as well. A CPMI survey among critical infrastructures – including (I)CSDs – revealed that more than 70 % of them considered cyber security threats are increasing, while about 50 % found it likely that a cyber attack would bring down their infrastructure [1].

CREDIT RISK

Credit risk is usually defined as the risk of loss from an FMI participant default. One typical example of credit risk in a CSD is settlement or principal risk ; i.e. the risk of the loss of securities delivered or payments made to the defaulting participant prior to detection of the default. Such risks can be removed by using delivery versus payment (DVP) mechanisms, ensuring that the delivery of securities only occurs if payment is made too. DVP mechanisms exist in NBB-SSS and Euroclear Belgium (central bank money in €) and Euroclear Bank (commercial bank money in >50 currencies). See also the next section on the CPMI-IOSCO assessment of NBB-SSS for non-euro settlement.

(1) Benoît Coeuré, Member of the ECB Executive Board, Speech at the workshop on the CPMI-IOSCO Guidance on Cyber Resilience for FMIs, 13 January 2016.

(I)CSDs having a banking status provide cash account facilities for their participants and potentially credit to support their settlement activity. Unlike financial institutions in general, these (I)CSDs do not engage in maturity transformation; i.e. credit exposures on participants are typically intraday. The existing prudential banking regulatory framework (CRD/CRR) does not adequately cover such intraday credit exposures. On the other hand, the 2012 CPMI-IOSCO Principles for FMIs (PFMIs) require (I)CSDs to fully cover credit exposures to each participant, including intraday, using collateral and other equivalent financial resources (such as part of available equity). The CSDR and the draft regulatory technical standards as published by the EBA further detail requirements for (I)CSDs to measure, monitor and manage (intraday) credit risks, including the type of collateral accepted to secure credit exposures and the conditions when using other equivalent financial resources. While (I)CSDs are required to cover (intraday) credit risk exposures in any case, points for the NBB's attention include the reduction of the system's aggregate participants' credit use. This requires an adequate and regular analysis of a system's credit usage drivers. Settlement patterns can have an impact on the potential for credit consumption, for example due to cross-border settlement (e.g. linked (I)CSDs do not necessarily operate in the same timeframe which may require pre-financing on behalf of participants that intend to settle transactions via a cross-border link) or system inefficiencies (e.g. time gaps between repo roll-overs whereby the (I)CSD finances the cash borrower between the closing and renewal of its repo transactions). Taking into account regulatory requirements on the availability of high-quality collateral (due to EMIR or Basel III rules), system participants share the same interest in minimising credit use as it will also lower their collateral needs, and consequently the related opportunity costs for holding collateral required to cover credit exposures.

Other sources of credit risk include exposures of (I)CSDs to their cash correspondents through which payment flows resulting from settlement and corporate action activity are processed. If participants decide to leave settlement or corporate action proceeds on their cash accounts in the system, these long cash balances create overnight credit risks for the (I)CSDs. To manage the related credit risks, (I)CSDs invest them on the interbank market either through reverse repos (secured investment), cash redeposits (unsecured), or place them on accounts with their local central banks. (I)CSDs do generally apply dissuasive interest rates (i.e. lower than market rates) on long cash balances maintained by their participants. With the current interest rate environment, and central banks' negative deposit rates, (I)CSDs need to be vigilant that participants' long cash balances do not accumulate in their books.

LIQUIDITY RISK

As a rule, CSDs provide settlement services mainly in a single currency – their home currency – with settlement in the books of the local central bank; i.e. the central bank of issue of that currency. (I)CSDs with a banking status provide cash accounts to their participants in order to allow multicurrency settlement. If (I)CSDs provide credit to their participants,

Box 2 – About overseers, supervisors, competent and relevant authorities

The organisation of the regulatory landscape for (I)CSDs has been reshaped significantly, primarily due to the CSD Regulation (CSDR) and for some FMIs with banking status – including (I)CSDs – the single supervisory mechanism (SSM).

COMPETENT AND RELEVANT AUTHORITIES FOR (I)CSDS UNDER CSDR

The CSDR has set rules to identify authorities responsible for the authorisation and supervision of CSDs. A pivotal role is assigned to the "competent authority", which is designated by national governments and responsible to carry out duties concerning the authorisation and supervision of CSDs. The list of competent authorities is published on the ESMA website[1]. The CSDR provides for other authorities, "relevant authorities", to also be involved in the authorisation and supervision of CSDs. Relevant authorities include overseers of the CSDs, the EU central banks issuing the most relevant currencies in which settlement takes place and, where relevant, the EU central bank in whose books the cash leg of a securities settlement system operated by the CSD is settled.

(1) https://www.esma.europa.eu/sites/default/files/library/competentauthoritiesundercsdr.pdf

In Belgium, the NBB, which is the supervisory authority of the CSDs under the present Belgian legislation, has been confirmed as the competent authority under the CSDR for carrying out the duties, including the authorisation and supervision of CSDs established in Belgium. As overseer of securities settlement systems, the NBB is also recognised as a relevant authority within the CSDR framework.

As competent authority and overseer, the NBB will be involved in cooperation arrangements with other Member States' competent and relevant authorities. This is particularly relevant for Euroclear Bank. Cooperation with other competent authorities is required when a CSD's activities have become of substantial importance for the functioning of the securities markets and the protection of investors in another Member State. The full regulatory impact for Euroclear Bank still needs to be assessed when ESMA has drafted the specific guidelines in that respect.

REGULATORY FRAMEWORKS FOR FMIS WITH BANKING STATUS

In the euro area, six FMIs have the regulatory and legal status of a credit institution: two CCPs (Eurex AG, LCH. Clearnet SA) and four (I)CSDs (Clearstream Frankfurt, Clearstream Luxembourg, Euroclear Bank, OekB). These FMIs have a double regulatory status: as CSD or CCP, they are regulated respectively by the CSDR or by EMIR, while as credit institutions, they are subject to banking regulation. This poses the interesting question of regulatory focus and an adequate regulatory framework for supervising/overseeing such FMIs.

The SSM implemented since November 2014 organises the financial supervision in the euro area countries by the ECB and the national competent authorities (NCAs). It is noteworthy that under the SSM, these FMIs with banking status have been qualified as "less significant institutions" (LSI)[1]. This is because under the SSM criteria, which have been set up to identify systemic-relevant credit institutions within the euro area, these FMIs were not selected.

Also for FMIs with a banking status, their systemic relevance is due to their role as FMI rather than their banking activities as such. In this sense, the CSDR and EMIR rules are more binding as they cover these FMIs' activities in their capacity as respectively a CSD or a CCP, irrespective of their banking or non-banking status. Under the CSDR for example, banking activities are qualified as ancillary services apart from core services such as notary or settlement services.

Typically, major risks in such FMIs are operational risks (operational availability, cyber resilience, settlement efficiency) and financial risks – often on an intraday basis (intraday liquidity and credit risks, settlement risks). As such risk profile of an FMI is fundamentally different from that of a universal deposit-taking bank, prudential requirements for banks do not always adequately cover these specific operational and financial risks of FMIs. International agreed regulatory standards for CCPs and (I)CSDs (CPMI–IOSCO Principles for FMIs (PFMIs)) have been developed to cover among others these specific risks. The PFMIs cover FMIs irrespective of their regulatory (bank/non-bank) status.

In the EU, the PFMIs were transposed into European legislation (EMIR and CSDR). For instance, in the CSDR, there is a specific set of requirements (backed up by a comprehensive set of technical regulatory standards issued by the EBA) for regulating the banking activities of a CSD. A few noteworthy requirements are:
- besides its licence as CSD, a CSD with banking status needs to obtain a supplementary licence in order to provide only banking-type ancillary services directly related to the core or ancillary services of the CSD (limited purpose bank);
- specific additional capital charges for intraday credit risks;
- requirements regarding the quality of the collateral a CSD can accept to fully cover its credit risk exposures to individual participants.

(1) In the SSM framework, credit institutions are categorised as "significant" or "less significant". The ECB directly supervises significant institutions, whereas the NCAs have primary responsibility for the supervision of the less significant ones. Credit institutions are considered significant subject to conditions set by the SSM.

One can conclude here that, as the systemic risk aspects of (I)CSDs are covered by the specific provisions of the CSDR (and EMIR for CCPs), it is not productive to qualify FMIs with banking status as significant under the SSM, as the banking prudential requirements do not adequately cover the FMIs' risks.

Euroclear Bank is the only CSD with credit institution status in Belgium. With total assets below € 30 billion, it is qualified as an LSI under the SSM, and therefore remains under the direct supervision of the NBB as NCA.

they could face liquidity risks if the borrowing participant is not able to reimburse intraday its cash positions, in which case the (I)CSD needs to monetise the available collateral that covers the credit exposure. Current provisions in the draft CSDR regulatory technical standards for liquidity risk management go further than those of the PFMIs. While the PFMIs require (I)CSDs to withstand the failure of the participant with the largest payment obligation, the CSDR requires sufficient liquidity sources to cope with the simultaneous failure of the participants with the two largest payment obligations (i.e. Cover 2 scenario). (I)CSDs with a banking status will need to demonstrate that they have sufficient liquidity sources to cope with such crisis scenarios. Collateral assets, pledged by (I)CSDs participants to cover credit risk exposures, can be regarded as qualifying liquidity sources as long as there are arrangements to monetise such collateral from defaulting participants on an intraday basis.

INTERDEPENDENCIES

Interdependencies refer to the interrelationships between systems, such as payment systems, CCPs and (I)CSDs, and between systems and their participants. Due to such interdependencies, the sound functioning of an individual system often depends on the sound functioning of other interconnected systems or participants.

New type of participants

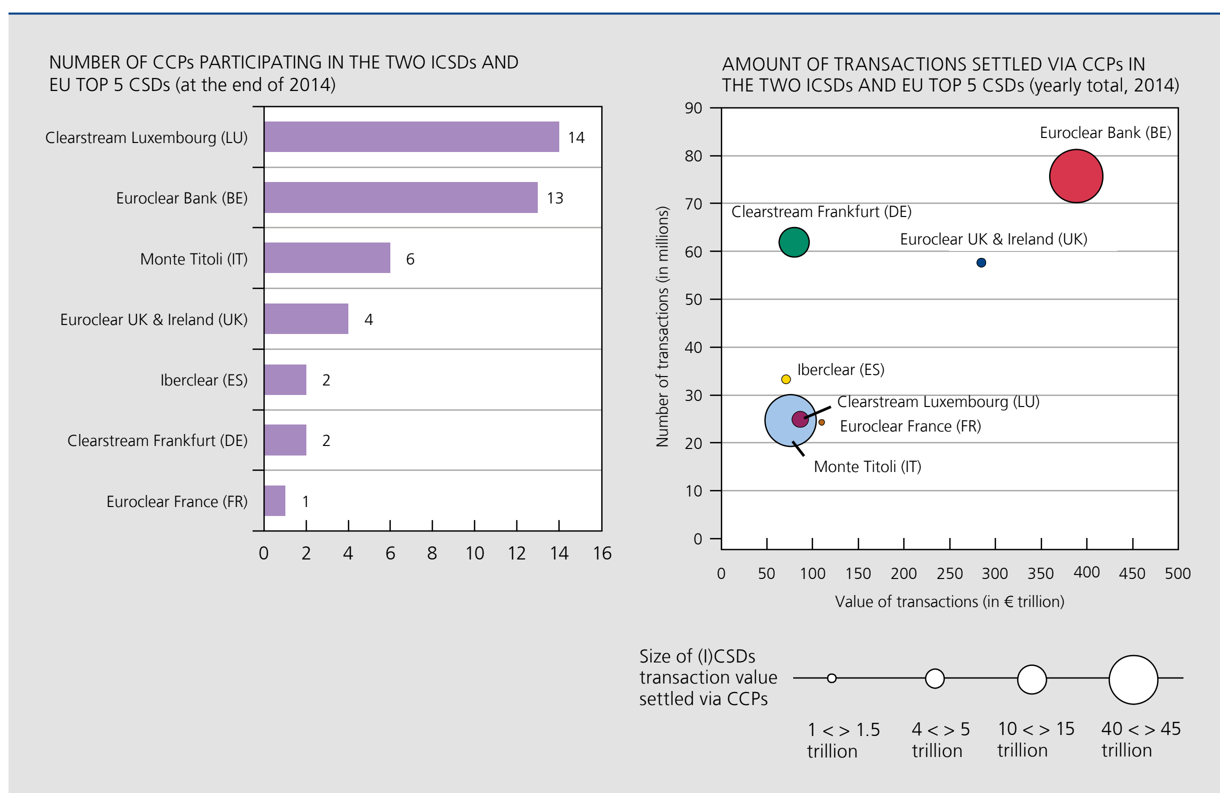
New interdependencies emerge between non-financial institutions and (I)CSDs. For reasons already mentioned in section 2, corporates have joined the buy-side spectrum of the repo markets by accessing FMIs directly, instead of via financial intermediaries. These types of participants will also be obliged to post collateral for their OTC derivatives transactions under EMIR. The number of corporate treasuries accessing Euroclear Bank's triparty platform has increased five-fold within five years to more than 50 in 2015. These new types of participants have a different risk profile than other participants and this needs to be translated into adequate admission criteria. In principle, the Settlement Finality Directive (SFD) which aimed to reduce systemic risks associated with participation in payment and securities settlement systems, and in particular the risk linked to the insolvency of a participant in such a system, stipulates that only legal entities (i.e. credit institutions, investment firms and public authorities) are covered by settlement finality provisions. However, national implementing laws may further stipulate the types of legal entities that can participate in a settlement system. The Belgian Law of 28 April 1999, implementing the SFD, was amended by a Royal Decree of 14 April 2013 based on the PFMIs allowing other types of legal entities to participate in a settlement system, insofar as specific conditions are met.

CCPs

Major interdependencies exist between the post-trade clearing and settlement layer: i.e. between CCPs and (I)CSDs. CCPs participate in (I)CSDs to settle cleared securities transactions and/or to make use of their triparty collateral management services for the collateral received from their clearing members. Legislation such as EMIR makes the use of CCPs mandatory for certain derivatives segments (as mentioned in section 2), and will also drive CCPs' demand for collateral management services. (I)CSDs have a strategic interest to provide settlement and collateral management services between CCPs and market participants. Given their large participant base[1] and their access to multiple securities (collateral) markets worldwide, Euroclear Bank and Clearstream Luxembourg have, as ICSDs, been able to attract a large number of CCPs on their books (Chart 42, left-hand panel). The value of settled transactions by CCPs

(1) Euroclear Bank has more than 1,500 participants, whereas Clearstream Luxembourg has close to 1,400 participants (ECB Blue Book, 2014).

CHART 42 (I)CSD AND CCP INTERDEPENDENCIES



Sources: ECB Blue Book, Euroclear.

in the ICSDs and top-5 EU CSDs varies strongly. Chart 42 (right-hand panel) plots selected (I)CSDs in terms of yearly aggregate settlement turnover based on the value of transactions (X axis) and the number of transactions (Y axis). The size of the "bubble" represents the yearly total value of settlement transactions processed in the books of these (I)CSDs via a CCP. In some cases, a local CSD, though smaller in size than an ICSD, can settle an equivalent amount of transactions via a CCP.

Regulatory focus

The ESES CSDs' migration to T2S, initially foreseen for April 2016, is now scheduled for September 2016. Regulators of the ESES CSDs, both overseers and securities commissions, are closely monitoring the T2S migration programme with ESES project management, as well as with Euroclear Risk Management and Internal Audit. Another priority in the NBB's oversight and supervision of Belgian FMIs is cyber risk. The nature of cyber risks and their impact (e.g. data integrity) challenge existing applicable operational risk management frameworks. The NBB takes also part in related CPMI-IOSCO workstreams to develop principles-based international guidance for FMIs to enhance their cyber resilience. In the longer term, the (I)CSD sector might be challenged by FinTech and in particular blockchain technologies. But it could take many years before new technology takes over core parts of the system [1]. For instance, many countries have legislation that requires data to be physically maintained in the country. The NBB interacts frequently with the industry to follow up further developments in this domain.

In Belgium, Euroclear Bank is the only CSD which has banking status and provides – typically intraday – credit to its participants. As part of its oversight and supervisory work, the NBB has developed a set of indicators to monitor the evolution in intraday credit and related liquidity risks, including the quality of the collateral pledged by Euroclear Bank's participants. Liquidity stress-testing, including multi currency aspects, also continues to be a primary focus of the NBB. As those (I)CSDs providing intraday credit and their participants have a mutual interest in minimising as far as possible

(1) Oliver Wyman and Euroclear, "Blockchain in Capital Markets, The Prize and the Journey", February 2016

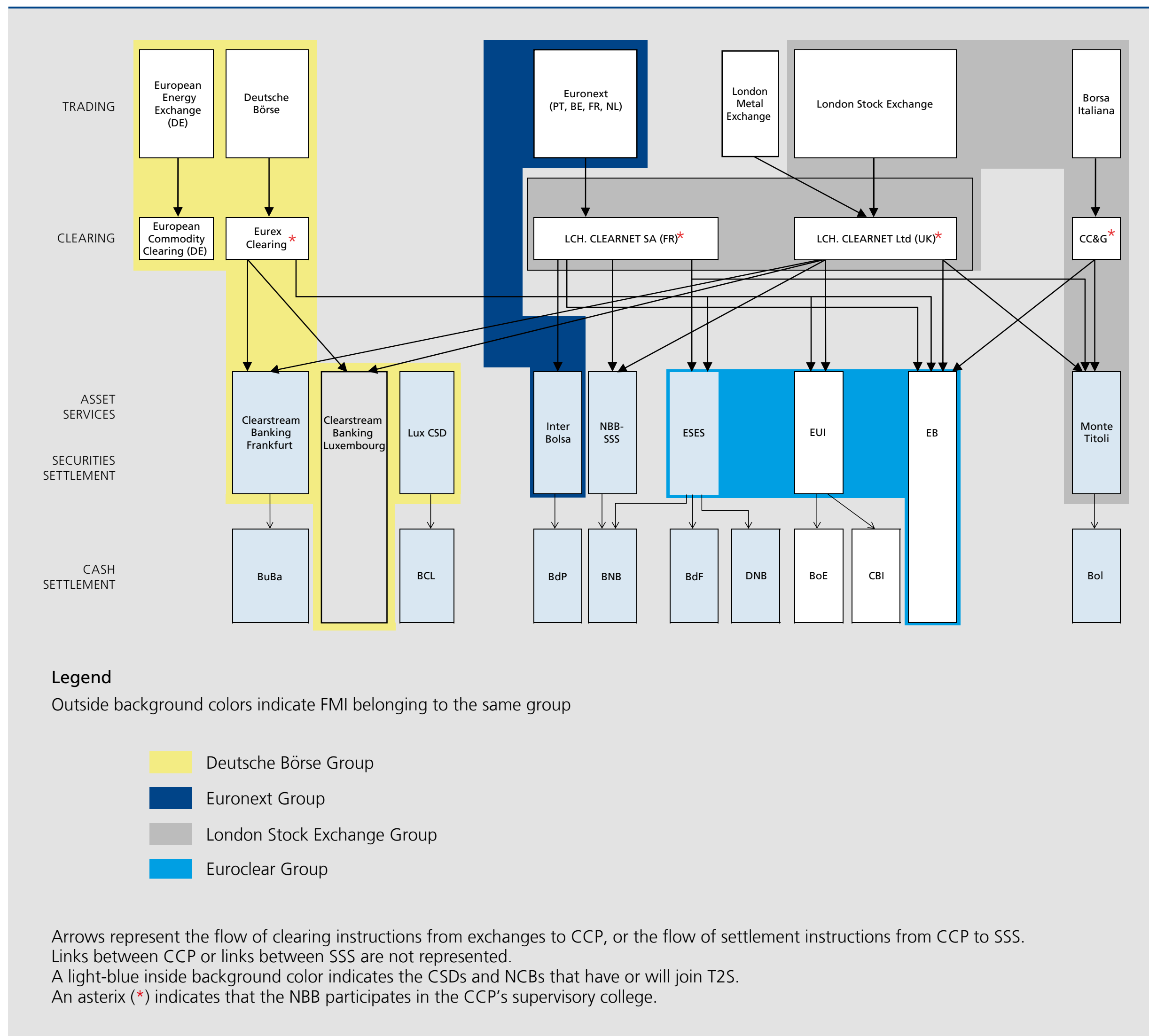
credit consumption – and thus the use of collateral – a close and structural dialogue between system operators and their participants, in particular at risk management level, is warranted. To mitigate other types of credit risk that result from participants' long cash balances, (I)CSDs should define the appropriate level of participants' working cash balances that ought to support settlement activity in the system.

The NBB also pays due attention to interrelationships between CCPs and (I)CSDs in its oversight and supervision of FMIs and how those interdependencies are managed by the FMIs themselves. As both CCPs and their clearing members are often participants in the same (I)CSDs, such interdependencies should be taken into account in (I)CSDs' liquidity stress test scenarios. Potential impacts on the default of clearing members, or the CCP itself, is further elaborated in the article by Steven Vancauwenberge ("CCP resilience and recovery – impact for the CCP users").

CONSOLIDATION WITHIN THE TRADE AND POST-TRADE LANDSCAPE

Taking into account the launch of T2S and the commoditisation of the settlement function, as well as the fiercer competitive environment among (I)CSDs in value-added services or due to CSDR rules, consolidation may provide (I)CSDs the economies of scale that are expected to be required in order to capitalise potential business opportunities. Consolidation

CHART 43 **TRADING, CLEARING AND SETTLEMENT INFRASTRUCTURE**
(situation at the end of March 2016)



Source: NBB.

among infrastructures at the trading and clearing layers can also have strategic consequences for (I)CSDs. As illustrated before, feeds from CCPs' cleared trades, as well as the derived use of collateral management services, can be of strategic importance for (I)CSDs. Clearing activity is a central component in the potential merger between Deutsche Börse and London Stock Exchange which own the two largest CCPs in Europe: i.e. Eurex and LCH.Clearnet. Chart 43 provides a stylised overview of the European trade and post-trade landscape relevant in that context. The first layer represents the stock exchanges whereas clearing by CCPs is depicted by the second layer. On the day when the buyers and sellers have to settle their obligations, assets (securities or cash) are exchanged. Securities and cash settlement is shown in respectively the third and fourth layer. Chart 43 also shows the ownership of market infrastructures, whether the settlement layer is owned by the stock exchange (Clearstream, Interbolsa, Monte Titoli) or not (Euroclear).

4.4 Assessment of the NBB-SSS against the CPMI-IOSCO Principles for Financial Market Infrastructures

The NBB-SSS is the central securities depository (CSD) for dematerialised fixed-income securities in Belgium: i.e. government securities and corporate debt. The system is run by the NBB. NBB-SSS participants – more than 80 entities, both domestic and international – can settle transactions in EUR by book-entry on a delivery-versus-payment basis in central bank money. The NBB-SSS holds € 575 billion in assets and has a yearly turnover of € 8 919 billion (in 2015).

In February 2015, the NBB-SSS migrated to a new settlement platform ("RAMSES") with a view to its migration to T2S in March 2016. The NBB-SSS has also discontinued the automatic securities lending and borrowing service.

TABLE 8 SUMMARY OF THE RESULTS OF THE PRINCIPLE-BY-PRINCIPLE ASSESSMENT OF OBSERVANCE

Assessment category	Principle
Observed	1, 2, 4, 5, 7, 8, 9, 11, 13, 15, 18, 20, 21, 22, 23
Broadly observed	3, 12, 17, 19
Partly observed	–
Not observed	–
Not applicable	6, 10, 14, 16, 24

Source: NBB.

This assessment has been carried out by the NBB's Oversight team, which is fully independent from the operational departments of the NBB (such as the NBB-SSS).

Oversight has assessed the NBB-SSS against the applicable CPMI-IOSCO Principles for Financial Market Infrastructures (PFMIs[(1)]), taking into account the specifics of a central bank infrastructure, where relevant.

Table 8 gives an overview of the ratings of the 24 Principles. A detailed assessment of each Principle is set out below.

PRINCIPLE 1 LEGAL BASIS

The Terms & Conditions of the NBB-SSS have been amended to take into account the migration to T2S. After the finalisation of this new version, an external legal opinion confirming the validity and enforceability of the new Terms & Conditions

(1) An overview of these PFMIs can be found in box 1 on p.129 of the FSR 2013.

under Belgian law should be provided. In addition, further assessment of the impact of recovery/resolution measures that can potentially affect participants is recommended considering recent regulatory developments in this domain.

PRINCIPLE 2 GOVERNANCE

The NBB has documented objectives, governance arrangements for the Board and management level and a documented risk management framework. In the last few years, progress has been made to enhance compliance with the Governance Principle via the publication of a Mission Statement, the establishment of a User Committee and of a Management Committee. The publication of its "conflicts of interest" policy has answered the remaining open Oversight recommendation regarding this Principle.

PRINCIPLE 3 FRAMEWORK FOR THE COMPREHENSIVE MANAGEMENT OF RISKS

The PFMIs require FMIs to analyse the risks borne from and posed to other entities. More specifically, an analysis has to be made of the settlement and funding flows in the FMI. The impact on the sound functioning of the market and the system from either the default or operational outage of the largest participant has to be analysed. The desktop analysis made by the NBB-SSS reveals a concentration of activity in the hands of a few participants. The analysis was made based on data from the NBB-SSS only while some NBB-SSS participants also participate in other CSDs. Analyses made by individual CSDs have a more limited value in the new T2S context. Therefore, the reliance on a T2S simulator addressing the impact of the outage or default of one or more T2S participants would allow the CSDs to observe the PFMIs in a meaningful way.

CREDIT AND LIQUIDITY RISK MANAGEMENT (PRINCIPLE 4 CREDIT RISK, PRINCIPLE 5 COLLATERAL, PRINCIPLE 6 MARGIN, PRINCIPLE 7 LIQUIDITY RISK)

Participants can buy securities in the NBB-SSS with the cash (EUR) on their dedicated cash account in the books of the central bank. This account is funded by the NBB-SSS participants from their main T2 account with the NBB. As long as there is sufficient cash on this dedicated account, settlement will take place. The NBB-SSS does not provide credit to its participants neither in the settlement process, nor for any other purpose. Such credit could be provided, if needed, by the NBB. The credit provision by the NBB as central bank complies with the ESCB monetary policy framework which imposes full collateralisation of the positions, with the application of commonly agreed haircuts. Nor is the NBB exposed to any liquidity risk against the euro.

SETTLEMENT (PRINCIPLE 8 FINALITY, PRINCIPLE 9 MONEY SETTLEMENTS, PRINCIPLE 10 PHYSICAL DELIVERIES)

The NBB-SSS settles intraday with immediate finality. Money settlements take place in central bank money. The NBB-SSS does not offer physical settlement. All securities that are settled in the system are dematerialised or immobilised and settled in book-entry form.

PRINCIPLE 11 CENTRAL SECURITIES DEPOSITORIES

Through its accounting procedures, including the segregation of assets belonging to the NBB, the different participants and their underlying clients, the NBB-SSS protects investors from custody risk. The Terms & Conditions ensure the full protection of underlying clients' assets against the default of the NBB-SSS participant that is their custodian.

PRINCIPLE 12 EXCHANGE-OF-VALUE SETTLEMENT SYSTEMS

The NBB-SSS system allows participants to eliminate principal risk for transactions in EUR by ensuring that the final settlement of the cash leg and securities leg occur only when the other leg settles. For transactions in other currencies (mainly USD, GBP, CHF, NOK), the NBB-SSS does not provide DVP settlement as the securities leg is FOP settled within the NBB-SSS while the cash leg is settled outside the system. This relates to 1.39% of the total value of transactions settled (in 2015). The NBB-SSS has been asked to adapt its settlement processes in order to provide for a DVP arrangement (i.e. final settlement of one leg occurs if and only if the final settlement of the linked leg occurs – on a gross (trade-by-trade) or net basis) for primary and secondary market transactions in all applicable currencies.

DEFAULT MANAGEMENT (PRINCIPLE 13 PARTICIPANT-DEFAULT RULES AND PROCEDURES, PRINCIPLE 14 SEGREGATION AND PORTABILITY)

The NBB-SSS's new Terms & Conditions describe the procedure in the event of a participant default and define the moment of entry, moment of irrevocability and moment of settlement finality of transfer orders in line with the "Collective Agreement" which defines these moments in a harmonised way across all T2S CSDs.

PRINCIPLE 15 GENERAL BUSINESS RISK

The NBB checks whether the NBB-SSS's costs and revenues are in balance and takes remedial action if necessary. With a slightly increasing securities depot and a custody fee basis system, the NBB-SSS relies on a stable stream of revenues.

PRINCIPLE 16 CUSTODY AND INVESTMENT RISKS

All securities processed by the NBB-SSS are safekept directly within the NBB-SSS. The NBB-SSS does not rely on custodians.

PRINCIPLE 17 OPERATIONAL RISK

The NBB-SSS maintains high levels of operational reliability, especially since the launch of the new RAMSES platform. Cyber resilience is a new specific point for the NBB-SSS's attention in terms of operational risk. Considering the regulatory evolutions in that domain, the overseers have recommended that the NBB-SSS carries out a fully-fledged assessment of its cyber resilience against the principles of the CPMI guidelines on cyber resilience in financial market infrastructures, including an adequate holistic approach covering aspects like governance structure, business continuity and ad-hoc communication plans and legal aspects and to regularly update this assessment in line with the evolving guidelines and standards. The adequacy and the effectiveness of the NBB policies in that domain will be reviewed on a regular basis accordingly.

Considering their systemic importance for the well-functioning of financial markets, CSDs should analyse the impact of a long-term IT outage (extending over several days), notwithstanding the business continuity measures implemented in order to cope with the two-hour resumption time. Therefore, it is recommended that the NBB-SSS further assesses the potential consequences of a scenario of a long-term unavailability of its RAMSES platform and/or T2S and develops alternative (manual) procedures to ensure (partial) business continuity under such extreme scenarios.

PRINCIPLE 18 ACCESS AND PARTICIPATION REQUIREMENTS

The NBB-SSS's access criteria are objective, risk-based, and publicly disclosed. They guarantee fair and open access.

PRINCIPLE 19 TIERED PARTICIPATION ARRANGEMENTS

There is no sub-participant status in the NBB-SSS. As a rule, assets of participants' underlying clients are held in omnibus accounts. For that reason, the NBB-SSS does not have any specific, detailed and identifiable information on the activities of individual underlying clients. However, the NBB-SSS has – based on the PFMI methodology – identified the proportion of activity that each direct participant conducts on behalf of indirect participants in relation to the direct participants' capacity. The questionnaire sent to the participants having the most underlying client depots has revealed the existence of six important underlying clients (based on securities depot). It is recommended that the analysis is expanded to turnover data (in order to make a distinction between "buy-and-hold" custodians and more active players in the market) and that conclusions are drawn about the risks to which NBB-SSS may be exposed as a result of tiered participation arrangements. This outcome should be regularly reviewed and reported to the responsible governance bodies and adequate measures taken when required.

PRINCIPLE 20 FMI LINKS

The NBB-SSS has no links as investor CSD with other CSDs. Other CSDs may become participant in the NBB-SSS and are treated as regular participant. The NBB-SSS does not bear/pose any credit or liquidity risk.

EFFICIENCY (PRINCIPLE 21 EFFICIENCY AND EFFECTIVENESS, PRINCIPLE 22 COMMUNICATION PROCEDURES AND STANDARDS)

The NBB-SSS monitors key performance indicators (KPIs) such as the settlement efficiency and the system's up-time on a daily basis. It regularly benchmarks its tariff structure with peers and client surveys and the User Committee's input contribute to the NBB-SSS meeting users' expectations. The NBB-SSS uses internationally accepted communication procedures and standards.

TRANSPARENCY (PRINCIPLE 23 DISCLOSURE OF RULES, KEY PROCEDURES, AND MARKET DATA, PRINCIPLE 24 DISCLOSURE OF MARKET DATA BY TRADE REPOSITORIES)

The NBB-SSS is a domestic and low-risk system. It publicly discloses its Rule Book on its website. Training and support are provided to participants on request to further facilitate their understanding of the system. Fees and statistical data, as well as the Disclosure Framework, are also published.

The table below summarises all recommendations to the NBB-SSS:

TABLE 9 LIST OF RECOMMENDATIONS FOR THE NBB-SSS

Principles	Issues of concern	Recommended action
1	Legal basis	The NBB-SSS should: (a) obtain a legal opinion confirming the validity and enforceability of the new T&C under Belgian law; (b) further assess the impact of recovery/resolution measures potentially affecting participants in the NBB-SSS.
3	Analysis of risks borne from and posed to other entities	For the sake of comprehensiveness of the risk assessment, the analysis of the settlement and funding flows in the NBB-SSS should be further conducted and supplemented by the results of simulations to be conducted based on T2S-wide data.
12	DVP for foreign currencies	The NBB-SSS should provide for a DVP arrangement for primary and secondary market transactions for all eligible currencies.
17	Cyber resilience	Fully-fledged assessment of the NBB-SSS's cyber resilience to be performed against the principles of the CPMI guidelines on cyber resilience including an adequate holistic approach covering aspects like governance structure, business continuity and *ad hoc* communication plans and legal aspects. Such assessment should be regularly updated in line with evolving guidelines and standards.
17	Long-term IT outage	The NBB-SSS should analyse the impact of a long-term IT outage (unavailability of RAMSES and/or T2S) and develop adequate contingency procedures (incl. for issuance and asset servicing).
19	Tiered participation arrangements	In order to identify the extent of the potential risk arising from tiered participation arrangements, the NBB-SSS should identify and regularly review: (a) the proportion of activity (i.e. value of turnover) that each direct participant conducts on behalf of indirect participants in relation to the direct participants' capacity; (b) direct participants that act on behalf of a material number of indirect participants; (c) indirect participants responsible for a significant proportion of turnover in the system, and; (d) indirect participants whose transaction volumes or values are large relative to the capacity of the direct participant through which they access the FMI to manage risks arising from these transactions.

Source: NBB.