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Clearstream Innovative Solutions for the ETF Market

A research paper analysing post-trading fragmentation issues, and flexible solutions to improve process efficiencies in light of T2S and the internationalisation of markets.

Executive Summary

The Exchange Traded Fund (ETF) market has rapidly taken off in the last few years, fuelled by growing interest from issuers and investors. This paper focuses on the popularity of ETFs in the marketplace, the lifecycle of the instrument itself and the actors involved in the lifecycle. It looks at the market initiatives that instigated to improve infrastructure and settlement flows especially in the light of the internationalisation of markets, both inside and outside of Europe, as well as discussing the remaining market barriers and impacts.

In addition, this paper describes the innovative and flexible solutions that Clearstream has brought to the market and how those solutions satisfy the needs of all ETF issuers. Such solutions reduce inefficiencies in the process benefiting the issuers, investors and market in general.

Contents

Background

Did you know?

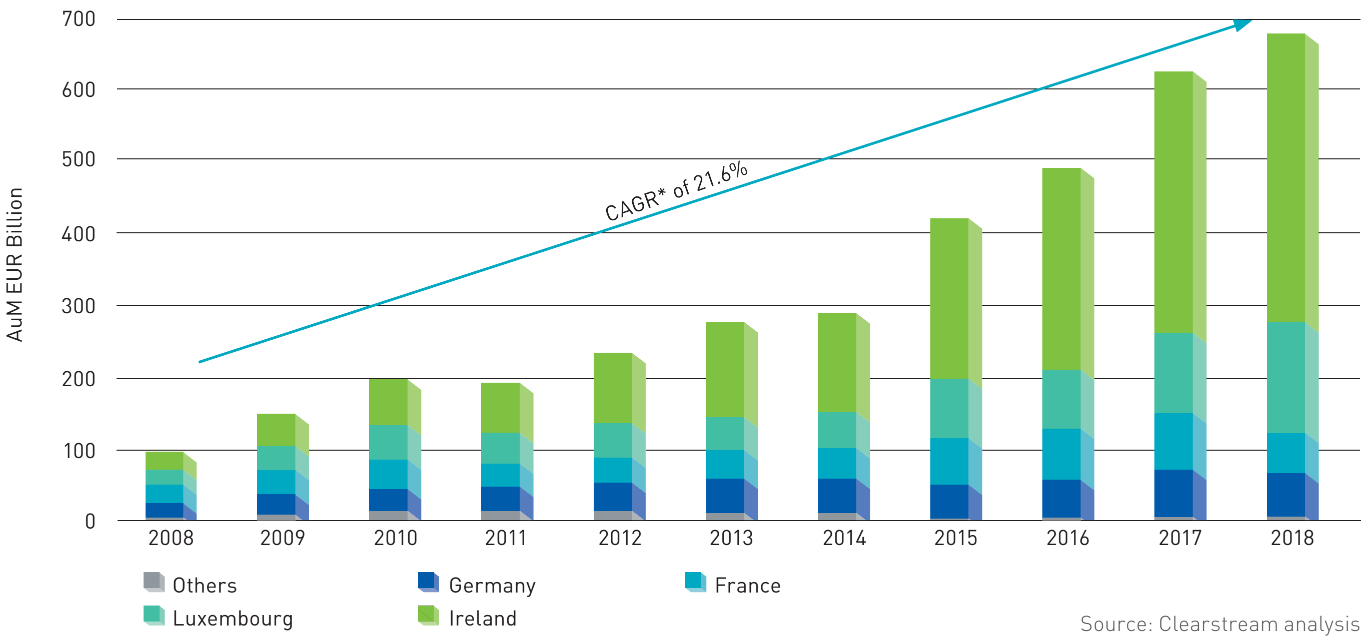
An Exchange Traded Fund (ETF) is typically a passive (although becoming increasingly active) investment vehicle that tracks the value of a portfolio of assets such as shares, bonds or commodities. ETFs differ from most mutual funds in that they are traded like common shares on an exchange, or over-the-counter, and thus offer more price flexibility and liquidity. Typically, an ETF price will follow the weighted average value of the underlying shares comprised in the portfolio during the day.

Overview of the European ETF market

The ETF market has evolved into a huge success story since the widely accepted launch of the first ETF at the beginning of 1993. The value of ETFs issued has risen globally, approaching 5 trillion EUR at the end of 2018. Although the US still accounts for the vast majority of the issued asset value, around 15% of the global asset value is now attributable to European ETFs. Indeed, the growth in value of European ETF assets under management (AuM) has increased more than six fold over the last ten years (Figure 1). The number of ETF launches has grown from 500 in 2008 to 1700 in 2018, representing a Compounded Annual Growth Rate (CAGR) of approximately 13% over the past 10 years.

The anticipation is that the global ETF market will continue to expand significantly in terms of number of ETF issues, number of transactions and underlying asset value.

Figure 1: Evolution of AuM for ETFs in Europe



Source: Clearstream analysis

It is worth pointing out that the accurate number of ETF transactions taking place every day has historically been difficult to calculate as it is estimated that only between 30-50% are transacted on exchange. A significant proportion of institutional ETF trades are conducted over-the-counter (OTC).

However, since the implementation of the MiFID II regulation market participants are now required to make such ETF OTC trading transparent. Reporting has commenced but currently it is difficult to aggregate the data. This will become feasible and provide an accurate insight into the true total volumes on exchange and over-the-counter.

Reasons behind the popularity of ETFs

ETFs have gained popularity amongst institutional and retail investors for a number of reasons, but predominantly for the following factors:

- Liquidity: ETFs, being available for trading throughout the trading day, are liquid and allow institutional investors in particular to fulfil short-term investment strategies.
- Fees: ETFs typically have lower associated fees than their mutual fund counterparts. Mutual funds specifically have to bear the costs of shareholder servicing and record keeping.
- Transparency: As an ETF is stock exchange-listed investors can see the market derived price throughout the trading day and can make investment decisions accordingly. The traditional equivalent mutual fund is typically only valued once per day. Moreover, ETFs' constituents and their relative weighting are fully disclosed.
- Features: ETFs, as a product in general, fulfil investor objectives in terms of liquidity, portfolio diversification as well as hedging.

Additionally, from a tax perspective for the issuer ETFs can, in certain instances, provide a more tax efficient return on underlying securities than is achieved by some mutual funds.

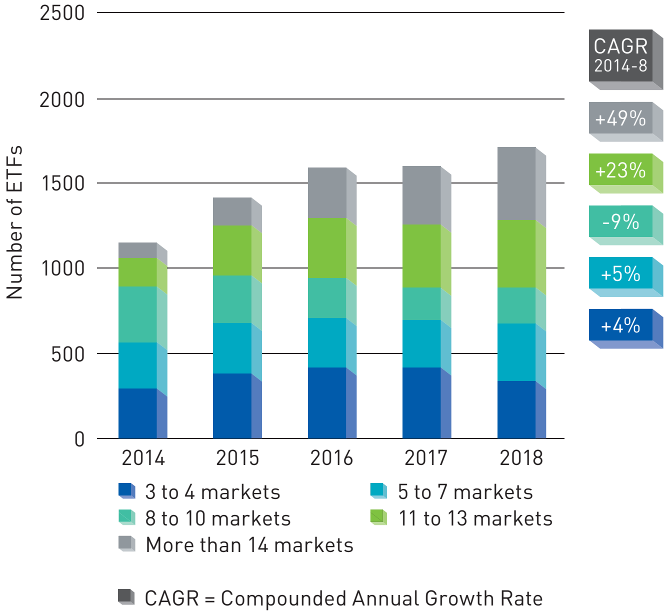
Market flows and constraints

Market flows overview

The popularity of European ETFs is growing and the demand comes from an expanding number of markets (inside and outside of the European Union). This increasing trend is highlighted in Figure 2 below.

Conversely, the statistics for listing of European ETFs highlight that strategies are changing. Figure 3 shows that European ETFs essentially concentrate their listing on one to five trading venues.

Figure 2: Evolution of worldwide market distribution of European ETFs



Source: Clearstream analysis

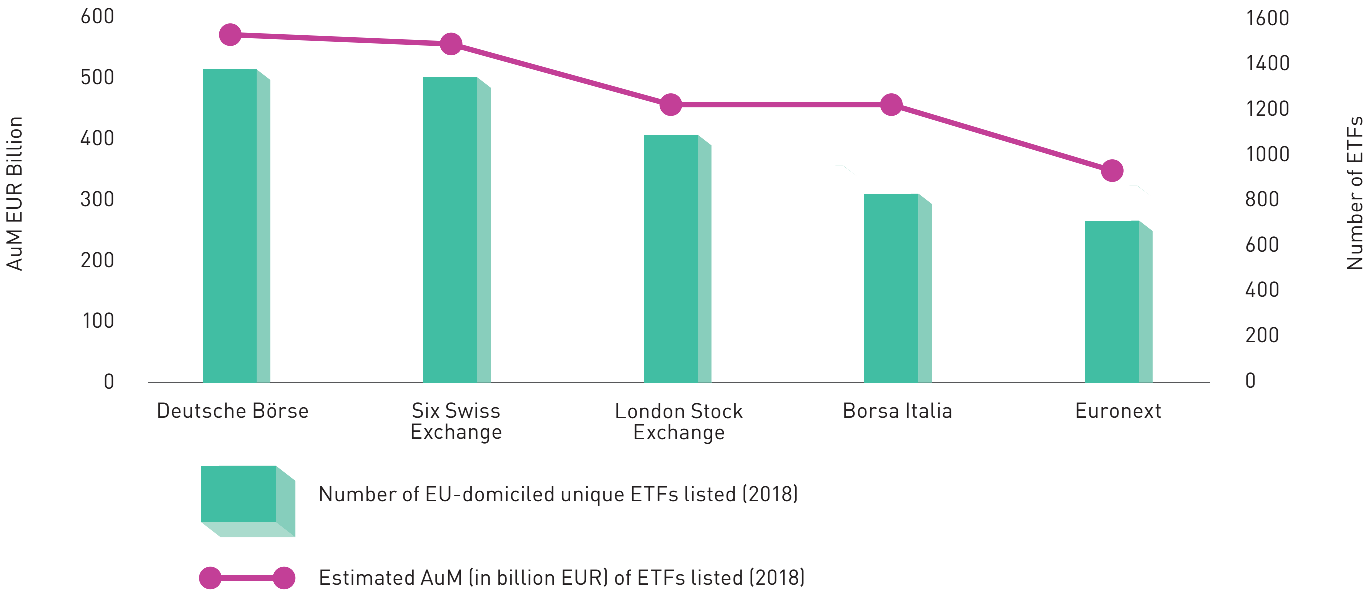
Figure 3: Evolution of European ETF number of listing

Source: Clearstream analysis

It is interesting to note that the number of European ETFs distributed in eleven markets or more has doubled in the space of four years. As of 2018, just short of 50% of European ETFs distribute to eleven or more markets.

The number of ETFs listed on more than 5 stock exchanges has decreased since 2014. Moreover, Figure 4 shows that European ETF issuers are positioning their assets on the European hot spots that are attracting international investors. The top 5 European Union trading venues are located in Frankfurt, Zurich, London, Milan and Paris.

Figure 4: Top European trading venues by unique number of ETFs listed and by AuM



Source: Clearstream analysis

In conclusion, these charts highlight the growing global popularity of ETFs with rapidly expanding market distribution, yet an evident pragmatism amongst ETF issuers to rationalise their cross listing to a smaller number of concentrated trading venues. This rationalisation is clearly born out of experience and the desire for efficiency in the ETF issuance, trading and settlement lifecycle.

In order to comprehend the implication of these trends in terms of post-trade settlement, it is important to understand the overall ETF lifecycle and the issuance and settlement models.

ETF lifecycle and main actors

Figure 5 illustrates the lifecycle of an ETF starting from the ETF issuer creating the security to the end investor holding it. The roles of each actor within the lifecycle are the following:

(I)CSD: place of all transactions occurring in the ETF lifecycle. Each actor has an account within an (I)CSD in order to enable the transaction.

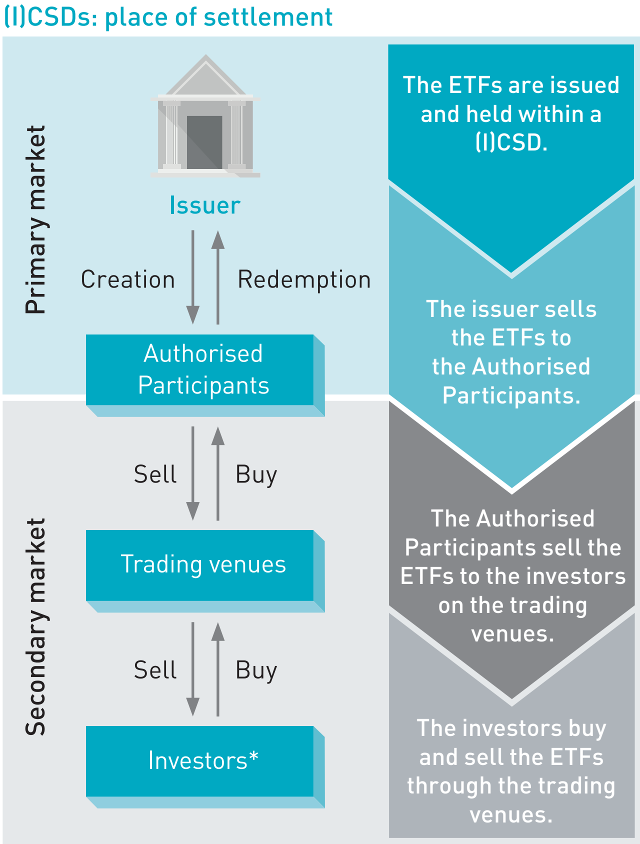
Issuer: entity instructing the issuance of an ETF. There are different issuance models that are described hereafter.

Authorised Participants (APs): support creation and redemption of ETFs by providing the underlying securities or cash in exchange for units of the ETF.

Trading venues: official markets where securities are exchanged between investors.

Investors (institutional or retail): buy and sell ETFs on the different trading venues or over-the-counter. They are the ultimate holders of the ETFs and do not directly have an account with an (I)CSD, but rather their custodian bank does.

Figure 5: ETF lifecycle

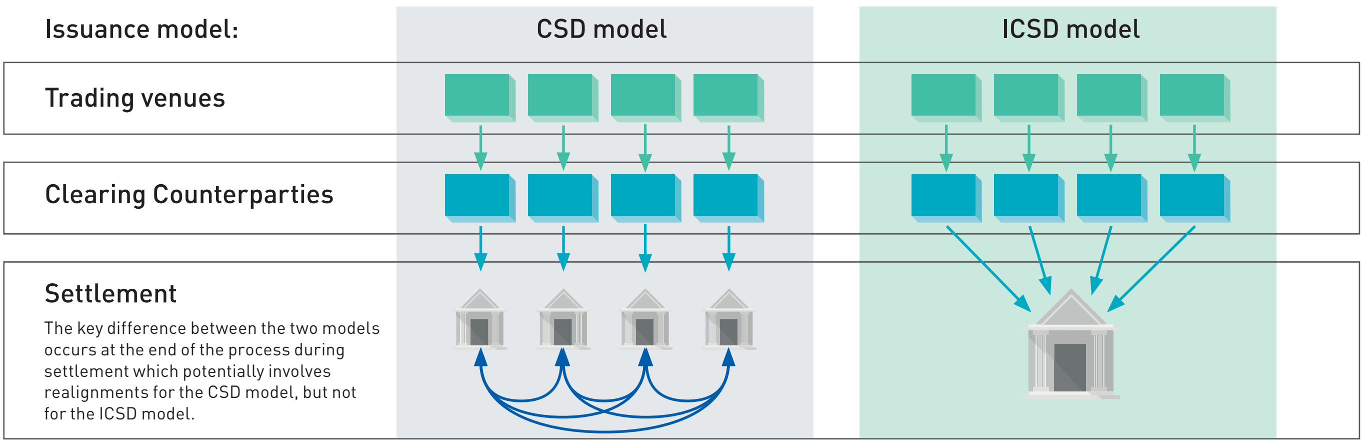


* The investors's assets are held at a custodian bank which has an account at (I)CSDs.

Overview of the issuance models

In the ETF market there are generally two issuance models governing the lifecycle of trading, clearing and settlement. These are often described as the Central Securities Depository (CSD) and International Central Securities Depository (ICSD) models or alternatively domestic and international models. The diagram below (Figure 6) provides a simplified overview of the two models:

Figure 6: Overview of CSD and ICSD models



CSD generic model

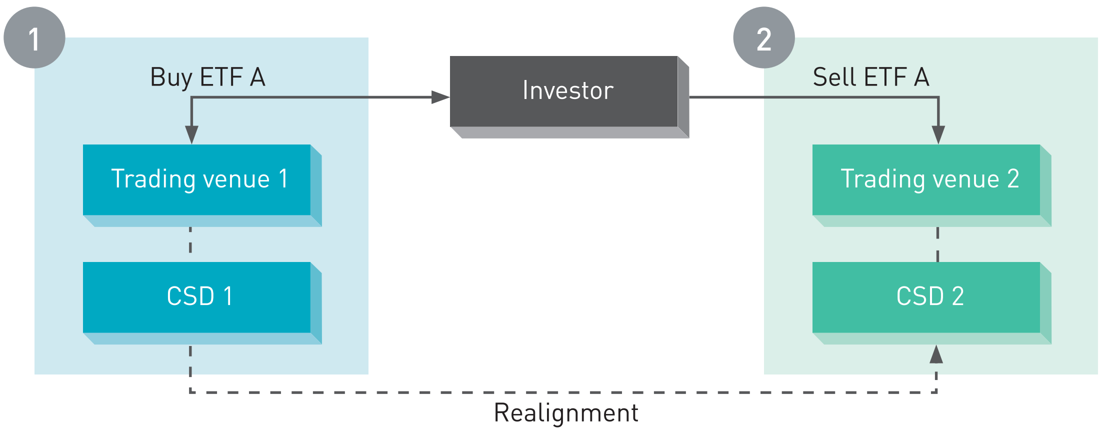
To list an ETF in multiple trading venues using the CSD model, an issuer must issue the ETFs in a given CSD (Issuer CSD) and there must be a link with CSDs (Investor CSDs) in the country of the trading venues. The settlement process occurs in the CSD of the trading venue's country. This means that when an investor buys an ETF on one trading venue and sells it on another, there must be a realignment between the two CSDs involved in the transaction. This is illustrated in Figure 7.

Did you know?

A Central Securities Depository (CSD) is an entity that provides a central point for depositing financial instruments. The EU regulation of 2014 describes the following core functions performed by a CSD:

1. **Operates a securities settlement system**
2. **Records newly issued securities in a book entry system**
3. **Provides and maintains securities accounts at the top tier level.**

Figure 7: Cross-border settlement and subsequent realignment



1. An investor buys ETF A on trading venue 1. The place of settlement is in the CSD where the exchange was performed, thus CSD 1.

2. The same investor sells ETF A on trading venue 2. The place of settlement is in the CSD 2 (place of trade). To enable this trade there must be an individual link between the 2 CSDs.

Realignment is a well documented challenge within the CSD model in terms of time and cost, which is explained later in this paper. In some cases realignment can also require realising a transfer at the Transfer Agent level.

ICSD generic model

Conversely, in the ICSD model, the ETF is issued in one common place of issuance and the settlement will occur in the books of one or both of the two ICSDs (dependent on where the counterparties hold their accounts) Clearstream Banking Luxembourg or Euroclear Bank Belgium.

The ICSD model has some similarities with the US model where all ETF transactions are cleared and settled through the Depository Trust & Clearing Corporation. Effectively all US ETF trades are centralised through this one organisation ensuring a liquid and efficient clearing and settlement process. For the generic ICSD model to deliver on its objective of settlement efficiency, ETF issuers are encouraged to engage with listing and clearing infrastructures to request that settlement be made possible directly into either of the two ICSDs.

The following section highlights the issues and impacts caused by fragmentation and market infrastructure changes that help reduce the impacts.

Did you know?

International Central Securities Depositories (ICSDs) were introduced in Europe in the 1970s predominantly to settle Eurobonds. They have now widened their scope to cover all types of internationally traded financial instruments and settle in multiple currencies. There are two ICSD's in the European Union, Clearstream Banking Luxembourg and Euroclear Bank Belgium. These two organisations have a unique settlement link between them referred to as the 'Bridge'.

Constraints and impacts

As highlighted in the market flows section of this paper, ETFs have become increasingly popular with investors and demand has become ever more global. Trading via sophisticated electronic platforms is seamless in today's world, however the challenge of alignment in the post-trading environment and particularly in settlement remains. For ETFs, it is well documented that the multi-listing and accordingly settlement locations has led to a fragmentation in the settlement process. This issue is manifested in the CSD model where there are a number of CSDs within the European Union that may be involved in the settlement process.

The European Union has contributed to harmonising the European landscape through the implementation of Target2-Securities (T2S) and the CSD Regulation (CSDR).

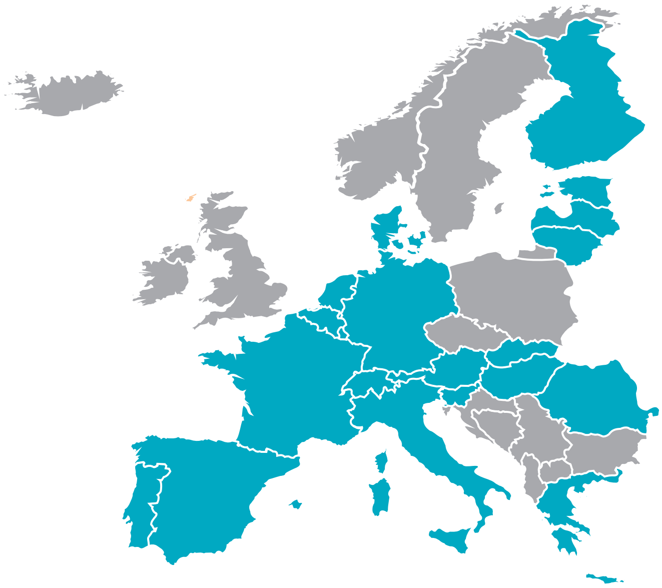
Market Initiatives

Did you know?

Target2-Securities (T2S)
Settlement at CSD level within Europe has been harmonised in recent times with the implementation of T2S, a single market securities infrastructure. It effectively has removed the differences between domestic and cross-border securities settlement bringing centralised delivery-versus-payment (DvP) settlement in central bank money across all European securities markets.

T2S

T2S is a centralised settlement infrastructure that connects all the participating CSDs. As a result of being centralised on one platform, settlement between the CSDs is harmonised with standard settlement procedures and processes. This harmonisation is also being extended to other ancillary services such as corporate actions processing. This centralised infrastructure is somehow moving closer to the model in the US with the Depository Trust & Clearing Corporation.



T2S has been implemented via CSD migration waves since June 2015 and the countries of the CSDs currently participating or planning to participate are highlighted in the map shown.
Source: www.ecb.europa.eu

T2S has made a significant difference to the settlement harmonisation. However, CSDs that are not in T2S must be individually linked, directly or indirectly, to other CSDs to enable cross-border settlement.

CSDR

CSD Regulation (CSDR), which is applicable to all EU members, has contributed to harmonising the operations and rules of the EU CSDs. It aims to make CSDs more efficient and therefore more robust and safe. CSDR puts pressure on the securities industry in general to ensure that going forward trades are settled on the actual contracted settlement date (normally T+2). CSDR enforces CSDs to apply mandatory buy-ins and cash penalties on each settlement instruction when settlement fails. Within the ETF industry, this adds additional incentive to reduce fragmentation and to minimise the number of realignments being performed.

Did you know?

The European Central Securities Depositories Regulation (CSDR), implemented in the wake of the 2008 financial crisis, has the objective to increase the operational efficiency of CSDs and to ensure the security of the assets they hold. Amongst a number of measures, CSDs require to obtain a new license to operate, must apply a more rigid settlement discipline imposing cash penalties for late settlement, apply account segregation rules, daily reconciliation, book entry form of securities and conform to use of the Legal Entity Identifier.

Remaining barriers for ETFs

The initiatives described in the previous section have brought significant improvement to the harmonisation of the European settlement environment but there still remain some challenges to overcome to eliminate all the barriers in the European ETF industry. T2S has greatly contributed to defragmenting the market, however only 21 countries are currently, or planning to be linked, to the platform (the European Central Securities Association has over 30 members). Settlement in T2S is currently restricted to Euros (EUR) and Danish Krone (DKK). T2S continues to strive to harmonise services within the T2S CSDs for instance with corporate actions processing.

T2S clearly enhances the market flows between participating CSDs, but on a more global scale, T2S naturally does not improve market flows between countries in T2S and those out of T2S. Looking back on the market figures, the trend shows an increase in cross-listing in 2 to 5 markets. In these markets, London Stock Exchange is in the top five markets in terms of Assets under Management and number of ETFs listed and is not within T2S. This contributes to fragmenting the current ETF European market.

Impacts

The lack of harmonisation remaining between CSDs in T2S and CSDs out of T2S adversely affects the post-trade environment, impeding the European industry in reaching its full potential. The key impacts are the following:

Did you know?

Collective Safe Custody (CSC) is governed by the German Securities Deposit Act (Depotgesetz, DepotG). In summary, it refers to the rights of holders under the custodial arrangement whereby securities are issued under German law and are safe kept in the vaults of any German central securities depository (currently only Clearstream Banking AG).

- Realignment challenge: On the European ETF market, in the case where a de-synchronisation between traded settlement location and place of issue and/or safekeeping occurs, a cross-border realignment is required between the place of safekeeping and traded location to ensure that the accounting records are in line. This effectively relates to performing a position transfer between one securities depot and another. In some circumstances where cross-border settlement requires a realignment of holdings between CSDs, this can take between two and three days. This brings inherent challenges in a European trading environment which largely operates on a trading date plus 2 days (T+2) settlement basis. Delays in settlement can be costly due to stringent clearing discipline and the new Central Securities Depositories Regulation (CSDR). The inefficiencies are often reflected in the pricing of the ETFs with the bid/ask spreads. Ultimately, the investor is paying for these inefficiencies.
- Regulatory challenge: There are different regulatory frameworks within the EU and different settlement regimes. These are generally surmountable, but there is for instance the specificity in Germany with the national Collective Safe Custody (CSC) regulation. Securities maintained within the German CSD, namely Clearstream Banking Frankfurt (CBF), domestic system, as well as foreign securities held by CBF through a foreign CSD must comply with this regulation. For example, ETFs issued in Ireland via Euroclear UK and Ireland (EUI), with an Irish (IE) ISIN, do not meet the CSC criteria, and cannot be accepted into the CBF domestic settlement system. To overcome this issue, and to meet the German market demand to adhere to the CSC regime, EUI issued ETFs have been re-certified into a German (DE) ISIN ETF that satisfies CSC requirements. This uniquely means that the same ETF can have two ISINs, one Irish (IE) and one German (DE).
- Lower liquidity and thus higher funding costs.

ETF issuer needs

Based on information collected from ETF issuers and based on market trends, we understand that there are a number of key issuer needs in terms of ETF issuance and settlement. The key drivers of these needs can be summarised as follows:

- Ease of set-up of issuance – the ability to access an issuance facility quickly.
- Ease of migration – the ability to switch issuance model with minimal operational risk or impact for both issuers and investors.
- Settlement efficiency – no barriers to settlement on the contracted settlement date.
- Minimising operational risk – efficient settlement process.
- Infrastructure connectivity – efficient settlement links and market liquidity.
- Costs – minimal settlement costs and overheads. Control of costs with intermediaries.
- Transparency – disclosure on where the ETFs are being distributed and who are the holders of the ETFs.

Clearstream has developed solutions with these drivers in mind and its key issuance model solutions described hereafter satisfy each of these needs for varying issuer and investor types.

Clearstream issuance models

Given the expansion of the reach of different models, Clearstream believes that issuers can rely on a single ISIN issuance via the ICSD model. This option facilitates efficient issuance, trading and post-trade activity, reducing cost and post-trade fragmentation due to centralisation of the securities within one or both of the European ICSDs.

Such a model allows for solutions for new issuance as well as accommodating regulatory or market change e.g. Brexit. Ultimately, Clearstream offers a range of innovative solutions for ETF issuance tailored to different needs. The key model offerings, their features and their respective benefits are described below.

Model 1: ICSD issuance model

The ICSD issuance model is based on the utilisation of a common depository, which is a financial institution that has been jointly appointed by Clearstream and Euroclear to hold and service international securities issued in Classical Global Note or book-entry form. Settlement of the securities occurs in Clearstream Banking Luxembourg and/or Euroclear Bank Belgium.

The issuance and redemption of tranches of the overall ETFs issued are simply reflected by markup/markdown of the issued quantity within the books of the common depository i.e. no requirement to generate or withdraw the underlying certification (e.g. Global Note).

ICSD issuance model

1. Transfer Agent instructs markup/down and ETFs are issued in the Common Depository.

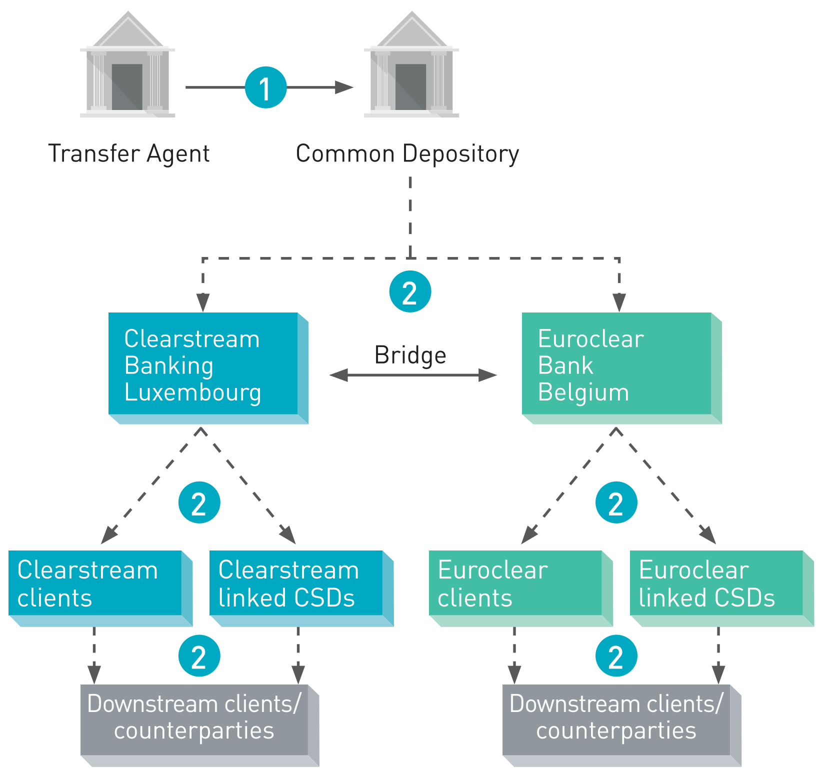
2. The ETFs are posted to the accounts of Clearstream or Euroclear in the common depository to reach the target client/CSD most efficiently.

Legend

Issuance*

Transfer

*The Transfer Agent can also redeem the ETFs (opposite flow).



Issuance and settlement process

Issuance

The security is issued in a common depository and the total security holding is split between the two ICSDs based on the underlying securities holdings held in their respective books. Subsequent transactions in the market may alter the respective security balances between the two ICSDs, however the overall total is altered only in the case of a markup/markdown. The ICSD holding may be for a number of clients that may maintain accounts directly on the books of the ICSD or alternatively via a downstream CSD.

Settlement

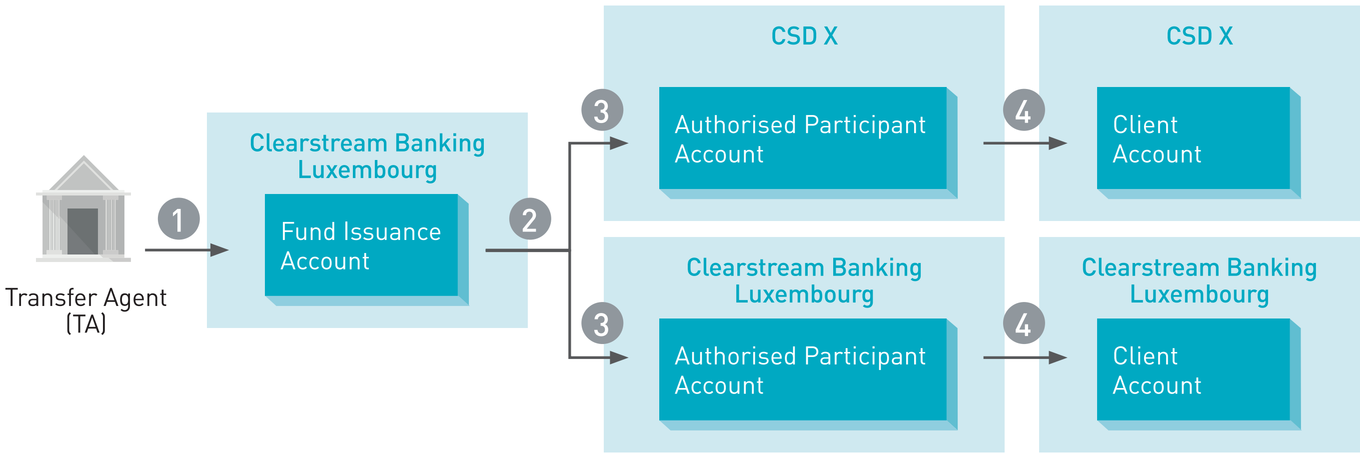
Settlement is executed in Clearstream Banking Luxembourg and Euroclear Bank Belgium. Realignment is performed between these two entities via adjustment of their relative holdings at the common depository (no impact on underlying customer accounts).

Benefits

- **Easy set-up of accounts** using the ICSD's current account structure and product offerings.
- **Structured migration** from a CSD model based on good coordination and market communication.
- **Settlement efficiency:**
  - Single ISIN. There is no re-certification requirement.
  - Simple model providing efficient liquidity pool as the securities are maintained in one location.
  - Realignment only needs performed between the two ICSD accounts within the common depository, can be immediate and does not pose a delay to settlement.
- **Operational risk:** reduced settlement failure.
- **Infrastructure connectivity:**
  - Provides access to the vast community of international participants on the Clearstream platform and its settlement links to other (I)CSDs.
- **Cost savings:**
  - Fee model based on pooling of settlement, safekeeping and custody fees at client/family group level, hence economies of scale are possible.
  - Increased liquidity potential from pooling of assets and collateral.
  - Ability to use multi-currency settlement capability of ICSD in line with ETF characteristics.
- **Transparency** of holdings for all Clearstream accounts.

Model 2: ICSDplus issuance model

Model 2 is based on the unique Fund Issuance Account (FIA) capability delivered by Clearstream. Clearstream effectively takes the role of the common depository in Model 1 reducing a step in the overall process. The following diagram provides a high-level overview of the service and process:

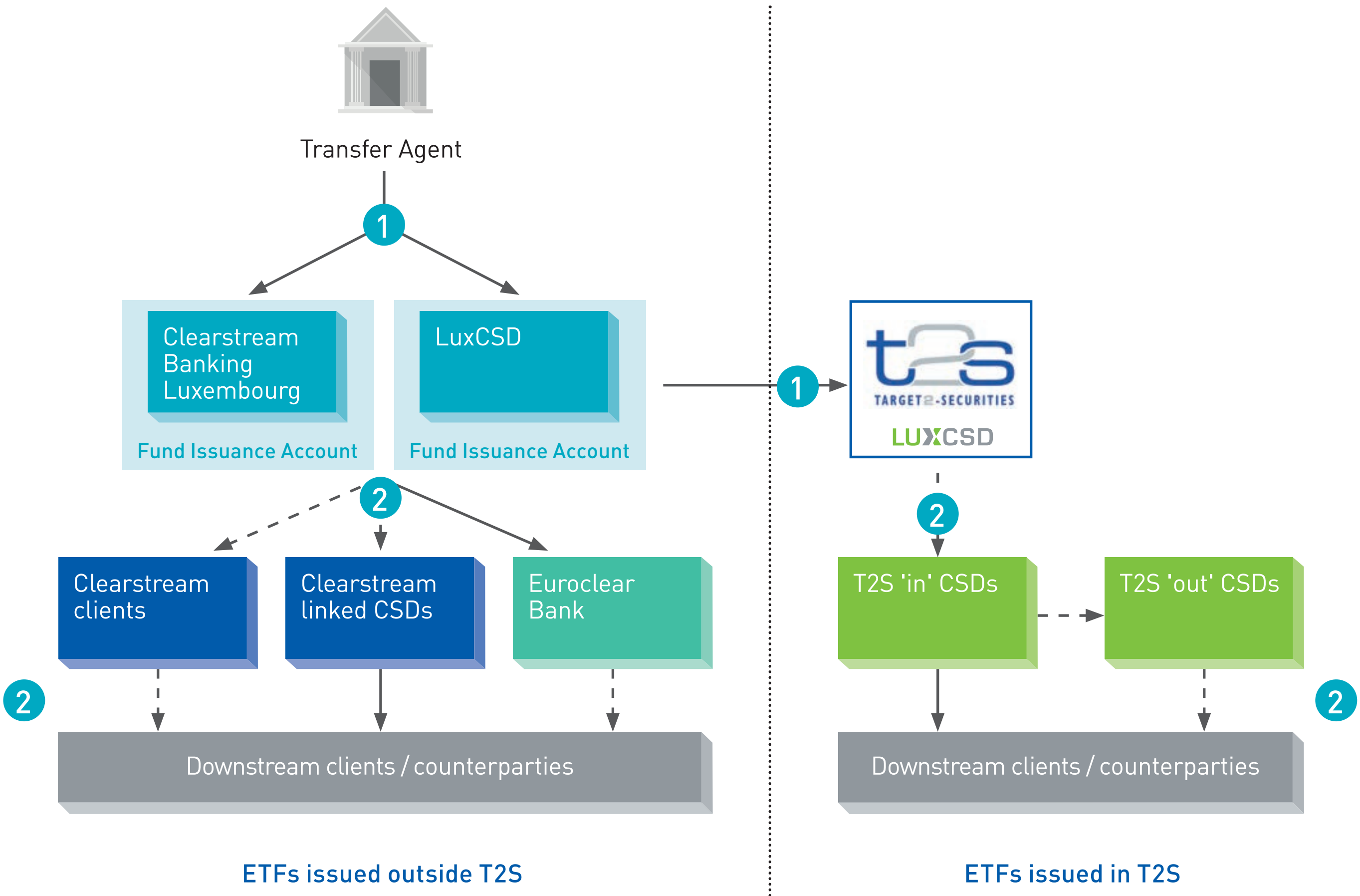


1. The Transfer Agent instructs Clearstream to realise a share markup/markdown in the Fund Issuance Account.
2. The shares are issued or redeemed in the Fund Issuance Account held by the TA at Clearstream Banking Luxembourg.
3. The shares are transferred from the FIA to an Authorised Participant's account either in Clearstream or in a CSD linked to Clearstream.
4. The shares are onward transferred from the Authorised Participant's account to any accounts in a CSD linked to Clearstream Banking Luxembourg.

This service has been in place since 2007, attracting a growing customer base and as such is both proven and robust.

The ICSDplus issuance model has the advantage of servicing ETFs issued directly within T2S as well as those outside T2S as illustrated in Figure 9 below.

Figure 9: ICSDplus issuance model



ETFs issued outside T2S

1. Transfer Agent instructs markup/down and ETFs are automatically issued in the Fund Issuance Account in Clearstream.
2. ETFs are transferred DvP to the APs Clearstream account, CSD account or via the bridge to Euroclear in Clearstream.

ETFs issued in T2S

1. Transfer Agent instructs markup/down and ETFs are automatically issued in T2S through LuxCSD via the Fund Issuance Account in Clearstream.
2. ETFs are transferred DvP to the APs or APs custodian account within the 'in' T2S CSD.

Legend

⟶ Issuance*

- - - → Transfer

*The Transfer Agent can also redeem the ETFs (opposite flow).

Issuance

In the ICSDplus issuance model there is no requirement for a common depository, rather the participating institution (issuer's agent, such as Transfer Agents or fund promoter) opens a Fund Issuance Account (FIA) within Clearstream Banking Luxembourg. Holdings are automatically marked up or marked down in the FIA without the need for the creation of a Global Certificate. Effectively the Transfer Agent is synchronised with the FIA structure.

This service has been available since 2007 to cater traditionally for fund shares issued within Clearstream Banking Luxembourg. However, the FIA service is now available additionally to facilitate the direct issue of ETFs in T2S through LuxCSD via Clearstream Banking Luxembourg. This allows issuers to take full advantage of the settlement and cost efficiencies offered by the T2S infrastructure. Furthermore, the issuer's agent can benefit from this facility without being a direct customer of LuxCSD, and simply leverage their existing Clearstream Banking Luxembourg setup and connectivity.

This FIA service is fully integrated with Clearstream Banking Luxembourg's ICSD settlement and custody service. The settlement capability facilitates the reduction of processing risk through the synchronous exchange of cash and securities (DvP) between participants.

The FIA structure also benefits from the capability of trade date accounting ensuring that income and corporate action entitlement is calculated on an accurate basis. This removes for instance the requirement for lengthy cash reconciliation once dividends are paid.

Did you know?

The Funds Issuance Account (FIA) is at the heart of the Clearstream post-trade infrastructure designed to provide greater efficiency and cost-effectiveness in the settlement and custody process for the fund industry. It is used for the posting of standard settlement services based on the synchronous exchange of cash and securities between fund distributors, custodians and Transfer Agents thus reducing processing risk.

Finally, the ICSDplus issuance model utilising the Fund Issuance Account is perfectly positioned to cater for the issue of dematerilaised securities under the Luxembourg Dematerialisation Law dated 6 April 2013. This Law established a new category of securities – the dematerialised security, which was introduced to coexist with, and to be an option to, its material equivalents namely registered and bearer securities. The Luxembourg legislator defined dematerialised securities as securities, which are issued or converted through registration on a securities issuance account maintained by a settlement organisation or a central account keeper. Clearstream and LuxCSD both meet the required criteria as settlement organisations within Luxembourg.

Settlement

For non T2S issued ETFs, settlement of the fund transactions in the market can directly reach counterparts (or their nominated custodians) who have accounts at:

- Clearstream Banking Luxembourg;
- CSDs linked to Clearstream Banking Luxembourg;
- Euroclear Bank Belgium.

For T2S issued ETFs, settlement of the fund transactions in the market can directly reach counterparts (or their nominated custodians) who have accounts at:

- Clearstream Banking Luxembourg;
- T2S 'in' CSDs;
- T2S 'out' CSDs having links to T2S 'in' CSDs.

Did you know?

CSDs settlement activity typically settles in **Central Bank Money (CeBM).** In simple terms, this means that the funds are sourced from /paid to an account held by the customer of the CSD at a central bank. Settlement in T2S is made in CeBM.

Funds sourced to/from commercial banks is conversely referred to as **Commercial Bank Money (CoBM).**

Benefits

- **Easy set-up of accounts:** Creation of an FIA account is a streamlined process, subject to standard regulatory customer documentation being in place.

- **Easy migration:**
  - Simple migration from ICSD model via transfer of ETF holding from Clearstream Banking Luxembourg standard account to a FIA.
  - Migration from a CSD model based on excellent coordination and market communication.

- **Settlement efficiency:**
  - As with Model 1, single ISIN and efficient liquidity.
  - No cross-border realignment as the whole issue is maintained within the FIA account structure.
  - Issuance and redemption reflected by automatic markup/markdown on the FIA account.
  - Access to the T2S settlement platform participants.
  - Direct access to T2S settlement with Central Bank Money (CeBM) settlement capability.
  - Issuance is directly in T2S through LuxCSD with a single ISIN, thus liquidity of ETF is secured (other models can be jeopardised through technical issuer CSD bringing non-T2S issued security into T2S).

- **Operational risk:**
  - Reduced settlement failures.
  - Trade-date based entitlement in line with fund industry practice.
  - Collective Safe Custody: German-based Authorised Participants can directly use their Clearstream Banking Frankfurt account as CSC status is granted for Clearstream Banking Luxembourg issued ETFs.

- **Infrastructure connectivity:**
  - Provides access to the vast community of international participants on the Clearstream platform and its settlement links to other (I)CSDs.
  - Access to the T2S settlement platform participants.
  - Facilitator for the increase in distribution of ETFs.

- **Cost savings:**
  - Fee model based on pooling of settlement, safekeeping and custody fees at client/family group level.
  - Increased liquidity potential from pooling of assets and collateral.
  - Ability to use multi-currency settlement capability of the ICSD in line with ETF characteristics.
  - Benefit from T2S lower settlement costs.
  - Increased liquidity potential from pooling of assets and collateral at T2S and or ICSD level.

- **Transparency** of holdings for all Clearstream accounts.

To keep in mind: Clearstream Banking Frankfurt Issuance Offerings

Clearstream Banking Frankfurt also can provide issuance options for their clients. Alongside the German domestic issuance model for DE ISIN ETFs, there is the Global Bearer Certificate (GBC) which is detailed below.

Global Bearer Certificate (GBC) model

Issuance

This model has proved convenient for a Crest (UK and Ireland securities settlement system) issued ETF (i.e. Irish ETF) to access the German and ultimately international marketplace. A global certificate needs to be issued and maintained by an appointed custodian. This model does however require a separate DE ISIN to be created for non-German issuers and a service level provided that qualifies for CSC as for example the IE ISIN maintained via the Crest CSD does not qualify for CSC.

Benefits

The securities are admitted to collective safe custody by Clearstream Banking Frankfurt.

T2S liquidity: as German CSD, the issuer controls how the ETF is brought into T2S and can guarantee its liquidity in that infrastructure.

Access to non-T2S counterparts in the International market can be reached via the Clearstream Banking Frankfurt link with Clearstream Banking Luxembourg.

Conclusion

Benefits for issuers

Clearstream Banking Luxembourg is confident that it can provide tailored solutions for issuers via the different key models described in this paper:

- The traditional ICSD model utilising the common depository is proven and sustainable.
- The ICSDplus issuance model utilising the FIA account can bring additional benefits in terms of control and reconciliation. This model can also go a step further with direct access to T2S taking advantage of all the cross-market settlement, low settlement costs and efficiency benefits this infrastructure brings.

Each of these solutions enable the issuer to have assurance that traditional post-trading fragmentation issues are minimised, in an evolving environment whereupon settlement delay and inefficiency will bring penalties. Each provides access to international markets and infrastructure with a reach to global counterparties.

A number of ETF issues have been switched from a CSD model to an ICSD model in recent times. This can be performed with minimal operational risk through excellent communication and coordination. It can be a very interesting option for issuers particularly where there may be local market concerns or uncertainty for instance in recent times with Brexit.

The ICSD options with their international appeal are also ideal for creating links to non-European CSDs for instance with Asian markets which can only be of benefit for both issuers and investors.

Benefits for investors

Inefficiencies and fragmentation in the ETF market ultimately are manifested in the pricing of the instrument as mentioned previously usually in the bid/ask spread. The Clearstream ICSD models facilitate efficient intra-book settlement ensuring certainty in meeting settlement commitments. This can only be positive for the end investor and bring further confidence and growth in the ETF market.

Furthermore, the ETF market in Europe is not mature in terms of inclusion of ETFs in the many supporting products for financial instruments. For instance, it is anticipated that there will be a growing demand for ETFs to be acceptable market wide for securities lending as well as for collateral use. Clearstream is ideally placed to offer such services with sophisticated securities lending and collateral management products. Such developments will ultimately lead to further attractiveness of the ETF product to institutional and retail investors alike.

About Clearstream

Clearstream is a global leader in post-trade securities services with around EUR 14 trillion in assets under custody, making it one of the world's largest settlement and custody firms for domestic and international securities. In its role as international central securities depository (ICSD) headquartered in Luxembourg, Clearstream provides the post-trade infrastructure for the Eurobond market and services for securities from around 60 domestic markets worldwide.

As a central securities depository (CSD) based in Frankfurt, Clearstream provides the post-trade infrastructure for the German securities industry as well as CSD services for a large number of domestic markets across Europe and beyond. Clearstream also serves the Luxembourgish market via LuxCSD jointly operated by Clearstream and the Banque centrale du Luxembourg (BCL).

Keeping customer assets safe

As an integral market infrastructure, Clearstream is a key contributor to the stability and resilience of international financial markets and ensures the highest standards of safety for customer assets, including asset segregation and DVP settlement. Clearstream holds strong, long-term AA ratings from major international rating agencies, which reflect Clearstream's focus on risk management and operational efficiency as well as the strict regulatory framework within which it operates as both an ICSD and a Securities Settlement System (SSS).

Making the most of client assets

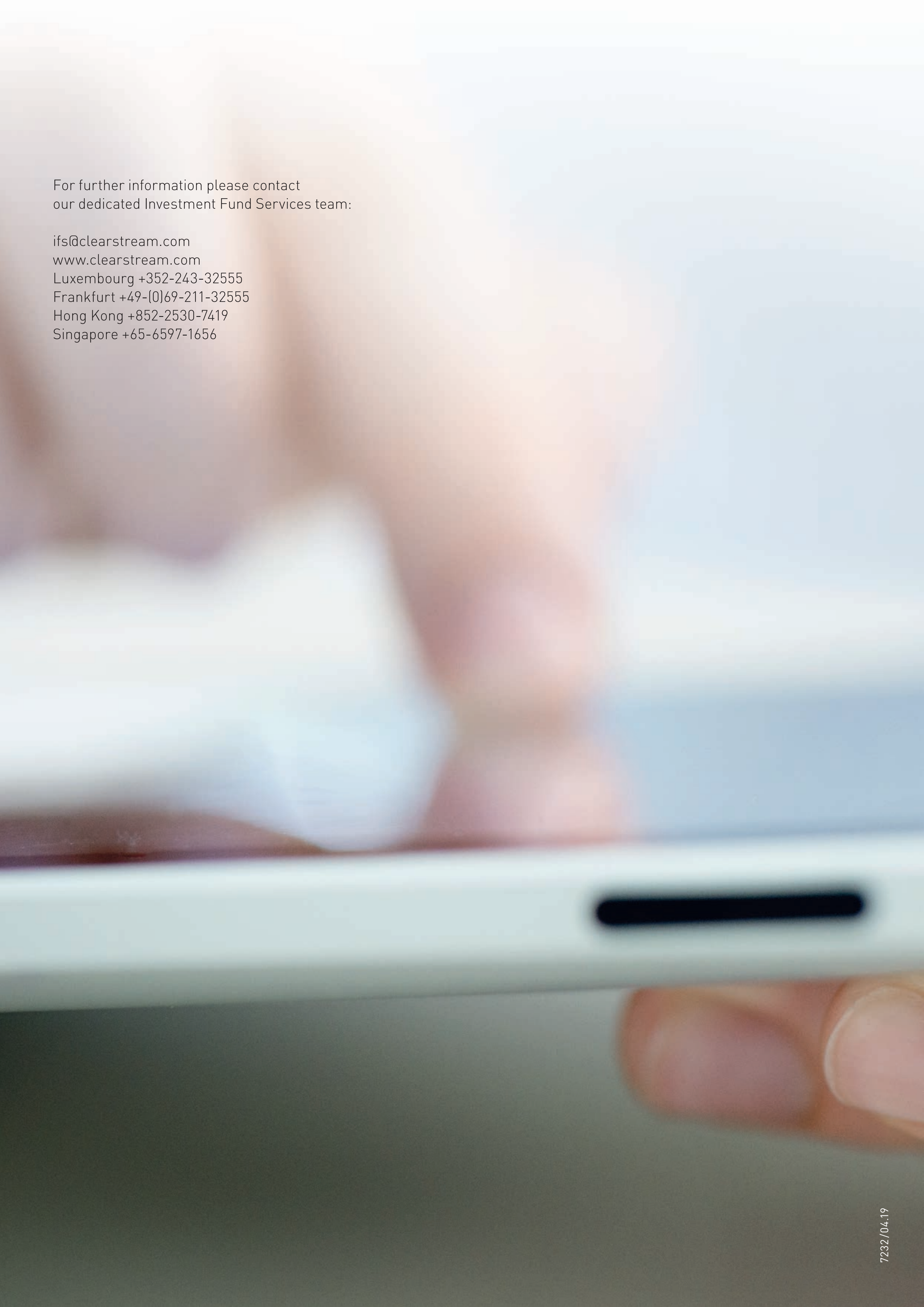
The introduction of TARGET2-Securities (T2S) has allowed connected CSDs to build an Investor-CSD offering that covers all T2S markets, asset classes and transaction types. Market participants aim to realise the benefits of opting for consolidated, direct market access models allowing customers to pool assets across different European markets in a single Investor CSD.

With a market share of approximately 80% of the custody and settlement volume of T2S markets available through our Investor CSD model, Clearstream is delivering a true cross-border Investor CSD solution in the T2S era. Thanks to partnerships with local agents, Clearstream delivers best-in-class asset servicing for the T2S markets covered in the Investor CSD offering.

Drivers of innovation

A changing market environment and regulatory combined with a strong focus on leveraging new technologies – such as DLT, APIs and AI – to deliver customised client solutions, drive Clearstream's innovative business development. Tokenisation of securities and assets constitutes the next evolutionary step of financial infrastructures into the digital asset space.

Notes



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