Pillar III Disclosure Report of Clearstream Holding AG 2021

Disclosures as of 31 December 2021

July 2022

Pillar III Disclosure Report of Clearstream Holding AG 2021 - According to Part 8 of Regulation (EU) No. 876/2019 (Capital Requirements Regulation II, CRRII) and No. 575/2013 (Capital Requirement Regulation, CRR), in conjunction with § 26a German Banking Act (Kreditwesengesetz, KWG).

July 2022

Document number: 6475

Clearstream Holding AG is a Deutsche Börse Group company.

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Linkages between financial statements and regulatory exposures	EU LI1	
	EU LI2	
	EU LI3	
	EU LIA	Free format
Own Funds and Capital	CC1	
	CC2	
	CCA	Free format
Counterparty credit risk	EU CCR1	
	EU CCR2	
	EU CCR3	
	EU CCRA	Free format
Countercyclical Capital Buffer	EU CCyB1	
	EU CCyB2	
Credit Risk and Dilution Risk	EU CR1	
	EU CR2	
	EU CR2a	
	EU CR3	
	EU CRC	Free format
	EU CRD	Free format
Asset Encumbrance	EU AE1	
	EU AE2	
	EU AE3	
	EU AE4	Free format

Capital Requirements Regulation (CRR)	EBA Template: Pillar III Requirement	
Use of Standardised Approach	EU CR4	
	EU CR5	
	EU CRD	Free format
Market Risk	EU MRA	Free format
Operational Risk	EU OR1	
	EU ORA	Free format
Key Metrics	EU KM1	
	EU OV1	
ICAAP	EU OVC	Free format
Risk Management Objectives and Policies	EU OVA	Free format
	EU OVB	
Leverage Ratio	EU LR1	
	EU LR2	
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Liquidity requirements	EU LIQ1	
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1. Introduction

1.1. Regulatory Framework

In 2004, the Basel Committee on Banking Supervision ("BCBS") published its standards governing the capital adequacy of internationally active banks ("Basel II"). The Basel framework consists of three mutually reinforcing pillars, as outlined below.

- Pillar I concerns the minimum quantitative (capital) requirements related to credit, operational and market risks. In addition, when the Basel III framework was translated into European law, requirements to calculate a Leverage Ratio as well as Liquidity Coverage Ratio and Net Stable Funding Ratio came into force.
- Pillar II requires banks to integrate the risks of Pillar I and further significant and substantial risks into integrated capital management and risk management considerations. Additionally, the interaction between the banks' own assessments and the banking supervisors' review is prescribed.
- Pillar III promotes market discipline through disclosure and thereby transparency to the public.

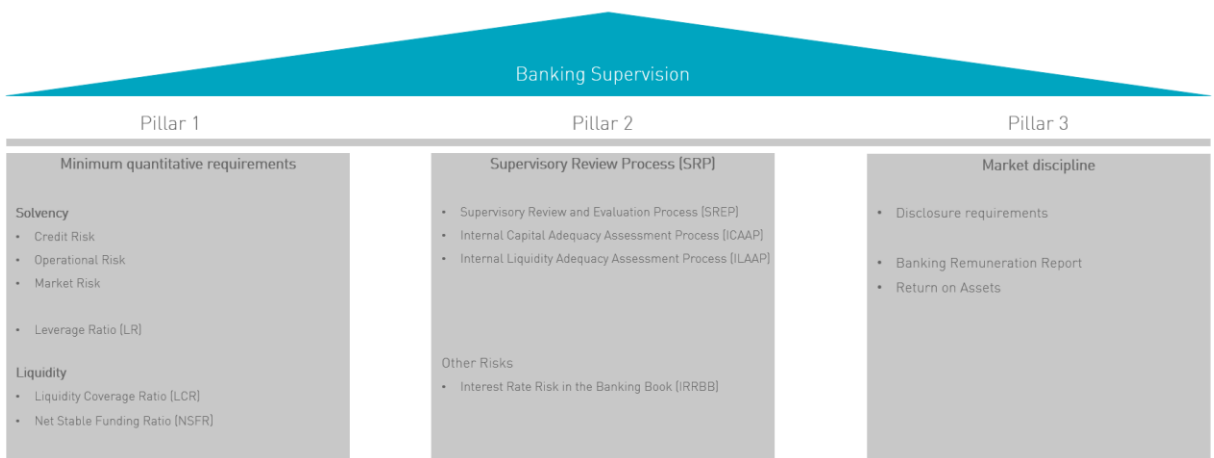

Figure 1: Overview regulatory framework

In December 2010, the Basel Committee on Banking supervision published the global regulatory framework on capital and liquidity, commonly known as Basel III, a set of standards aiming at strengthening the stability and resilience of the banking system. The Basel III standards were further enhanced through, among others, the revision of existing frameworks for assessing risk weighted assets (RWA), most notably through publication of "Basel III: Finalising post-crisis reforms" in December 2017.

The first elements of the Basel III standards were introduced in European law by the Capital Requirements Regulation (EU) No 575/2013 (CRR) and the Capital Requirements Directive 2013/36/EU (CRD). In May 2019, a reformed prudential regulation package was introduced, further transposing the Basel III standards into European law through amended versions of the CRR (through Regulation (EU) 2019/876 or CRR 2) and the CRD (through Directive (EU) 2019/878 or CRD 5)

In addition, the EU banking package also contains a revised Banking Recovery and Resolution Directive (BRRD, amended as per Directive (EU) 2019/879 – BRRD2), reflecting changes related to legislation on the Minimum Requirement for own funds and Eligible Liabilities (MREL) and the Total Loss-Absorbing Capacity (TLAC) for global systemically important institutions

This report provides the Pillar III disclosures on consolidated level of Clearstream Group as set out in Part Eight of the CRR. In Germany, the CRD disclosure requirements were transposed in § 26a of the German Banking Act (*Kreditwesengesetz*).

The key elements of the CRR 2 and CRD 5 that are relevant to Clearstream Holding AG and the Clearstream Group include:

- The obligation to apply for authorisation as a financial holding company according to Article 21a CRD 5;
- The introduction of eligible liabilities as a new category alongside own funds;
- The exclusion of software assets from CET1 deduction items;
- A binding leverage ratio of 3% of total exposure measure (unweighted) serving as backstop requirement (excluding CSD's banking type ancillary services from exposure measure);
- The introduction of a binding Net Stable Funding Ratio (NSFR) on a consolidated basis, requiring a stable funding profile in relation to on- and off-balance sheet exposures;
- An amended Standardised Approach for Counterparty Credit Risk (SA-CCR);
- Changes to the large exposure regime;
- Extended reporting and disclosure requirements; and,
- Revised remuneration requirements, including the obligation to have a gender-neutral remuneration policy and the introduction of an extended deferral period for variable remuneration.

The Basel III standards are not yet fully transposed into European Law. To provide banks with greater operational capacities to react to the ongoing COVID-19 crisis, the Basel Committee on Banking supervision deferred the implementation of the 2017 reforms, initially foreseen for 1 January 2022, by one year to 1 January 2023. With publication of three legislative proposals amending CRR, CRD as well as BRRD in October 2021, the EU initiated the finalisation of the implementation of Basel III.

While the proposed introduction of the Output Floor limiting minimum capital requirements calculated with internal models to 72.5% of minimum capital requirements calculated with standardised approaches, is not expected to affect Clearstream Holding AG, proposed changes relating to the use of the credit risk standardised approach, the calculation of capital requirements for operational risk and identification, management and disclosure of ESG risk will be respectively monitored closely to ensure timely and appropriate implementation. The legislative proposals currently foresee application of the newly introduced and amended requirements as of 1 January 2025.

Expect for dedicated exemptions, CRR 2 applies since 28 June 2021, whereas CRDD 5 was transposed into German law through the so-called Risk Reduction Act (*Risikoreduzierungsgesetz*), which entered into force on 28 December 2020.

In addition to the previously mentioned regulations and directives, this report considers the following regulatory publications:

- Commission Implementing Regulation (EU) 2021/637 of 15 March 2021 laying down implementing technical standards with regard to public disclosures by institutions of the information referred to in Titles II and III of Part Eight of Regulation (EU) No 575/2013 of the European Parliament and of the Council and repealing Commission Implementing Regulation (EU) No 1423/2013, Commission Delegated Regulation (EU) 2015/1555, Commission Implementing Regulation (EU) 2016/200 and Commission Delegated Regulation (EU) 2017/2295
- EBA/GL/2017/11: Guidelines on internal governance under Directive 2013/36/EU
- EBA/GL/2017/12: Joint ESMA and EBA Guidelines on the assessment of the suitability of members of the management body and key function holders under Directive 2013/36/EU and Directive 2014/65/EU

In the following, we refer to the respective laws in place as of 31 December 2021 if not stated otherwise.

1.2. Objective of the report

The objective of this Disclosure Report is to fulfil the disclosure requirements detailed in Part 8 CRR and § 26a KWG for Clearstream Holding AG ("CH"). More specifically, the report intends to provide a detailed overview on Clearstream Holding Group's ("Clearstream Group", "Clearstream", "CH Group", "CHAG"):

- Legal structure
- Capital structure
- Risk management framework including governance arrangements, risk management methodology and risk reporting
- Risk management in terms of identified risk types

Disclosure content can be omitted according to Article 432 CRR and relating EBA Guideline 2014/141 if the information is non-material, proprietary or confidential. To ensure adequate fulfilment of the disclosure requirements and assessing the appropriateness of the disclosed information, a *Disclosure Policy* has been established, which is reviewed and adapted, where necessary, on a yearly basis. The Executive Board of CH is ultimately responsible for the *Disclosure Policy* and must approve any material changes to the policy. The policy defines disclosure content, allocates responsibilities, and defines disclosure processes and timelines.

In line with the *Disclosure Policy*, a dedicated process has to be followed in case Clearstream Group considers to omit certain disclosures due to these disclosures being immaterial, proprietary or confidential. Where the Group classifies information as non-material in this this report, this has been stated accordingly in the related disclosures.

1.3. Scope of application (Article 436 CRR 2)

The figures for Clearstream Holding Group follow the consolidation provisions set out in Article 18 to 24 CRR in combination with the rules of § 10a (4) KWG and the German Generally Accepted Accounting Principles (German GAAP), based on the German Commercial Code (Handelsgesetzbuch, HGB). As all Clearstream companies - regardless of accounting and/or regulatory consolidation - are included in the consolidated annual accounts/annual report of the ultimate parent company Deutsche Börse AG ("DBAG"), CH is, according to § 291 of HGB, exempted from the obligation to draw up consolidated statutory accounts. Consolidated financial figures are therefore set up for regulatory purposes only.

All disclosed information is reported in CH's accounting and reporting currency, Euro, if not otherwise specified.

1.4. Disclosure Policy and Frequency

In accordance with Article 434 CRR 2, CH publishes its Disclosure Report on its website:

Pillar III Disclosure Report (clearstream.com)

The report is updated once a year. In addition to the Pillar III report, the following documents are also made available:

- A remuneration report that fulfils the requirements according to Article 450 CRR 2. The report is disclosed on an annual basis on the website of Clearstream Group: www.clearstream.com/clearstream-en/about-clearstream/regulation-1-/remuneration-information
- The Country-by-Country reporting to fulfil the requirements according to § 26a (1) sentence 2 KWG (implementation of Article 89 CRD IV into German law) is included as an annex to the financial statements of Clearstream Holding AG and that is published on the website of the German Federal Gazette (www.bundesanzeiger.de) and that can also be found on the website of Clearstream: https://www.clearstream.com/clearstream-en/about-clearstream/reports-and-ratings/annual-reports
- Information about the Return on Assets ("RoA") according to § 26a (1) sentence 4 KWG (implementation of Article 90 CRD IV into German law) is disclosed in the management report of the financial statement of CBF. CBL disclosed the RoA according to Article 38-4 of the Luxembourg Banking Act under note 9.3 in the notes to its financial statements. The financial statement of CBF is published on the website of the German Federal Gazette (www.bundesanzeiger.de). The financial statements of CBL are published the Luxembourg Trade and Companies Register (Registre de Commerce et des Sociétés). The information can also be found on the website of Clearstream: https://www.clearstream.com/clearstream-en/about-clearstream/reports-and-ratings/annual-reports
- EBA/GL/2017/11: Guidelines on internal governance under Directive 2013/36/EU
- EBA/GL/2017/12: Joint ESMA and EBA Guidelines on the assessment of the suitability of members of the management body and key function holders under Directive 2013/36/EU and Directive 2014/65/EU

In the following, we refer to the respective laws in place as of 31 December 2021 if not stated otherwise.

1.5. Clearstream Group

Clearstream Holding AG is licensed as a financial holding company as defined in Article 4 paragraph 1 point 20 CRR, and together with its subordinated companies, among others, Clearstream Banking S.A. Luxembourg ("CBL") and Clearstream Banking AG, Frankfurt/Main ("CBF"), forms a financial holding group under German law (see Figure 2).

CH was founded under the name Deutsche Börse Verwaltungs AG on 4 June 2007 in Frankfurt/Main. On 12 May 2009 the company was officially renamed Clearstream Holding AG, Frankfurt/Main. CH is headquartered in Germany and has its registered office at Mergenthalerallee 61, 60485 Frankfurt am Main, Germany.

In the context of the corporate restructuring of Clearstream, CH acquired an additional company called Skylinehöhe 96 VV AG in December 2018. It was renamed into Clearstream Beteiligungs AG ("CBAG") effective as of 2 January 2019. Most of Clearstream Group's participations were transferred from Clearstream International S. A. ("CI") to Clearstream Participations S. A. ("CP"). Effective from 1 July 2019 CP itself was merged with CBAG (the former Skylinehöhe 96 VV AG). On 12 November 2019, CH was merged into CBAG and renamed to CH.

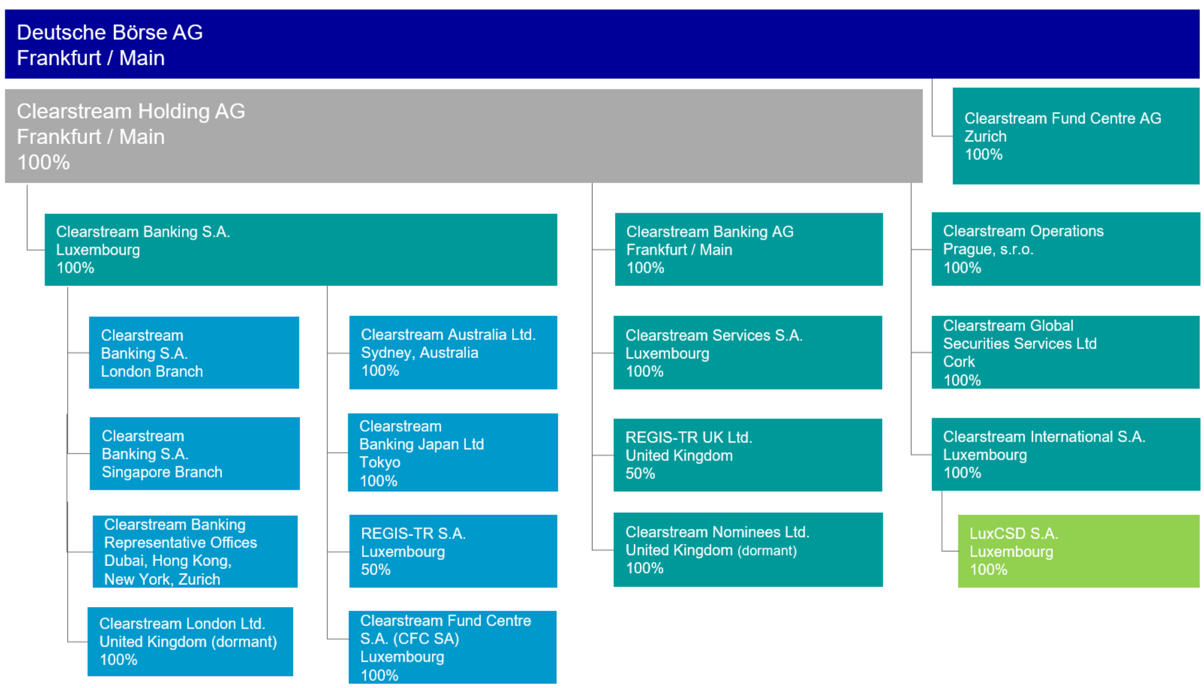

Figure 2: Overview of corporate structure

1.5.1. Business operations

Clearstream Group is a post-trade services provider and has been fully owned by DBAG since July 2002.

Clearstream Group's main business activities are custody and settlement of securities and can be further divided into:

- Domestic central securities depository business ("CSD") and
- International central securities depository business ("ICSD").

In terms of the domestic business, Clearstream Banking AG ("CBF") acts as the central securities depository for the German market according to the German Securities Deposit Act ("Depotgesetz"), while Clearstream Banking S.A. ("CBL") is only involved marginally in domestic CSD activities for Luxembourg securities.

The ICSD business, however, is mostly performed by CBL. More specifically, the ICSD business provides different types of settlement options to facilitate the settlement of transactions in international and domestic securities traded across borders, depending on the selected settlement location. CBF internationally only covers the services offered for Non-Collective Safe Custody business ("NCSC"), that is, book-entry credits on a fiduciary basis or trustee business.

Besides the afore-mentioned business activities, Clearstream also offers securities lending services, collateral management, banking services and Liquidity Hub Global Outsourcing (all included in the Global Securities Financing ("GSF")) as well as Investment Fund Services (including order routing) which are all linked to its main business activities custody and settlement. In addition, Clearstream offers IT outsourcing for third parties via its subsidiary Clearstream Services S.A.

Further information on the business activities per entity is provided below.

1.5.1.1. Clearstream Holding AG, Frankfurt/Main ("CH")

CH is classified as a financial holding company according to Article 4 paragraph 1 No 20 CRR. CH acts solely as a holding company in the interest of its subsidiaries and does not have material additional business activities and therefore risk positions. Moreover, CH is the superordinated undertaking of the financial holding group according to § 10a (1) KWG. CH in its role is responsible to fulfil the regulatory obligations on a consolidated/group level towards the German supervisory authorities and the college of supervisors.

1.5.1.2. Clearstream International S.A., Luxembourg ("CI")

CI is defined as an ancillary service undertaking in accordance with Article 4 paragraph 1 point 18 CRR. Following the recent CH-Group restructuring, CI only holds one participation, i.e., 100% of the shares in LuxCSD S.A. CI's main business activities lie within its role as trustee providing operational support for ASL and ASLplus business. CI is authorised in Luxembourg as a specialised PSF (professional depository of financial instruments) according to article 26 of the Luxembourg Law of 5 April 1993 on the financial sector, as amended.

1.5.1.3. Clearstream Banking S.A., Luxembourg ("CBL")

CBL is defined as a credit institution in accordance with Article 4 paragraph 1 No 1 CRR. CBL was incorporated in 1970 and is an ICSD which provides settlement and custody services for international securities.

These services include:

- Delivery versus payment and delivery free of payment settlement transactions;
- Comprehensive custody management;
- Value-added services, such as securities lending, collateral management etc.; and,
- Transactional information distribution.

Further services offered by CBL include the issuance of securities, Investment Funds Services ("IFS") and Global Securities Financing ("GSF"), consisting of securities lending as well as collateral management services. In addition, CBL provides operative treasury services for CBF as well as for CI and Clearstream Services S.A. ("CS").

In May 2019, CBL launched an enhanced distribution support service – called Fund Desk – for all its customers. Following the acquisition of a 51.2% stake in the UBS Fondcenter AG, Zurich, effective 1 October 2020, CBL merged its existing Clearstream Fund Desk with the new entity.

Additionally, CBL applied for an authorisation as CSD according to Article 17 for providing banking-type ancillary services according to Article 54 paragraph 2 lit. (a) of Regulation (EU) No 909/2014 ("Central Securities Depositories Regulation", "CSDR"). The authorisation has been provided on 12 April, 2021.

CBL holds the following branches/participations:

CBL Singapore branch ("CBS")

CBS is a branch of CBL and its first operational centre outside Europe. In November 2009, the Singapore branch obtained a banking license, which has been updated in October 2017. All of CBL's products and services, including Global Securities Financing, Investment Funds Services and Issuance and Distribution are offered locally to customers in the Asia-Pacific region.

CBL London branch ("CLB")

In January 2016, Clearstream transformed its representative office in London into a fully-fledged branch, which took over the activities of the representative office. In conjunction with the Brexit on December 2022, the CBL London branch began operating under FCA and PRA's Temporary Permissions Regime (TPR) meaning it has been able continue its pre-Brexit activities effectively under its existing license for a limited period of time.

Clearstream London Limited ("CLL")

On 27 December 2018, CBL established a fully owned subsidiary called Clearstream London Limited ("CLL") in London, UK. CLL is a dormant entity that has submitted an application for an Arranger licence to the Financial Conduct Authority. CLL considers that the Arranger licence is sufficient to cover the full extent of its UK-based activity.

Clearstream Banking Japan Ltd, Tokyo ("CBJ"), Tokyo

In 2009, CBL established a fully owned subsidiary in Tokyo, Japan. The purpose of Clearstream Banking Japan Ltd ("CBJ") is to engage in marketing, information provision and advertising; holding financial seminars and other education and trainings; support of existing customers of group companies and any other business activities relating to any of the preceding.

Clearstream Banking Japan branch

At the beginning of 2022, a branch licence was granted to CBJ, thus becoming a branch fully owned by Clearstream Banking S.A. The purpose of establishing a branch is to further fortify the presence of the Bank and ensure a solid regulatory environment by enabling a transparent, long-term business position in Japan. However, the CBJ Ltd. company continues to operate.

REGIS-TR S.A., Luxembourg ("REGIS-TR")

REGIS-TR is a European Trade Repository (TR) for reporting trades and transactions across multiple product classes and jurisdictions. The TR is open to financial and non-financial institutions, and services the major regulatory reporting obligations in Europe. REGIS-TR was registered by the European Markets and Securities Authority (ESMA) on 14 November 2013 in accordance with Regulation (EU) No. 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties, and trade repositories (European Market Infrastructure Regulation), for the provision of reporting services commonly referred to as "EMIR."

Moreover, REGIS-TR was registered by ESMA for a service extension enabling it to perform Trade Repository services pertaining to the Securities Finance Transaction Reporting regulation 2015/2365 of 25 November 2015 (SFTR).

Since 2010, REGIS-TR has been fully consolidated into the Deutsche Börse Group financial statements. With regard to the consolidation provisions set out in the CRR/KWG, REGIS-TR has been classified as an "other undertaking" and is therefore not included in regulatory consolidation.

In September 2021, Clearstream signed a transaction to sell its 50% stake in REGIS-TR to its joint venture partner Iberclear, part of SIX, who will take full control of the business as of 1 April 2022.

Clearstream Fund Centre S.A. ("CFC SA")

Clearstream Fund Centre S.A. ("CFC SA") was established on 16 November 2021, and has its registered office at 42, Avenue John F. Kennedy, L-1855, Luxembourg, Luxembourg. CFC is directly 100% owned by the Bank. This business was established for future fund services business under Luxembourgish law.

Clearstream Australia Limited, Sydney, Australia

CBL successfully completed the acquisition of Ausmaq Limited, Sydney, Australia, during the third quarter of 2019. With this acquisition, Clearstream is further expanding its offering in the investment funds space and has entered the Australian market. Ausmaq Limited has been a wholly owned subsidiary of Clearstream Banking Luxembourg since 31 July 2019. In June of 2020 it was renamed Clearstream Australia Limited. Due to the expansion of its geographical footprint, Clearstream expects the transaction to deliver revenue synergies.

Clearstream Australia Nominee Limited ("CAN")

CAN was registered in June 2020 as a Nominee company which is wholly owned by Clearstream Australia Limited. The nominee company was established to hold the assets of the company's clients. Clearstream Australia, in fulfilling its role as custodian, controls CAN and administers the assets on behalf of its clients who are the beneficial owners of the underlying managed funds.

1.5.1.4. Clearstream Banking AG, Frankfurt/Main ("CBF")

CBF is defined as a credit institution in accordance with Article 4 paragraph 1 No 1 CRR. CBF is a CSD, which provides settlement and custody services in both, the Collective Safe Custody ("CSC"), which is mainly German domestic, and the Non-Collective Safe Custody businesses. The focus of the settlement business is thereby on the settlement of stock exchange transactions.

CBF is the only CSD in Germany. It operates a large vault where most of the securities issued in Germany, securities issued elsewhere, as well as physical gold are stored. Within the frame of individual or collective safe custody, the settlement and asset servicing of domestic and international securities are offered.

These services include:

- Delivery versus payment and delivery free of payment settlement transactions;
- Comprehensive custody management;
- Value-added services like securities lending, collateral management etc.;
- Transactional information distribution.

Beyond that, CBF acts as a trustee to cover specific types of asset-backed bonds. With respect to commodity-backed bonds, the commodity (Gold) is stored physically in the vaults of CBF. For bond issues covered by securities, CBF, as a Central Securities Depository, performs safekeeping's and as a trustee offers an increased level of protection for investors with significantly low-risk businesses and operational models. Moreover, CBF offers its customers the Global Securities Financing (GSF) service, through which market participants can lend and borrow securities against collateral.

Additionally, CBF applied for an authorisation as CSD according to Article 17 of Regulation (EU) No 909/2014 ("Central Securities Depositories Regulation", "CSDR"), for which authorisation has been granted on 21 January 2020. Additionally, CBF applied for an authorisation for providing banking-type ancillary services according to Article 54 paragraph 2 lit. a CSDR and authorisation is expected in Q3 2021.

1.5.1.5. Clearstream Services S.A., Luxembourg ("CS")

CS is defined as an ancillary services undertaking in accordance with Article 4 paragraph 1 No 18 CRR. CS provides information technology managed and application service provision. The company's services include hosting, network management, system management, security management, storage and data management, information technology operations, and disaster recovery planning, as well as consultancy, project management, and quality assurance services. It serves financial market customers in Luxembourg and internationally. The company was founded in 1997 and is based in Luxembourg. Main services are provided to CBL and CBF. In addition, CS provides services to external customers.

1.5.1.6. Clearstream Operations Prague s.r.o., Prague ("COP")

COP is defined as an ancillary services undertaking in accordance with Article 4 paragraph 1 No 18 CRR. In 2008 CI established a subsidiary in Prague, Czech Republic. Clearstream Operations Prague s. r. o. ("COP") offers certain operational services in relation to CBL, CBF, and LuxCSD. Furthermore, COP functions as a shared services centre for certain administrative and support functions for major parts of the entire Deutsche Börse Group. After the restructuring of Clearstream Group COP operates as a direct subsidiary of CH.

As the arrangements are governed by outsourcing contracts according to Luxembourg and German regulatory standards, the services performed are fully monitored and managed by Clearstream management structures and processes.

1.5.1.7. Clearstream Global Securities Services Ltd., Cork ("CGSS")

CGSS is defined as an ancillary services undertaking in accordance with Article 4 paragraph 1 No 18 CRR. CGSS is a wholly owned subsidiary of CH and is one of Clearstream's servicing centres for mutual and hedge funds, as well as core client services support. CGSS also provides corporate IT support services for DB Group entities.

1.5.1.8. LuxCSD S.A., Luxembourg ("LuxCSD")

As a central securities depository, LuxCSD provides Luxembourg's financial community with services for settlement in EUR central bank money as well as with issuing and custody services for a wide variety of domestic and international securities including investment funds. LuxCSD was incorporated in July 2010 and is jointly owned by the Banque centrale du Luxembourg (BCL) and CI (equal shares; 50%/50%). CI acquired the 50% of shares from BCL on 10 December 2021, thus becoming the sole shareholder.

LuxCSD applied for an authorisation as CSD according to Article 17 of Regulation (EU) No 909/2014 ("Central Securities Depositories Regulation", "CSDR"). Authorisation has been granted on 15 April 2020.

1.5.1.9. REGIS-TR UK Ltd., London

In response to the United Kingdom's decision to leave the European Union, REGIS-TR S.A. launched its sister TR, REGIS-TR UK Ltd ("REGIS-TR UK") in order to maintain a continuous reporting service for its UK client base. REGIS-TR UK is regulated by the Financial Conduct Authority ("FCA") and is based in the London offices of Clearstream Banking S.A. Initially, REGIS-TR UK will focus its efforts to report for UK EMIR with a view of continued expansion and market adaptation to client needs in the UK.

1.5.1.10. Clearstream Fund Centre AG, formerly Fondcenter AG, Zürich ("FCAG")

Effective 1 October 2020, CH acquired a 51.2% stake in Fondcenter AG from UBS. FCAG is a B2B fund distribution support platform. UBS holds a minority stake of 48.8%, remaining a strategic partner, and has entered into long-term cooperation agreements for the provision of services by Clearstream Group including to continue using the Fund Centre platform on a long-term basis. Clearstream Holding AG combines the acquired Fondcenter business with the existing Fund Desk (previously within CBL), forming Clearstream Fund Centre AG, creating a leading provider of fund services.

1.5.1.11. Clearstream Nominees

Clearstream Nominees Limited is a dormant company registered in England and Wales which is owned by Clearstream Holding AG. The nominee concept is only used where necessary to fulfil local customer asset protection obligations.

1.5.2. Licencing and Regulatory supervision

The "Commission de Surveillance du Secteur Financier" ("CSSF") is the competent authority for the supervision of CBL as a credit institution according to Article 42 and 43 of the Luxembourg Banking Act. Furthermore, the "Banque Centrale du Luxembourg" ("BCL") has a shared responsibility for liquidity supervision on the basis of Article 2 (4) of the Law of 23 December 1998 concerning the monetary status.

Moreover, CBL is subject to regulatory supervision in relation to the securities settlement system ("SSS") according to Title V of the Luxembourg Law of 10 November 2009 relating to payment services. BCL is responsible for the oversight of SSSs, as per Art. 110 of the Law of 10 November 2009. The oversight focuses on the operational and financial stability of each system individually, the participants in such systems as well as the stability of the financial system as a whole. Furthermore, specific regulations for SSSs must be considered (e.g. circulars BCL 2001/163 and 2001/168).

As applicable competent authority, the CSSF complies with the EBA Guidelines 2014/10 on criteria to determine the conditions of application of Art. 131(3) of Directive 2013/36/EU (CRD IV) in relation to the assessment of other systemically important institutions. Clearstream Banking S.A. is classified as Other Systemically Important Institution ("O-SII") since 1 January 2018 based on CSSF Regulation N° 17-04 of 31 October 2017. As at 31 December 2020, CBL was classified as an O-SII based on CSSF Regulation N° 19-09 of 29 October 2019. Classification as O-SII from 1 January 2021 onwards was confirmed by CSSF Regulation N°20-07 of 12 November 2020. Due to its classification as an O-SII, CBL must produce a stand-alone Pillar III disclosure report.

Clearstream Banking AG is a company incorporated in Germany and licensed as a credit institution under supervision of the German Financial Supervisory Authority ("Bundesanstalt für Finanzdienstleistungsaufsicht ", "BaFin").

CBF accepts deposits and grants its clients short-term loans. It is therefore a CRR credit institution pursuant to section 1 (3d) of Kreditwesengesetz (KWG, German Banking Act).

Clearstream Holding as the superordinate company of the financial holding Group according to § 10a (1) KWG, is responsible for fulfilling the regulatory obligations on a consolidated/Group level vis-à-vis the German supervisory authorities and presents a Pillar 3 report in compliance with the disclosure requirements pursuant to Part Eight CRR and § 26a KWG.

CH is subject to consolidated supervision by the German Federal Financial Supervisory Authority.

1.5.3. Scope of consolidation

All information provided in this report refers if not stated otherwise to the companies included in the regulatory scope of consolidation. The regulatory scope of consolidated differs slightly from the consolidated group under accounting rules. CH is exempted from the preparation of consolidated annual accounts according to § 291 (1) HGB. The accounting consolidation in this section refer to the consolidation method at Deutsche Börse group level.

Type of enterprise	Company	Regulatory consolidation		Accounting consolidation	
		Consolidation Art. 18 CRR Full Consolidation	Neither consolidated nor deducted	Full Consolidation	At equity
Credit Institutions	Clearstream Banking S.A., Luxembourg (CBL)	X		X	
	Clearstream Banking AG, Frankfurt am Main (CBF)	X		X	
Financial Holding Company	Clearstream Holding AG, Frankfurt am Main (CH)	X		X	
Financial Institution	Clearstream Australia Ltd	X		X	
Ancillary Services Undertaking	Clearstream Services S.A., Luxembourg (CS) [1]	X		X	
	Clearstream Operations Prague s.r.o., Prague (COP)	X		X	
	Clearstream Banking Japan Ltd., Tokyo (CBJ)	X		X	
	Clearstream Global Securities Services Ltd., Cork (CGSS)	X		X	
	Clearstream International, S.A., Luxembourg (CI) [2]	X		X	
Other Undertaking	Clearstream Nominees Ltd., London		X		X
	LuxCSD S.A. Luxembourg (LuxCSD)		X		X
	REGIS-TR S.A., Luxembourg (REGIS-TR) [3]		X	X	
	REGIS-TR UK Ltd., London		X	X	
	Clearstream London Limited (CLL)		X	X	
	Clearstream Australia Nominees [4]		X		
	Clearstream Fund Centre S.A.		X	X	

[1] PSF according to Articles 29-2 and 29-4 of the Luxembourg Law of 5 April 1993;

[2] PSF according to Article 26 ot the Luxembourg Law of 5 April 1993;

[3] REGIS-TR is classified as trade repository according to Article 2 paragraph 2 EMIR.

[4] Clearstream Australia Nominees was dormant as of 31 December 2020, and was neigher consolidated nor deducted.

Figure 3: Overview of consolidation

2. Key Metrics

(in 000s of €)	2021	2020	2019	2018
Available own funds (amounts)				
Common Equity Tier 1 (CET1) capital	1,790,596	1,677,658	1,559,506	1,525,464
Tier 1 capital	1,790,596	1,677,658	1,559,506	1,525,464
Total capital	1,790,596	1,677,658	1,559,506	1,525,464
Risk-weighted exposure amounts				
Total risk exposure amount	5,397,118	6,700,960	6,422,721	6,958,220
Capital ratios (as a percentage of risk-weighted exposure amount)				
Common Equity Tier 1 ratio (%)	33.18%	25.04%	24.28%	21.92%
Tier 1 ratio (%)	33.18%	25.04%	24.28%	21.92%
Total capital ratio (%)	33.18%	25.04%	24.28%	21.92%
Additional own funds requirements to address risks other than the risk of excessive leverage (as a percentage of risk-weighted exposure amount)				
Additional own funds requirements to address risks other than the risk of excessive leverage (%)	4.70%	4.70%	7.20%	0.80%
of which: to be made up of CET1 capital (percentage points)	7.14%	2.64%	4.05%	1.80%
of which: to be made up of Tier 1 capital (percentage points)	9.53%	3.53%	5.40%	2.40%
Total SREP own funds requirements (%)	12.70%	12.70%	15.20%	11.20%
Combined buffer and overall capital requirement (as a percentage of risk-weighted exposure amount)				
Capital conservation buffer (%)	2.50%	2.50%	2.50%	1.88%
Conservation buffer due to macro-prudential or systemic risk identified at the level of a Member	0.0%	0.0%	0.0%	0.00%
Institution specific countercyclical capital buffer (%)	0.05%	0.09%	0.02%	0.01%
Systemic risk buffer (%)	0.00%	0.00%	0.00%	0.00%
Global Systemically Important Institution buffer (%)	0.00%	0.00%	0.00%	0.00%
Other Systemically Important Institution buffer (%)	0.00%	0.00%	0.00%	0.00%
Combined buffer requirement (%)	2.55%	2.59%	2.52%	1.88%
Overall capital requirements (%)	15.25%	15.29%	17.72%	13.08%
CET1 available after meeting the total SREP own funds requirements (%)	28.68%	25.04%	24.28%	22.28%
Leverage ratio				
Total exposure measure	6,111,439	17,304,003	16,857,640	20,151,734
Leverage ratio (%)	29.30%	9.70%	9.25%	7.57%
Additional own funds requirements to address the risk of excessive leverage (as a percentage of total exposure measure)				
Total SREP leverage ratio requirements (%)	3.00%	n/a	n/a	n/a
Leverage ratio buffer and overall leverage ratio requirement (as a percentage of total exposure measure)				
Overall leverage ratio requirement (%)	3.00%	0.00%	0.00%	0.00%
Liquidity Coverage Ratio				
Total high-quality liquid assets (HQLA) (Weighted value -average)	14,654,131	9,604,330	14,566,986	15,171,856
Cash outflows - Total weighted value	12,394,319	7,809,217	13,343,762	16,128,863
Cash inflows - Total weighted value	1,014,585	984,819	1,661,803	4,319,421
Total net cash outflows (adjusted value)	11,379,734	6,824,399	11,681,959	11,809,442
Liquidity coverage ratio (%)	128.77%	140.74%	124.70%	128.47%

Table 1: CH Key Metrics

(in 000s of €)	2021	2020	2019	2018
Available own funds (amounts)				
Common Equity Tier 1 (CET1) capital	1,214,206	1,209,868	1,149,360	1,111,991
Tier 1 capital	1,214,206	1,209,868	1,149,360	1,111,991
Total capital	1,214,206	1,209,868	1,149,360	1,111,991
Risk-weighted exposure amounts				
Total risk exposure amount	4,037,268	4,548,991	4,720,932	5,074,928
Capital ratios (as a percentage of risk-weighted exposure amount)				
Common Equity Tier 1 ratio (%)	30.07%	26.60%	24.35%	21.91%
Tier 1 ratio (%)	30.07%	26.60%	24.35%	21.91%
Total capital ratio (%)	30.07%	26.60%	24.35%	21.91%
Additional own funds requirements to address risks other than the risk of excessive leverage (as a percentage of risk-weighted exposure amount)				
Additional own funds requirements to address risks other than the risk of excess leverage (%)	8.00%	8.00%	8.00%	8.00%
of which: to be made up of CET1 capital (pp)	4.50%	4.50%	4.50%	4.50%
of which: to be made up of Tier 1 capital (pp)	6.00%	6.00%	6.00%	6.00%
Total SREP own funds requirements (%)	9.00%	9.00%	9.00%	8.00%
Combined buffer and overall capital requirement (as a percentage of risk-weighted exposure amount)				
Capital conservation buffer (%)	2.50%	2.50%	2.50%	2.50%
Conservation buffer due to macro-prudential or systemic risk identified at the level of a Member State (%)				
Institution specific countercyclical capital buffer (%)	0.05%	0.04%	0.04%	0.04%
Systemic risk buffer (%)	0.00%	0.00%	0.00%	0.00%
Global Systemically Important Institution buffer (%)	0.00%	0.00%	0.00%	0.00%
Other Systemically Important Institution buffer	0.50%	0.50%	0.50%	0.50%
Combined buffer requirement (%)	3.05%	3.04%	3.04%	3.04%
Overall capital requirements (%)	12.05%	12.04%	12.04%	11.04%
CET1 available after meeting the total SREP own funds requirements (%)	25.57%	14.56%	12.31%	10.99%
Leverage ratio				
Leverage ratio total exposure measure	4,037,268	15,110,166	15,826,142	18,830,858
Leverage ratio (%)	30.07%	8.01%	7.26%	5.91%
Additional own funds requirements to address the risk of excessive leverage (as a percentage of total exposure measure)				
Total SREP leverage ratio requirements (%)	3.00%	n/a	n/a	n/a
Leverage ratio buffer and overall leverage ratio requirement (as a percentage of total exposure measure)				
Leverage ratio buffer requirement (%)				
Overall leverage ratio requirement (%)	3.00%	0.00%	0.00%	0.00%
Liquidity Coverage Ratio				
Total high-quality liquid assets (HQLA) (Weighted value - average)	15,235,190	14,000,208	14,493,357	1,375,298
Cash outflows - Total weighted value	14,030,281	13,618,700	13,664,401	13,780,138
Cash inflows - Total weighted value	1,351,657	1,920,068	1,457,752	2,552,619
Total net cash outflows (adjusted value)	12,678,624	11,699	12,207	11,228
Liquidity coverage ratio (%)	120.16%	119.67%	118.73%	122.49%

Table 2: CBL Key Metrics

(in 000s of €)	2021	2020	2019	2018
Available own funds (amounts)				
Common Equity Tier 1 (CET1) capital	420,138	419,890	369,696	369,306
Tier 1 capital	420,138	419,890	369,696	369,306
Total capital	420,138	419,890	369,696	369,306
Risk-weighted exposure amounts				
Total risk exposure amount	1,563,296	1,878,936	1,658,658	1,290,395
Capital ratios (as a percentage of risk-weighted exposure amount)				
Common Equity Tier 1 ratio (%)	26.88%	22.35%	22.29%	28.62%
Tier 1 ratio (%)	26.88%	22.35%	22.29%	28.62%
Total capital ratio (%)	26.88%	22.35%	22.29%	28.62%
Additional own funds requirements to address risks other than the risk of excessive leverage (as a percentage of risk-weighted exposure amount)				
Additional own funds requirements to address risks other than the risk of excessive leverage (%)	4.70%	4.70%	4.70%	1.17%
of which: to be made up of CET1 capital (percentage points)	2.64%	2.64%	2.64%	2.64%
of which: to be made up of Tier 1 capital (percentage points)	3.53%	3.53%	3.53%	3.53%
Total SREP own funds requirements (%)	12.70%	12.70%	12.70%	12.70%
Combined buffer and overall capital requirement (as a percentage of risk-weighted exposure amount)				
Capital conservation buffer (%)	2.50%	2.50%	2.50%	1.87%
Conservation buffer due to macro-prudential or systemic risk identified at the level of a Member	0.00%	0.00%	0.00%	0.00%
Institution specific countercyclical capital buffer (%)	0.14%	0.45%	0.01%	0.01%
Systemic risk buffer (%)	0.00%	0.00%	0.00%	0.00%
Global Systemically Important Institution buffer (%)	0.00%	0.00%	0.00%	0.00%
Other Systemically Important Institution buffer (%)	0.00%	0.00%	0.00%	0.00%
Combined buffer requirement (%)	2.64%	2.95%	2.51%	1.89%
Overall capital requirements (%)	15.34%	15.65%	15.21%	14.59%
CET1 available after meeting the total SREP own funds requirements (%)	22.38%	22.35%	22.29%	28.62%
Leverage ratio				
Total exposure measure	1,129,704	2,622,290	2,168,544	2,455,352
Leverage ratio (%)	37.19%	16.01%	17.05%	15.04%
Additional own funds requirements to address the risk of excessive leverage (as a percentage of total exposure measure)				
Total SREP leverage ratio requirements (%)	3.00%	n/a	n/a	n/a
Leverage ratio buffer and overall leverage ratio requirement (as a percentage of total exposure measure)				
Overall leverage ratio requirement (%)	3.00%	0.00%	0.00%	0.00%
Liquidity Coverage Ratio				
Total high-quality liquid assets (HQLA) (Weighted value -average)	1,685,177	1,920,056	1,907,854	2,230,919
Cash outflows - Total weighted value	1,349,679	761,586	631,255	1,565,147
Cash inflows - Total weighted value	254,499	115,732	77,212	245,381
Total net cash outflows (adjusted value)	1,095,180	645,855	554,043	1,319,766
Liquidity coverage ratio (%)	153.87%	297.29%	344.35%	169.04%

Table 3: CBF Key Metrics

3. Governance Arrangements

3.1. Clearstream Holding AG

3.1.1. General Arrangements

Clearstream Holding AG is incorporated in Germany in the form of a stock corporation (Aktiengesellschaft). The German Stock Corporation Act (Aktiengesetz – "AktG") requires such a company to set up an Executive Board (§§ 76 et seq. AktG) and a Supervisory Board (§§ 95-116 AktG).

CH maintains a comprehensive *Suitability Assessment Policy* and a corresponding side-letter defining specific job descriptions of Supervisory Board and Executive Board members. The objective of this policy is to ensure that the members of the Executive Board, the members of the Supervisory Board and key function holders of CH (as well as of the subsidiaries of CH that are to be qualified as credit institutions) are suitable in terms of reputation, experience and governance criteria, as stipulated in the "Joint ESMA and EBA Guidelines on the assessment of the suitability of members of the management body and key function holders under Directive 2013/36/EU and Directive 2014/65/EU" (EBA/GL/2017/12/ESMA71-99-598) and BaFin guidance notes regarding the members of the Executive Board and the Supervisory Board in accordance with the German Banking Act as amended.

The suitability assessment is initiated when it is intended to appoint or elect a new member of the Executive Board or the Supervisory Board, if a member resigns from the mandate causing material changes to the composition of the management body and on a regular basis, at least once a year. The rules of the limitation of mandates in accordance with § 25c (2) KWG and § 25d (3) KWG must be complied with. Under this definition, and in consideration of the legal permissibility of the aggregation of mandates, on 31 December 2021 all members of the Supervisory Board and Executive Board of CH complied with these rules. In the following paragraphs, the composition of all boards and committees is reflected as at the end of the reporting period, being 31 December 2021.

3.1.2. Executive Board

According to CH's Articles of Incorporation, the Executive Board may consist of one or several members who are appointed by the Supervisory Board of CH for a period of three years. The Executive Board is chaired by the CEO. A notification is provided to the competent authorities in the event of the appointment of new members of the Executive Board of CH.

The Executive Board is inter alia responsible for the proper business organisation (in accordance with § 25c (3) number 1 in connection with § 25a KWG). The Executive Board is also responsible for the adoption of the business distribution plan, which regulates the allocation of tasks between the board members in order to enable a more efficient management of the company. Nevertheless, the Executive Board, as a whole, remains responsible for the fulfilment of the duties as defined by law and set out in the Articles of Incorporation (overall responsibility).

The members of the Executive Board must be professionally suitable and reliable for the management of a Financial Holding Company and must be able to devote sufficient time to fulfil their tasks. Further, sufficient theoretical and practical knowledge of the business of a financial holding company is required from all members of the Executive Board. In addition, the members of the Executive Board must have:

- An understanding of banking and financial markets, especially within the regulatory framework
- An understanding of managing a financial holding company
- Sufficient experience in managerial positions.

Meetings of the Executive Board are held monthly; further details are determined by the chairperson. Additional meetings take place, if required for the well-being of CH.

On 31 December 2021, the Executive Board consisted of the persons displayed in Table 4, which also discloses the number of directorships held by each member, as required by Article 435 (2) of CRR.

Name – Position	Number of directorships (as of 31/12/2021)
Philip Brown – Chief Executive Officer	3 (thereof 3 within Deutsche Börse Group)
Berthold Kracke	4 (thereof 4 within Deutsche Börse Group)
Samuel Riley	1 (thereof 1 within Deutsche Börse Group)
Philippe Seyll	8 (there of 7 within Deutsche Börse Group)
Dr. Stephanie Eckermann	7 (thereof 6 within Deutsche Börse Group)
Dr. Daniel Besse	2 (thereof 2 within Deutsche Börse Group)

Table 4: Executive Board Members, CH

3.1.3. Supervisory Board

CH has established a Supervisory Board to supervise the Executive Board, in accordance with the mandatory provision of the German Stock Corporation Act (§§ 95-116 AktG). The members of the Supervisory Board of CH are elected by the shareholders. This in principle takes place during the annual general meeting of shareholders. The members are elected for a period of five years (a term of office ending at the closing of the General Shareholders' Meeting, which votes on the discharge of the members of the Supervisory Board for the fourth fiscal year after the commencement of the term of office, not including such fiscal year in which the term of office has commenced). If there is the need of a replacement, this is done by an extraordinary shareholder's meeting. A notification is provided to the competent authorities in the event of the appointment of new members of the Supervisory Board of CH. There were no new appointments in 2021.

According to the Articles of Incorporation of CH, the Supervisory Board consists of three members. The members of the Supervisory Board are required to fulfil certain criteria, as laid down in the *Suitability Assessment Policy*, and to comply with regulatory requirements, as set out in the section above. Furthermore, the Supervisory Board in its entirety must have the necessary skills, capabilities, and experience to supervise and control the Executive Board of CH. This requires understanding of the business of a financial holding company. In addition, at least two members of the Supervisory Board should have a sound knowledge in each of the following areas:

- Accounting, finance, and audit;
- Risk management and compliance;
- Information technology and security;
- Clearing business; and,
- Regulatory requirements.

On 31 December 2021, the Supervisory Board consisted of the persons displayed in Table 5, which also discloses the number of directorships held by each member as required by Article 435 (2) of CRR.

Name – Position	Number of directorships (as of 31/12/2021)
Stephan Leithner	9 (thereof 6 within Deutsche Börse Group)
Gregor Pottmeyer	6 (thereof 5 within Deutsche Börse Group)
Christoph Böhm	3 (thereof 3 within Deutsche Börse Group)

Table 5: Supervisory Board Members, CH

The CH Supervisory Board meets as often as business requires, but at least two meetings are scheduled each half-year. In these meetings, it is informed about normal business activities as well as all substantial business events. In case of extraordinary incidents, the CH Supervisory Board is informed immediately.

3.1.4. Committees

Due to the small size of the Supervisory Board (three members), it is not necessary to set up any committees. However, the Supervisory Board in its entirety takes over the responsibilities stipulated for committees in § 25d (8) - (12) KWG.

3.2. Clearstream Banking S.A.

3.2.1. General Arrangements

Clearstream Banking S.A. is incorporated in Luxembourg in the form of a public limited company (Société Anonyme). According to its Articles of Incorporation, Clearstream Banking S.A. has an Executive and a Supervisory Board. The members of the Executive Board and the Supervisory Board conduct the business of the Company in accordance with all applicable laws and regulations, notably the Law of 10 August 1915 on commercial companies, as amended, as well as the Law of 5 April 1993 on the financial sector, as amended, CSSF circulars, notably the CSSF Circular 12/552, as amended, the relevant EU framework, notably the Central Securities Depositories Regulation (CSDR) including its implementing acts, the Articles of Incorporation, the Rules of Procedure of the Supervisory Board, and the Rules of Procedure of the Executive Board.

Clearstream Banking S.A. maintains a comprehensive suitability assessment policy and a corresponding side-letter defining specific job descriptions of Supervisory Board and Executive Board members. The objective of this policy is to ensure that members of the Executive Board of CBL, the members of the Supervisory Board and key function holders of CBL are suitable in terms of reputation, experience and governance criteria, as stipulated in the joint ESMA and EBA "Guidelines on the assessment of the suitability of members of the management body and key function holders under Directive 2013/36/EU and Directive 2014/65/EU" (EBA/GL/2017/12/ESMA71-99-598) as well as in the Luxembourg Banking Act and Central Securities Depositories Regulation ("CSDR").

In addition to the suitability assessment policy, CBL has defined several diversity principles that govern the selection of Executive Board and Supervisory Board members. The principles, listed below in detail, refer to educational and professional background, gender, age and geographical provenance with the aim to achieve a variety of views and experiences and to facilitate independent opinions within the Executive Board and the Supervisory Board:

- CBL aims to achieve a balance representation of women and men;
- The age structure of the Boards should be of an appropriately broad range;
- An appropriately broad range of education and professional backgrounds should be present in the Boards; and,
- The composition of the Boards should reflect CBL's international profile.

The suitability assessment is initiated when it is intended to appoint or elect a new member of the Executive Board or the Supervisory Board, if a member resigns from the mandate causing material changes to the composition of the management body, in case of any material changes (e.g. reduction of work time, change regarding the scope or nature of the mandate or negative event with regard to the reputation) and on a regular basis, at least once a year.

To benefit from a balanced gender diversity and to fulfil the requirement of Art. 27 (4) of the Regulation (EU) No. 909/2014 the Supervisory Board of Clearstream Banking S.A. has approved the Gender Diversity Policy as published on Clearstream's website and decided on a target to increase the number of the under-represented gender in the management body.

The Supervisory Board of Clearstream Banking S.A. approved the Gender Diversity Policy on 25 September 2017. According to Article 4 of the Gender Diversity Policy, the "Supervisory Board shall discuss and agree at least every five years on measurable objectives for achieving gender diversity in the Boards and decide on implementation measures." On 29 June, 2022, the Supervisory Board of Clearstream Banking S.A. decided on a target of 20% target quota for the representation of the under-represented gender (currently female) by 31 December 2026. At the moment 16.66 % of the Clearstream Banking S.A. Executive Board Member and 33.33 % of its Supervisory Board Member represent the under-represented gender.

From 2018, the rules of the limitation of mandates in accordance with Art. 38-2 of the Luxembourg Banking Act must be complied with. Under this definition, and in consideration of the legal permissibility of the aggregation of mandates, on 31 December 2020 all members of the Executive Board and the Supervisory Board of CBL complied with these rules.

In the following paragraphs, the composition of all boards and committees is reflected as at the end of the reporting period, being 31 December 2021.

3.2.1.1. Executive Board

According to CBL's Articles of Incorporation, the Executive Board shall be composed of at least three (3) members who are appointed by the Supervisory Board of CBL for a period of four (4) years. The Executive Board is chaired by the CEO.

The recruitment process of members of the Executive Board starts with the Nomination Committee to prepare the process, and the Supervisory Board to resolve on a job description and candidate profile for a specific position. Afterwards, the Nomination Committee identifies and recommends suitable members for the approval to the Supervisory Board. After the selection and nomination of a candidate, Boards & Committees Clearstream prepares a formal decision of the Supervisory Board. The appointment of new members of the Executive Board of CBL requires prior approval by the CSSF.

The Executive Board is responsible for managing CBL in accordance with the applicable laws, the Articles of Association, and its internal rules and regulations with the objective of creating sustainable value in the interest of the Company, and taking into consideration the interests of the shareholders, employees, and other stakeholders. The Executive Board is responsible for establishing a proper business organisation, encompassing appropriate and effective risk management.

The members of the Executive Board must be professionally suitable and reliable for the management of a credit institution and central securities depository, and they must be able to devote sufficient time to fulfil their tasks. Further, sufficient theoretical and practical knowledge of the business of a central securities depository/credit institution is required from all members of the Executive Board. In addition, the members of the Executive Board must have:

- An understanding of banking and financial markets, especially within the regulatory framework;
- An understanding of managing credit institutions; and,
- Sufficient experience in managerial positions.

The business distribution scheme regulates the allocation of tasks and responsibilities between the Board members. Nevertheless, the Executive Board remains collectively responsible for the fulfilment of the duties as defined by law and set out in the Articles of Incorporation (overall responsibility).

3.2.1.2. Frequency of meetings

Meetings of the Executive Board are held monthly or more frequently if required.

On 31 December 2021, the Executive Board consisted of the persons displayed in Table 6, which also discloses the number of directorships held by each member, as required by Art. 435 (2) CRR 2.

Name – position	Number of directorships
Philippe Seyll – Chief Executive Officer	8
João Amaral	1
Alain Courbebaisse	1
Anne-Pascale Malréchauffé	3
Denis Schloremberg	3
Guido Wille	1

Table 6: Executive Board Members, CBL

3.2.2. Supervisory Board

According to the Articles of Incorporation of CBL, the Supervisory Board consists of at least three (3) members. The members of the Supervisory Board are required to fulfil certain criteria, as laid down in the Suitability Assessment Policy, and to comply with regulatory requirements, as set out in the section above. Furthermore, the Supervisory Board in its entirety must have the necessary skills, capabilities, and experience to supervise and control the Executive Board of CBL. This requires understanding of the business of a credit institution/central securities depository. Such criteria include but are not limited to: Members of the management body should have an up-to-date understanding of the business, of the Bank, and its risks. The assessment of a member's knowledge, skills and experience should consider both the theoretical experience attained through education and training and the practical experience gained in previous occupations.

A member of the management body should be considered to be of good repute, honesty, and integrity if there are no objective and demonstrable grounds to suggest otherwise, and no reason to have reasonable doubt about his or her good repute, honesty and integrity.

The Nomination Committee prepares a job description and a candidate profile for a specific position, which is resolved by the Supervisory Board. Subsequently, the Nomination Committee identifies and recommends suitable candidates, who are sent for approval to the General Meeting of Shareholders. Following selection and nomination, Boards and Committees Clearstream prepares the formal decision of the General Meeting of Shareholders to appoint the candidate as new member. The appointments of members to the Supervisory Board require prior express approval by the competent authority (CSSF).

On 31 December 2021, the Supervisory Board consisted of the persons displayed in Table 7, which also discloses the number of directorships held by each member as required by Art. 435 (2) of CRR 2.

In 2021, no new directorships were approved by the competent authorities.

The Supervisory Board typically meets four (4) times per year, with additional meetings possible at the discretion of the Chairman. In these meetings, it is informed about normal business activities as well as all substantial business events. In case of extraordinary incidents, the CBL Supervisory Board is informed immediately.

Name – position	Number of directorships
Stephan Leithner – Chairman	9
Gregor Pottmeyer – Vice Chairman	6
Oliver Engels	3
Stephanie Eckermann	7
Wolfgang Gaertner	2
Marie-Jeanne Chevremont	6

Table 7: Supervisory Board Members, CBL

3.2.2.1. CBL Supervisory Board Committees

In 2021, the CBL Supervisory Board Committees comprised the Audit Committee, Risk Committee, Nomination Committee and Remuneration Committee. All four committees have three members each and the Audit Committee is chaired by an independent member of the Supervisory Board.

3.2.2.2. Audit Committee

Members	Tasks and responsibilities
▪ Marie-Jeanne Chevremont – Chairperson ▪ Wolfgang Gaertner – Vice Chairperson ▪ Stephanie Eckermann	▪ Monitors accounting and financial reporting processes; ▪ Monitors the effectiveness of the risk management process, in particular, the Internal Control System (ICS), the risk management system and internal audit; ▪ Monitors the execution of audits, in particular, in relation to the selection and independence of the auditor and the services provided by the auditor (for example, scope, frequency or reports); and, ▪ Submits recommendations to the Supervisory Board to ensure the integrity of the reporting and accounting processes.

3.2.2.3. Nomination Committee

Members	Tasks and responsibilities
▪ Wolfgang Gaertner – Chairperson ▪ Stephan Leithner ▪ Marie-Jeanne Chevremont	▪ Identifies, recommends and promotes, for the approval of the Supervisory Board (SB) and General Meeting of Shareholders, candidates to fill vacancies in the Executive Board (EB) and SB, with the objective to reach a balance and diversity of knowledge, skills and experience, as well as gender diversity amongst the respective members; ▪ Periodically assesses the general structure and performance of EB and SB and provides related recommendations to the SB for improvements; and, ▪ Assesses the knowledge, skills, and experience of respective boards, on an individual and collective basis.

3.2.2.4. Remuneration Committee

Members	Tasks and responsibilities
▪ Stephan Leithner – Chairperson ▪ Gregor Pottmeyer – Vice Chairperson ▪ Wolfgang Gaertner	▪ Supervises the reasonableness of the remuneration system of executive management members. In particular, it supervises the appropriateness of the compensation of the Head of the risk function and of the compliance function as well as employees having a substantial influence on the overall risk profile of the institution. It also supports the Supervisory Board in monitoring the reasonableness of the remuneration system of employees as well as the institution. At the same time, it assesses the impacts of the remuneration system on the risk, capital, and liquidity management; and, ▪ Supports the Supervisory Board in overseeing the internal control system and all other relevant areas in the structuring of the remuneration system

3.2.2.5. Risk Committee

Members	Tasks and responsibilities
▪ Oliver Engels – Chairman ▪ Stephan Leithner – Vice Chairman ▪ Stephanie Eckermann	▪ Advises the Supervisory Board on the institution's overall current and future risk appetite, risk tolerance and risk strategy and assists the Supervisory Board in overseeing the implementation of that strategy; ▪ Reviews whether the conditions offered to customers take into account the institution's business model and risk structure. If this is not the case, the Risk Committee submits proposals to the Executive Board, about how the conditions applied to customers in accordance with the business model and the risk structure could be created; ▪ Examines whether incentives provided by the remuneration system take into consideration the risk, capital and liquidity structure of the institution and the likelihood and timing of earnings; and, ▪ Takes advice from external experts, if necessary. It determines type, comprehensiveness, format, and frequency of information to be provided by the Executive Board with regard to strategy and risk.

3.2.2.6. User committee

Members	Tasks and responsibilities
▪ European Investment Bank ▪ Bank of New York Mellon ▪ CitiBank ▪ BNP Paribas Securities Services ▪ Union Bank of Switzerland ▪ Barclays ▪ Northern Trust	▪ Submits non-binding opinions to the management body; and, ▪ Advises the Executive Board on key arrangements that may affect its members, including the criteria for accepting issuers or customers in their respective securities settlement systems and at the service level and the pricing structure.

3.3. Clearstream Banking AG

3.3.1. General Arrangements

Clearstream Banking AG (CBF) is a stock corporation incorporated in Germany. The German Stock Corporation Act (AktG) requires such a company to set up an Executive Board (§§ 76 et seq. AktG) and a Supervisory Board (§§ 95-116 AktG).

Clearstream Banking AG maintains a comprehensive *Suitability Assessment Policy*. The objective of this policy is to ensure that members of the Executive Board, members of the Supervisory Board and key function holders of CBF are suitable in terms of reputation, experience and governance criteria, as stipulated in the "Joint ESMA and EBA Guidelines on the assessment of the suitability of members of the management body and key function holders under Directive 2013/36/EU and Directive 2014/65/EU" (EBA/GL/2017/12/ESMA71-99-598) and BaFin guidance notes regarding the members of the Executive Board and the Supervisory Board in accordance with the German Banking Act as amended. CBF follows a stringent *Recruitment Procedure* for the selection of members of the Supervisory Board and Executive Board as described below. A suitability assessment is initiated about each appointment or election of a new board member, the resignation of a board member causing material changes to the composition of the management body and on a regular basis, at least annually.

To benefit from a balanced gender diversity and to fulfil the requirement of Art. 27 (4) of the Regulation (EU) No 909/2014 the Supervisory Boards of Clearstream Banking AG and Clearstream Banking S.A. have approved the *Gender Diversity Policy* as published on Clearstream's website and decided on a target to increase the number of the under-represented gender in the management body.

The members of the Supervisory Board of Clearstream Banking AG agreed on a target quota amounted to 20% of the under-represented gender (currently female) in the Supervisory Board of Clearstream Banking AG and a target quota of 25% of the under-represented gender for the Executive Board of Clearstream Banking AG until 31 December 2021.

3.3.2. Executive Board

According to § 25a KWG and MaRisk certain functions and duties in several business areas have to be segregated up to the level of the Executive Board. In addition, all tasks have to be allocated in a clear manner to the responsible areas. Furthermore, the four-eyes principle as well as the role of a deputy should be determined. In order to fulfil the above-mentioned organisational requirements and in the light of the systemic importance of CBF, the articles of incorporation of CBF stipulate that the Executive Board consists of at least two members. A notification is provided to the competent authorities, as well as for Key Function Holders ("KFH"), (Chief Risk Officer, Chief Compliance Officer and Head of Internal Audit according to MaRisk Article 4, and in the event of the appointment of new members of the Executive Board of CBF.

The Executive Board is inter alia responsible for the proper business organisation (in accordance with § 25c (3) number 1 in connection with § 25a of the German Banking Act). The Executive Board is also responsible for the business distribution plan which regulates the allocation of tasks between the board members in order to enable a more efficient management. Nevertheless, the Executive Board as a whole remains responsible for the fulfilment of the duties as defined by law and set out in the Articles of Incorporation (overall responsibility).

Meetings of the Executive Board shall be held regularly; further details, including but not limited to the interval between the meetings, shall be determined by the chairperson. Meetings are held as often as business requires, but at least one meeting per quarter should be scheduled each year.

The members of the Executive Board must be professionally suitable and reliable for the management of a credit institution and must be able to devote sufficient time to fulfil their tasks. Their professional competence requires sufficient theoretical and practical knowledge of the business of a credit institution.

Members of the Executive Board must have in particular:

- An understanding of financial markets, especially within the regulatory framework;
- Professional experience with credit institutions; and,
- Sufficient practical and professional experience in managerial positions.

The rules of the limitation of mandates in accordance with § 25c (2) KWG must be complied with. Under this definition and in consideration of the legal permissibility of the aggregation of mandates, on 31 December 2021 all members of the Executive Board of CBF complied with these rules.

Name – Position	Number of directorships
Berthold Kracke	4 (thereof 4 within Deutsche Börse Group)
Tilman Fechter	2 (thereof 2 within Deutsche Börse Group)
Martina Gruber	2 (thereof 2 within Deutsche Börse Group)
Volker Riebesell	1 (thereof 1 within Deutsche Börse Group)

Table 8: Executive Board Members, CBF

3.3.3. Supervisory Board

CBF has established a Supervisory Board to supervise the Executive Board, in accordance with the mandatory provisions of the German Stock Corporation Act (AktG) in connection with the German One Third Participation Act ("Drittelbeteiligungsgesetz", "DrittelbG"). According to the DrittelbG, one third of the members of the Supervisory Board (two out of six) are employee representatives. The shareholders representatives of the Supervisory Board of CBF are elected by the shareholders in the annual general meeting of shareholders or, if there is the need of a replacement, in an extraordinary shareholders' meeting. The employee representatives are elected by the employees of CBF prior to that shareholders' meeting to elect an entirely new Supervisory Board. All members are elected for a period of five years (a term of office ending at the closing of the General Shareholders' Meeting, which votes on the discharge of the members of the Supervisory Board for the fourth fiscal year after the commencement of the term of office, not including such fiscal year in which the term of office has commenced).

According to the Articles of Incorporation, the Supervisory Board consists of six members. The Supervisory Board in its entirety must have the necessary skills, capabilities and experience to supervise and control the Executive Board of CBF. This requires understanding of the business of a credit institution. A notification is provided to the competent authorities in the event of the appointment of new members of the Supervisory Board of CBF. There were no new appointments in 2021.

In addition, at least two members of the Supervisory Board should have sound knowledge in each of the following areas:

- Accounting, finance, and audit;
- Risk management and compliance;
- Information technology and security;
- Clearing business; and,
- Regulatory requirements.

The rules of the limitation of mandates in accordance with § 25d (3) KWG must be complied with. Under this definition and in consideration of the legal permissibility of the aggregation of mandates, on 31 December 2021 all members of the Supervisory Board of CBF complied with these rules.

The Supervisory Board of CBF also agreed to support and make use of the existing Female Executive Mentoring (FEM) programme which is a part of the gender diversity initiative of Deutsche Börse Group as well as the Deutsche Börse Group's Women's Network; both programmes promote the underrepresented gender on different levels.

On 31 December 2021, the Supervisory Board consisted of persons displayed in Table 9, which also discloses the number of directorships held by each member, as required by Article 435 (2) of CRR.

Name – Position	Number of directorships
Stephan Leithner – Chairman	9 (thereof 6 within Deutsche Börse Group)
Oliver Engels – Vice Chairman	3 (thereof 3 within Deutsche Börse Group)
Peter Gomber	3 (thereof 3 within Deutsche Börse Group)
Christina Bannier	1 (thereof 1 within Deutsche Börse Group)
Peter Eck	1 (thereof 1 within Deutsche Börse Group)
Norfried Stumpf	1 (thereof 1 within Deutsche Börse Group)

Table 9: Supervisory Board Members, CBF

3.3.3.1. CBF Supervisory Board Committees

EU Central Securities Depositories regulation No 909/2014 (CSDR) requires each Central Securities Depository (CSD) to implement an Audit Committee, a Remuneration Committee and a Risk Committee.

Additionally, CBF follows a proactive approach towards its customers by hosting a User Committee on a quarterly basis. It is a domestic user group that meets two to four times a year. If required, a user task force is formed taking care of ad hoc topics.

Membership as well as tasks and responsibilities are outlined below.

3.3.3.1.1. Audit Committee

Members	Tasks and responsibilities
▪ Peter Gomber (Chairman) ▪ Oliver Engels (Vice Chairman) ▪ Norfried Stumpf	▪ Monitors accounting and financial reporting processes; ▪ Monitors the effectiveness of the risk management process, in particular, the internal control system (ICS), the risk management system and internal audit; ▪ Monitors the execution of audits, in particular, in relation to the selection and independence of the auditor and the services provided by the auditor (for example scope, frequency or reports); and, ▪ Submits recommendations to the Supervisory Board to ensure the integrity of the reporting and accounting processes; and,

3.3.3.1.2. Remuneration Committee

Members	Tasks and responsibilities
▪ Stephan Leithner (Chairman) ▪ Christiane Bannier (Vice Chairman) ▪ Norfried Stumpf	▪ Supervises the reasonableness of the remuneration system of Executive Board members. In particular, it supervises the appropriateness of the compensation of the Head of the risk function and of the compliance function as well as employees having a substantial influence on the overall risk profile of the institution. It also supports the Supervisory Board in monitoring the reasonableness of the remuneration system of employees as well as the institution. At the same time, it assesses the impacts of the remuneration system on the risk, capital and liquidity management; ▪ Prepares the Supervisory Board resolutions regarding the determination of the aggregate remuneration of any member of the Executive Board, and by doing so, takes into account what effects the resolutions have on the risk and the risk management of the institution as well as the long-term interests of the shareholders, investors and other stakeholders; ▪ Designs and further develops the Remuneration Policy including the remuneration of the Executive Board; ▪ Supports the Supervisory Board in overseeing the internal control system and all other relevant areas in the structuring of the remuneration system; ▪ The Remuneration Committee shall cooperate with the Risk Committee. The Remuneration Committee shall use internal advice, for example from risk controlling, and external advice from individuals independent of the Executive Board. The Chair of the Remuneration Committee may obtain information from the Head of internal audit and the Head of the organisational units responsible for the development of the remuneration systems; and, ▪ Members of the Executive Board are not allowed to participate in meetings of the Remuneration Committee, the subject of which is their remuneration.

3.3.3.1.3. Risk Committee

Members	Tasks and responsibilities
▪ Oliver Engels (Chairman) ▪ Stephan Leithner (Vice Chairman) ▪ Peter Eck	▪ Advises the Supervisory Board on the institution's overall current and future risk appetite, risk tolerance and risk strategy and assists the Supervisory Board in overseeing the implementation of that strategy; ▪ With the Audit Committee, submits proposals to the Executive Board about how the conditions applied to customers in accordance with the business model and the risk structure could be created; and ▪ Examines whether incentives provided by the remuneration system take into consideration the risk, capital and liquidity structure of the institution and the likelihood and timing of earnings. The tasks of the Remuneration Committee remain unaffected; ▪ Reviews whether the conditions offered to customers take into account the institution's business model and risk structure; and, ▪ If this is not the case, the Risk Committee takes advice from external experts, if necessary. It determines type, comprehensiveness, format and frequency of information to be provided by the Executive Board with regard to strategy and risk.

In 2021, the Risk Committee met 4 times (information disclosed as required by Article 435 (2) (d) CRR 2).

3.3.3.1.4. User Committee

According to the CSD Regulation, a CSD is required to establish a User Committee for each security settlement system it operates.

Clearstream Banking AG (CBF) operates the securities settlement systems CASCADE and CREATION and offers services through both systems. Consequently, CBF established two user committees.

The committees consist of representatives of issuers and participants in the securities settlement systems.

<table>
<tr><th>Members</th><th>Tasks and responsibilities</th></tr>
<tr><td>CASCADE
BNP Paribas
Citigroup
Commerzbank
Deutsche Bank
Dwpbank
HSBC
CREATION
BNP Paribas
Commerzbank
Deutsche Bank
Dwpbank
HSBC
LBBW</td><td>Pursuant to Article 28 of the CSD Regulation (EU) 909/2014 (CSDR), the User Committee advises the Executive Board of the Company on the following topics:
Committee shall advise the Executive Board on key arrangements that impact on its members, including the criteria for accepting issuers or participants in the securities settlement systems and on service level;
Committee may submit non-binding opinions to the Executive Board, containing detailed reasons regarding the pricing structures of the securities settlement systems of the Company.
The advice of the Committee shall be independent from any direct influence of the Executive Board;
Apart from the CSDR requirements, the Executive Board may seek advice and recommendation from the User Committees with respect to matters which are of relevance for the business of the Company and its relationship with customers, in particular:
Business and marketing strategy;
Development of new products; and,
General market trends and requirements</td></tr>
</table>

4. Risk Management Overview

4.1. Concise Risk Statement

Please visit section 9.1 Concise Risk Statement for Clearstream's concise risk statement.

4.2. Risk Management Framework

Risk management is a fundamental component of Clearstream's management and control framework. Effective and efficient risk management is vital to protect Clearstream's interests and simultaneously enables Clearstream to achieve its corporate goals. Clearstream has therefore established a group-wide risk management system comprising roles, processes and responsibilities applicable to all employees and organisational units of Clearstream. This ensures that emerging risks are identified and managed as early as possible.

4.3. Risk Strategy

Clearstream Risk Management (CRM) has developed three risk strategy statements, which are linked to Clearstream's overall business strategy, related to all entities.

Risk limitation – CRM aims to protect and ensure continuity of operations with its risk limitation in both capital and liquidity terms. Supporting growth in the various business divisions – CRM supports the business division to expand their overall business.

Appropriate risk and return ratio – Clearstream has set itself the goal that risk and return should be in a reasonable proportion across the product and customer base. Also, the cost of liquidity must fairly reflect the benefits derived from maintaining sufficient liquidity levels.

The analysis of initiatives and project related to the business strategy is an essential part of the annual Risk Strategy review. The Clearstream Risk Strategy process follows a five-step process covering planning & review, assessment, risk bearing capacity (RBC) limit allocation, approval and implementation. The strategy process takes changing market and the regulatory environment into account as well as feedback from internal and external stakeholders. Clearstream's risk strategy is based upon its business strategy and regulates the extent of risks taken through its various business activities.

All members of the Executive Board of Clearstream are ultimately responsible for the risk strategy, which reflects Clearstream's risk appetite defining the maximum loss the Executive Board is willing to assume in one year, the risk tolerance, as well as, desired performance levels. It is Clearstream's intention to maintain risk at an appropriate and acceptable level. Moreover, the members of the Executive Board ensure that the risk strategy is integrated into all business activities and that adequate measures are in place to implement the strategies, policies and procedures.

4.3.1. Risk appetite

The risk strategy includes statements concerning risk appetite and sets limits. The following two concepts are established and determine the risk appetite:

- Required Economic Capital – Economic perspective *(formerly Liquidation principle)*: The Required Economic Capital is the Value at Risk (VaR) based on a 99.90 percent confidence level (as of 01.01.2021, until then 99.98%). Required Economic Capital is compared with the Available Risk-Bearing Capacity ("ARBC"), which is defined as regulatory own funds (eligible regulatory capital) minus adjustments for unrealised losses driven mainly by ongoing litigations, for non-consolidated entities as well as for potential further reasons. The Available Risk-Bearing Capacity is updated according to the respective regulatory reporting frequency.
- Earnings at Risk: *Earnings at Risk* is the VaR based on 99.0 percent confidence level. This VaR is used for information purposes only at CH-Group, CBL and CBF level. It is not expected to have impact on capital and therefore it is not used for capital management. It is compared with the budgeted EBITDA.

The REC for individual risk types is defined as a fraction of the overall Risk-Bearing Capacity. When allocating the respective Risk-Bearing capacity to a risk type, the respective risk profile for Clearstream is taken into account.

4.3.2. Risk profile

The risk profile of Clearstream differs fundamentally from those of other financial services providers. Clearstream differentiates between three major risk types that are managed and controlled with distinct methods. These risk types are operational risk, financial risk and business risk. Operational risk is assessed as the major risk type within Clearstream.

Financial risks (divided into credit, market and liquidity risks), as well as operational risk are described in the further sections.

The risk strategy was approved by the Executive Board of Clearstream in May 2022.

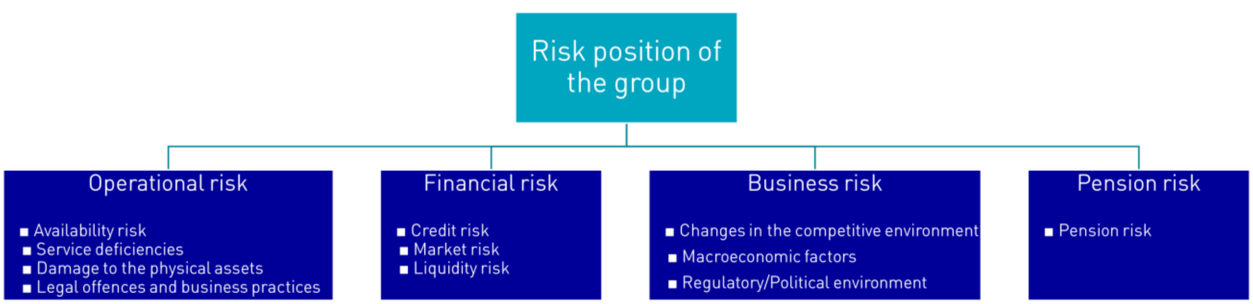

Figure 4: Risk profile of Clearstream

4.4. Risk culture

Risk awareness and a corresponding risk-conscious culture are encouraged, amongst other things, through appropriate organisational structures and responsibilities, adequate processes and the knowledge of employees. The appropriateness of the risk management and controlling systems is regularly checked. Overall, Clearstream's risk culture is based on the Financial Stability Board's four indicators of a sound risk culture: tone from the top, accountability, effective communication and challenge, and incentives, thereby striving for clear risk ownership and accountability.

4.5. Risk Management Process

Clearstream's risk management process is based on the three lines of defence model, see Figure 5. Furthermore, the process aims at ensuring that all threats, causes of loss and potential disruptions are:

- Properly identified as soon as possible (identification);
- Centrally recorded (notification);
- Assessed (that is, quantified in financial terms to the largest possible extent);
- Controlled (mitigation & control); and,
- Reported in a timely manner and consistently, together with suitable recommendations to the Executive Board (monitoring & reporting).

These five key elements as well as adequate quality standards, are defined in the *Group Risk Management Policy* and are reviewed on an ongoing basis by an independent audit function, which ensures the suitability and effectiveness of the risk management process.

Controlling risks is performed in the decentralised business areas, that is, where the risks occur. Risk control in the Clearstream operational units is ensured by nominating "Operational Risk Representatives" who are responsible for identifying, notifying, and controlling any risk in their area. Clearstream Risk Management, a central risk controlling function within Clearstream, assesses all existing and potential new risks and reports on a quarterly basis, and if necessary ad hoc, to the relevant Executive Board.

Figure 5: Risk management process

4.6. Risk Identification

Risk identification includes the identification of all threats, causes of loss and potential disruptions with regards to existing or new processes as well as internal activities or external factors.

More specifically, the risk identification process is on the one hand proactive, based on regular reviews of processes in order to identify weak areas and points of failure (e.g. manual input required, processes without double keying or four-eyes controls in place, specific procedures subject to high volumes or tight deadlines) or based on scenarios of disruption or failure taking into consideration all sources of issues (e.g. unavailability of systems, human error). For the purpose of properly identifying potential risks for Clearstream, a risk inventory process has been established. The inventory process is carried out at least once a year by Clearstream Risk Management. On the other hand, the risk identification process is also reactive as a consequence of an incident.

The identification phase also includes the quantification of risks in the form of parameters based either on statistical data, in the case of actual process monitoring, or on subjective expert judgement when available statistics are insufficient.

All organisational units and individual employees are obliged to identify and quantify potential risks within their area of responsibility.

4.6.1. Risk notification

The process step of risk notification ensures that risks are centrally recorded. To do so, all organisational units and individual employees must notify Clearstream Risk Management in a timely manner of the risks that they have identified.

4.6.2. Risk assessment

Clearstream assesses material risks on an ongoing basis. It applies both the economic perspective and the Earnings at Risk principle to aggregate risks at company level. The main instrument that Clearstream uses for the purpose of quantification is the Value at Risk ("VaR") concept. The VaR quantifies the risks to which a company is exposed and indicates the maximum cumulative loss that Clearstream could face if certain independent loss events materialise over a specific time horizon for a given probability.

Clearstream also considers extreme scenarios and factors these into its risk management. Such extreme scenarios include both stress tests across all risk types and stress tests for specific material risk types.

4.7. Risk mitigation and control

Risk mitigation and control involves the determination and implementation of the most appropriate reaction to the identified risk. It encompasses risk avoidance, risk reduction, risk transfer and intentional risk acceptance.

All organisational units and employees must perform risk control and implement mitigating actions.

4.8. Risk monitoring and reporting

Clearstream Risk Management is the independent control function of Clearstream, responsible for monitoring and reporting risks.

A detailed risk report is submitted to the Executive Board of Clearstream at least once a quarter.

Limit breaches are explained in detail and reported to the Executive Board before the 10^{th} business day following the end of the respective quarter of the year or ad-hoc in case the regular monitoring process identifies a limit breach. The regular risk reports contain risk quantification results in comparison with the limits, risk related qualitative information, information about stress tests and capital adequacy information.

In addition to the above-mentioned risk monitoring and reporting functions, Internal Audit serves as the 3^{rd} line of defence and provides further assurance of the risk management process by conducting independent audits.

In the Executive Board meeting on 24 March 2022 the Executive Board concluded that the Risk Management System for the reporting period was effective.

4.9. ICAAP Information

The Internal Capital Adequacy Assessment of Clearstream is defined centrally and calculated on a regular basis. The Executive Boards of CH, CBL and CBF and the Supervisory Board of CBL are ultimately responsible for the Risk Strategy of Clearstream and oversee the internal capital adequacy process. CRM prepares, updates and reviews the ICAAP report, presents it to the relevant Executive Boards for approval and provides the report to the regulatory authorities. The ICAAP report is subject to a 4-eyes principle. The checks are performed using the EBA Readers Manual. The input to the report is prepared and collected by CRM team members including other relevant parties. The final report is reviewed by the Chief Risk Officer of CH and the Chief Risk Officer of CBL. Alternatively, the Head of CBF Risk Management can review the final report in support to the Chief Risk Officer of CH to ensure the 4-eye principle is met.

The process includes the first and second line of defence. The ICAAP Report is also reviewed by CBL Compliance in line with CSSF requirements. The CBL Chief Compliance Officer issues recommendations after having reviewed the report which will be discussed with CRM during a meeting and incorporated into the report. Internal Audit, as the third line of defence, reviews the ICAAP regularly (see annex 12.16). Additionally, Clearstream follows clearly defined escalation procedures.

The Executive Boards of CH, CBF and CBL and the Supervisory Board of CBL are ultimately responsible for the Risk Strategy of Clearstream and the ICAAP with a focus on:

- Ensuring full compliance with the ICAAP objective concerning risk taking, mitigation and internal capital planning;
- Assuring adequate capitalisation of the company;
- Ensuring effective risk management structures including risk policies and procedures to address and mitigate all risks to which Clearstream is exposed to;
- Ensuring that the Risk Strategy is integrated into the business activities throughout the entire group and that adequate measures are in place to implement the strategies, policies, and procedures;
- Approving capital planning; and,

- Overseeing the integration of internal capital adequacy statement and framework (ICAAP) into the company.

The Executive Boards of CH, CBF and CBL approve the capital adequacy statement and Executive Boards of CH and CBL approve the ICAAP report and the key components of the ICAAP report which are defined as follows:

- Consistency between the business and risk strategies,
- Integration within the overall risk management and risk appetite frameworks, including early warning indicators, limit structures, and escalation procedures;
- Identification, measurement, assessment, and aggregation of material risks;
- Assessment, planning and allocation of capital requirements for the normative and economic perspectives;
- Derivation and monitoring of the Available Risk Bearing Capacity;
- Stress testing and consistency with the recovery plan;
- Overall governance and IT support;
- Reporting; and,
- Capital Adequacy Statement.

5. Financial statement linkages

A full reconciliation of own funds to audited financial statements pursuant to point (a) of Article 437 paragraph 1 CRR 2 must be applied by institutions as laid out in the Implementing Regulation (EU) No 1423/2013. As CH is exempted from the preparation of consolidated annual accounts in line with § 291 (1) HGB, a reconciliation with consolidated own funds is not possible. The balance sheet reconciliation for CBL and CBF is shown in Table 10 and Table 11, respectively. For more information on CBL and the differences, please see the CBL 2021 Pillar III report.

			Carrying values of items				
(in 000s of €)	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation	Subject to the credit risk framework	Subject to the CCR framework	Subject to the securitisation framework	Subject to the market risk framework	Not subject to own funds requirements or subject to deduction from own funds
Breakdown by asset clases according to the balance sheet in the published financial statements							
Cash, cash balances at central banks and other demand deposits	10,622,518	8,187,153	8,187,153	-	-	8,187,153	-
Financial assets held for trading	91,323	88,941	-	88,941	-	88,941	-
Financial assets at fair value through other comprehensive income	6,943	6,943	6,943	-	-	-	-
Financial assets at amortized cost	3,734,964	6,164,470	6,164,470		-	6,164,470	-
of which Debt securities	*1,516,518*	*1,515,769*				*1,515,769*	
of which Loans and Advances	*2,218,446*	*4,648,701*				*4,648,701*	
Derivatives - hedge accounting	-	-	-	-	-	-	-
Investments in subsidiaries, joint ventures and associates	31,690	31,690	31,690	-	-	31,690	-
Tangible assets	13,298	13,277	13,277	-	-	-	-
Intangible assets	30,978	34,458	-	-	-	-	34,458
Tax assets	1,217	1,212	-	-	-	-	1,212
Other assets	46,063	43,681	43,681	-	-	-	-
of which other assets	*43,854*						
of which Prepayments and accrued income	*2,209*						
Total assets	**14,578,994**	**14,571,824**	**14,447,213**	**88,941**	**-**	**14,472,254**	**35,670**
Breakdown by liability classes according to the balance sheet in the published financial statements							
Financial liabilities held for trading	2,860	3,133				3,133	3,133
Financial liabilities measured at amortised cost	12,965,421	12,959,996				12,959,996	12,959,996
Derivatives - hedge accounting	2,114	2,112				2,112	2,112
Provisions	23,896	23,881					23,881
Tax liabilities	22,062	22,062					22,062
Other liabilities	63,460	57,886				57,886	57,886
of which other liabilities	*11,224*						
of which Accruals and deferred income	*52,236*						
Total liabilities	**13,079,813**	**13,069,069**	**-**	**-**	**-**	**13,023,126**	**13,069,069**

Table 10: Financial statement linkages, CBL

(in 000s of €)	Carrying values as reported in published financial statements	Carrying values under scope of prudential consolidation	Carrying values of items				
			Subject to the credit risk framework	Subject to the CCR framework	Subject to the securitisation framework	Subject to the market risk framework	Not subject to own funds requirements or subject to deduction from own funds
Breakdown by asset clases according to the balance sheet in the published financial statements							
Cash at central banks	1,546,078	1,546,078	1,546,078		-	1,546,078	-
Receivables from banks	452,728	459,894	459,894	459,894	-	459,894	-
Due daily	*452,728*	*256,967*	*256,967*	*256,967*	-	*256,967*	-
Other receivables	*0*	*202,927*		*202,927*	-	*202,927*	-
Receivables from non-banks	2,907			-	-		-
Bonds and other fixed-income securities	389,683	389,683	389,683	-	-	389,683	-
Public-sector issuers	*257,076*	-	-	-	-		-
Other issuers	*132,606*	-	-	-	-		-
Intangible assets	49	49		-	-		49
Property, plant and equipment	109	109	109	-	-		-
Other assets	61,411	58,447	58,447	-	-	6,621	58,447
Prepaid expenses	125	-	-	-	-		-
Excess of plan assets over post-employment benefit liability	54	-	-	-	-		-
Total assets	**2,453,144**	**2,454,260**	**2,454,211**	**459,894**	**-**	**2,402,275**	**58,497**
Breakdown by liability classes according to the balance sheet in the published financial statements							
Liabilities due to banks	1,341,782	1,374,020	-	-	-	1,374,020	1,374,020
Amounts due to customers and other liabilities	4,720		-	-	-	-	-
Bonds issued	350,000	352,950	-	-	-	352,950	352,950
Other liabilities	50,316	2,226	-	-	-	2,226	2,226
Deferred income	1,377		-	-	-	-	-
Provisions	103,181	120,867	-	-	-	-	120,867
Provisions for pensions and other obligations	*6,332*	*6,332*	-	-	-	-	-
Provisions for taxation	*14,557*	*19,805*	-	-	-	-	-
Other provisions	*82,292*	*94,730*	-	-	-	-	-
Total liabilities	**1,851,376**	**1,850,063**	**-**	**-**	**-**	**1,729,196**	**1,850,063**

Table 11: Financial statement linkages, CBF

The following table provides information on the main sources of differences between the published financial statements and COREP reporting (other than those due to different scopes of consolidation):

(in 000s of €)	Total	Items subject to			
		Credit risk framework	Securitisation framework	CCR framework	Market risk framework
Assets carrying value amount under the scope of prudential consolidation (as per template LI1)	14,536,154	14,447,213	-	88,941	14,472,254
Liabilities carrying value amount under the scope of prudential consolidation (as per template LI1)	-	-	-	-	13,023,126
Total net amount under the scope of prudential consolidation	14,536,154	14,447,213	-	88,941	1,449,128
Off-balance-sheet amounts	886,325	886,325	-		
Differences in valuations					
Differences due to different netting rules, other than those already included in row 2					
Differences due to consideration of provisions					
Differences due to the use of credit risk mitigation techniques (CRMs)	(45,623,106)	(45,623,106)			
Differences due to credit conversion factors					
Differences due to Securitisation with risk transfer					
Other differences	41,122,268	40,890,329		231,938	
Exposure amounts considered for regulatory purposes	10,921,640	10,600,761	-	320,880	21,474

Table 12: Main sources of differences between carrying values in the published financial statements and regulatory exposure amounts, CBL

(in 000s of €)	Total	Items subject to			
		Credit risk framework	Securitisation	CCR framework	Market risk framework
Assets carrying value amount under the scope of prudential consolidation (as per template LI1)	2,454,260	2,454,211	-	459,894	2,402,275
Liabilities carrying value amount under the scope of prudential consolidation (as per template LI1)	1,850,063	-	-	-	1,729,196
Total net amount under the scope of prudential consolidation		2,454,211	-	459,894	673,078
Off-balance-sheet amounts	2,471,943	2,471,943	-	-	
Differences in valuations	-	-	-	-	
Differences due to different netting rules, other than those already included in row 2	-	-	-	-	
Differences due to consideration of provisions	-	-	-	-	
Differences due to the use of credit risk mitigation techniques (CRMs)	(129,298)	(129,298)	-	-	
Differences due to credit conversion factors	-	-	-	-	
Differences due to Securitisation with risk transfer	-	-	-	-	
Other differences		0	-	(14,833)	
Exposure amounts considered for regulatory purposes	**2,342,645**	**4,796,855**	**-**	**445,061**	**6,717**

Table 13: Main sources of differences between carrying values in the published financial statements and regulatory exposure amounts, CBF

In terms of consolidation, please see Figure 3: Overview of consolidation.

6. Own Funds and Capital

6.1. Composition of Capital

Following the disclosure requirements in Art. 437 CRR 2, as specified in the Implementing Regulation (EU) No. 1423/2013 of December 2013, institutions are required to provide information concerning the capital composition, including reconciliation with their balance sheet and the main features of the regulatory capital instruments.

Furthermore, Art. 438 of Part Eight CRR 2 requires disclosure of an overview of the total RWA and the related minimum capital requirements. Further breakdowns of RWAs are presented in subsequent parts of this report.

The total regulatory capital of Clearstream Holding AG, Clearstream Banking S.A., and Clearstream Banking AG, consists of Common Equity Tier 1 (CET1) capital, which is comprised of subscribed capital, share premium, reserves, and retained earnings. Deductions of CET1 arise from intangible assets, deferred tax assets and regulatory adjustments.

Following Art. 438 (c) to (f) CRR 2, institutions should disclose an overview of total RWA forming the denominator of the risk-based capital requirements calculated per Art. 92 CRR 2 and summary of the institution's calculation approaches chosen. Select rows are not shown given no values to report for the above three Clearstream members on 31 December 2021. Below is the composition of Own Funds on 31 December 2021 with accompanying ratios.

(in 000s of €)	Amounts	Source based on reference numbers/letters of the balance sheet under the regulatory scope of consolidation
Common Equity Tier 1 (CET1) capital: instruments and reserves		
Capital instruments and the related share premium accounts	50	26(1), 27, 289, 29, EBA list 26(3)
Retained earnings	-60,121	26(1)(c)
Accumulated other comprehensive income (and other reserves)	1,733,862	26(1)
Funds for general banking risk	169,309	
Minority interests (amount allowed in consolidated CET1)	0	
Common Equity Tier 1 (CET1) capital before regulatory adjustments	1,843,100	
Common Equity Tier 1 (CET1) capital: regulatory adjustments		
Intangible assets (net of related tax liability) (negative amount)	-52,372	36(1)(b),37, 472, (4)
Losses for the current financial year (negative amount)	-131,111	
Total regulatory adjustments to Common Equity Tier 1 (CET1)	-183,483	
Common Equity Tier 1 (CET1) capital	1,790,596	
Additional Tier 1 (AT1) capital: instruments=		
Additional Tier 1 (AT1) capital before regulatory adjustments	0	
Additional Tier 1 (AT1) capital: regulatory adjustments		
Total regulatory adjustments to Additional Tier 1 (AT1) capital	0	
Additional Tier 1 (AT1) capital	0	
Tier 1 capital (T1 = CET1 + AT1)	1,790,596	
Tier 2 (T2) capital: instruments		
Tier 2 (T2) capital before regulatory adjustments	0	
Tier 2 (T2) capital: regulatory adjustments		
Total regulatory adjustments to Tier 2 (T2) capital	0	
Tier 2 (T2) capital	0	
Total capital (TC = T1 + T2)	1,790,596	
Total Risk exposure amount	5,397,118	
Capital ratios and requirements including buffers		
Common Equity Tier 1 capital	33.18%	
Tier 1 capital	33.18%	
Total capital	33.18%	
Institution CET1 overall capital requirements	2.55%	
of which: capital conservation buffer requirement	2.50%	
of which: countercyclical capital buffer requirement	0.05%	
of which: systemic risk buffer requirement	0.00%	
of which: Global Systemically Important Institution (G-SII) or Other Systemically Important Institution (O-SII) buffer requirement	0.00%	
Common Equity Tier 1 capital (as a percentage of risk exposure amount) available after meeting the minimum capital requirements	28.68%	(minimum capital requirement of 4.5%)

Table 14: Composition of Own Funds, CH

(in 000s of €)	Amounts	Source based on reference numbers/letters of the balance sheet under the regulatory scope of consolidation
Common Equity Tier 1 (CET1) capital: instruments and reserves		
Capital instruments and the related share premium accounts	321,935	26(1), 27, 289, 29, EBA list 26 (3)
Retained earnings	0	26(1) (c)
Accumulated other comprehensive income (and other reserves)	943,016	26 (1)
Funds for general banking risk	0	
Amount of qualifying items referred to in Article 484 (3) CRR and the related share premium accounts subject to phase out from CET1		
Minority interests (amount allowed in consolidated CET1)		
Independently reviewed interim profits net of any foreseeable charge or dividend		
Common Equity Tier 1 (CET1) capital before regulatory adjustments	1,264,951	
Common Equity Tier 1 (CET1) capital: regulatory adjustments		
Additional value adjustments (negative amount)		
Intangible assets (net of related tax liability) (negative amount)	-34,458	36 (1) (b), 37, 472, (4)
Not applicable		
Deferred tax assets that rely on future profitability excluding those arising from temporary differences (net of related tax liability where the conditions in Article 38 (3) CRR are met) (negative amount)	-1,212	36 (1) (b), 37
Other regulatory adjustments to CET1 capital *(including IFRS 9 transitional adjustments when relevant)*	-15,075	36 (1) (j)
Total regulatory adjustments to Common Equity Tier 1 (CET1)	-50,745	
Common Equity Tier 1 (CET1) capital	1,214,206	
Additional Tier 1 (AT1) capital: instruments		
Additional Tier 1 (AT1) capital before regulatory adjustments		
Additional Tier 1 (AT1) capital: regulatory adjustments		
Other regulatory adjustments to AT1 capital	0	
Total regulatory adjustments to Additional Tier 1 (AT1) capital	0	
Additional Tier 1 (AT1) capital	0	
Tier 1 capital (T1 = CET1 + AT1)	1,214,206	
Tier 2 (T2) capital: instruments		
Tier 2 (T2) capital before regulatory adjustments	0	
Tier 2 (T2) capital: regulatory adjustments		
Total regulatory adjustments to Tier 2 (T2) capital	0	
Tier 2 (T2) capital	0	
Total capital (TC = T1 + T2)	1,214,206	
Total Risk exposure amount	4,037,268	
Capital ratios and buffers		
Common Equity Tier 1 (as a percentage of total risk exposure amount)	30.07%	
Tier 1 (as a percentage of total risk exposure amount)	30.07%	
Total capital (as a percentage of total risk exposure amount)	30.07%	
Institution CET1 overall capital requirement (CET1 requirement in accordance with Article 92 (1) CRR, plus additional CET1 requirement which the institution is required to hold in accordance with point (a) of Article 104(1) CRD, plus combined buffer requirement in accordance with Article 128(6) CRD) expressed as a percentage of risk exposure amount)	3.05%	
of which: capital conservation buffer requirement	2.50%	
of which: countercyclical buffer requirement	0.05%	
of which: Global Systemically Important Institution (G-SII) or Other Systemically Important Institution (O-SII) buffer	0.50%	
Common Equity Tier 1 capital (as a percentage of risk exposure amount) available after meeting the minimum capital requirements	25.57%	(minimum capital requirement of 4.5%)
Amounts below the thresholds for deduction (before risk weighting)		
Direct and indirect holdings of own funds and eligible liabilities of financial sector entities where the institution does not have a significant investment in those entities (amount below 10% threshold and net of eligible short positions)	6,007	
Direct and indirect holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities (amount below	31,690	

Table 15: Composition of Own Funds, CBL

(in 000s of €)	Amounts	Source based on reference numbers/letters of the balance sheet under the regulatory scope of consolidation
Common Equity Tier 1 (CET1) capital: instruments and reserves		
Capital instruments and the related share premium accounts	26,108	26(1), 27, 289, 29, EBA list 26(3)
Retained earnings	98,187	26(1)(c)
Accumulated other comprehensive income (and other reserves)	295,892	26(1)
Funds for general banking risk	0	
Minority interests (amount allowed in consolidated CET1)	0	
Common Equity Tier 1 (CET1) capital before regulatory adjustments	420,187	
Common Equity Tier 1 (CET1) capital: regulatory adjustments		
Intangible assets (net of related tax liability) (negative amount)	(49)	36(1)(b),37, 472, (4)
Losses for the current financial year (negative amount)	0	
Total regulatory adjustments to Common Equity Tier 1 (CET1)	(49)	
Common Equity Tier 1 (CET1) capital	420,138	
Additional Tier 1 (AT1) capital: instruments		
Additional Tier 1 (AT1) capital before regulatory adjustments	0	
Additional Tier 1 (AT1) capital: regulatory adjustments		
Total regulatory adjustments to Additional Tier 1 (AT1) capital	0	
Additional Tier 1 (AT1) capital	0	
Tier 1 capital (T1 = CET1 + AT1)	420,138	
Tier 2 (T2) capital: instruments		
Tier 2 (T2) capital before regulatory adjustments	0	
Tier 2 (T2) capital: regulatory adjustments		
Total regulatory adjustments to Tier 2 (T2) capital	0	
Tier 2 (T2) capital	0	
Total capital (TC = T1 + T2)	420,138	
Total Risk exposure amount	1,563,296	
Capital ratios and requirements including buffers		
Common Equity Tier 1 capital	26.88%	
Tier 1 capital	26.88%	
Total capital	26.88%	
Institution CET1 overall capital requirements	2.64%	
of which: capital conservation buffer requirement	2.50%	
of which: countercyclical capital buffer requirement	0.14%	
of which: systemic risk buffer requirement	0.00%	
of which: Global Systemically Important Institution (G-SII) or Other Systemically Important Institution (O-SII) buffer requirement	0.00%	
Common Equity Tier 1 capital (as a percentage of risk exposure amount) available after meeting the minimum capital requirements	22.38%	(minimum capital requirement of 4.5%)

Table 16: Composition of Own Funds, CBF

6.1.1.Main features of own funds

	Quantitative/qualitative information
Issuer	Clearstream Holding AG
Unique identifier (e.g., CUSIP, ISIN or Bloomberg identifier for private placement)	N/A
Governing law(s) of the instrument	German Stock Corporation Act (Aktg)
Regulatory treatment	
Transitional CRR rules	Common Equity Tier 1
Post-transitional CRR rules	Common Equity Tier 1
Eligible at solo/group/group and solo	Consolidated
Instrument type (types to be specified by each jurisdiction)	Ordinary Shares
Amount recognised in regulatory capital (currency in thousands, as of most recent reporting date)	€50
Nominal amount of instrument (in thousands, in currency of issuance)	€50
Issue price (in thousands)	€50
Accounting classification	Shareholders' equity
Original date of issuance	N/A
Perpetual or dated	perpetual
Original maturity date	N/A
Issuer call subject to prior supervisory approval	No
Optional call date, contingent call dates and redemption amount	N/A
Subsequent call dates, if applicable	N/A
Coupons / dividends	
Fixed or floating dividend/coupon	Floating
Coupon rate and any related index	N/A
Existence of a dividend stopper	N/A
Fully discretionary, partially discretionary, or mandatory (in terms of timing)	Fully discretionary

Existence of step-up or other incentive to redeem	No
Non-cumulative or cumulative	Non-cumulative
Convertible or non-convertible	Non-convertible
If convertible, conversion trigger(s)	N/A
If convertible, fully or partially	N/A
If convertible, conversion rate	N/A
If convertible, mandatory or optional conversion	N/A
If convertible, specify instrument type convertible into	N/A
If convertible, specify issuer of instrument it converts into	N/A
Writedown feature	No
If writedown, writedown trigger(s)	N/A
If writedown, full or partial	N/A
If writedown, permanent or temporary	N/A
If temporary write-own, description of writeup mechanism	N/A
Position in subordination hierarchy in liquidation (specify instrument type immediately senior to instrument in the insolvency creditor hierarchy of the legal entity concerned).	N/A
Non-compliant transitioned features	No
If yes, specify non-compliant features	N/A

Table 17: Capital instruments main features, CH

	Quantitative/qualitative information
Issuer	Clearstream Banking S.A.
Unique identifier (e.g., CUSIP, ISIN or Bloomberg identifier for private placement)	NA
Governing law(s) of the instrument	Luxembourg Company Law: Law of 10th August 1915 on commercial companies
Transitional Basel III rules	Common Equity Tier 1
Post-transitional Basel III rules	Common Equity Tier 1
Eligible at solo/group/group and solo	Solo
Instrument type (types to be specified by each jurisdiction)	Ordinary Shares
Amount recognised in regulatory capital (currency in millions, as of most recent reporting date)	€229
Par value of instrument	€92
Accounting classification	Shareholders' equity
Original date of issuance	1970
Perpetual or dated	perpetual
Original maturity date	NA
Issuer call subject to prior supervisory approval	No
Optional call date, contingent call dates and redemption amount	NA
Subsequent call dates, if applicable	NA
Coupons / dividends	
Fixed or floating dividend/coupon	Floating
Coupon rate and any related index	NA
Existence of a dividend stopper	No
Fully discretionary, partially discretionary or mandatory	Fully discretionary
Existence of step-up or other incentive to redeem	No
Non-cumulative or cumulative	Non-cumulative
Convertible or non-convertible	Non-convertible

If convertible, conversion trigger(s)	NA
If convertible, fully or partially	NA
If convertible, conversion rate	NA
If convertible, mandatory or optional conversion	NA
If convertible, specify instrument type convertible into	NA
If convertible, specify issuer of instrument it converts into	NA
Writedown feature	No
If writedown, writedown trigger(s)	NA
If writedown, full or partial	NA
If writedown, permanent or temporary	NA
If temporary write-own, description of writeup mechanism	NA
Position in subordination hierarchy in liquidation (specify instrument type immediately senior to instrument in the insolvency creditor hierarchy of the legal entity concerned).	NA
Non-compliant transitioned features	No
If yes, specify non-compliant features	NA

Table 18: Capital instruments main features, CBL

(amounts in millions of €)	Quantitative/qualitative information
Issuer	Clearstream Banking AG
Unique identifier (e.g., CUSIP, ISIN or Bloomberg identifier for private placement)	DE0008053604
Governing law(s) of the instrument	German Stock Corporation Act (Aktg)
Regulatory treatment	
Transitional CRR rules	Common Equity Tier 1
Post-transitional CRR rules	Common Equity Tier 1
Eligible at solo/group/group and solo	Solo
Instrument type (types to be specified by each jurisdiction)	Ordinary Shares
Amount recognised in regulatory capital (currency in millions, as of most recent reporting date)	€26
Nominal amount of instrument (in millions, in currency of issuance)	€26
Issue price (in millions)	€26
Redemption price	N/A
Accounting classification	Shareholders' equity
Original date of issuance	1949
Perpetual or dated	perpetual
Original maturity date	N/A
Issuer call subject to prior supervisory approval	No
Optional call date, contingent call dates and redemption amount	N/A
Subsequent call dates, if applicable	N/A
Coupons / dividends	
Fixed or floating dividend/coupon	Floating
Coupon rate and any related index	N/A
Existence of a dividend stopper	N/A
Fully discretionary, partially discretionary, or mandatory (in terms of timing)	Fully discretionary

Fully discretionary, partially discretionary, or mandatory (in terms of amount)	Fully discretionary
Existence of step-up or other incentive to redeem	No
Non-cumulative or cumulative	Non-cumulative
Convertible or non-convertible	Non-convertible
If convertible, conversion trigger(s)	N/A
If convertible, fully or partially	N/A
If convertible, conversion rate	N/A
If convertible, mandatory or optional conversion	N/A
If convertible, specify instrument type convertible into	N/A
If convertible, specify issuer of instrument it converts into	N/A
Writedown feature	No
If writedown, writedown trigger(s)	N/A
If writedown, full or partial	N/A
If writedown, permanent or temporary	N/A
If temporary write-own, description of writeup mechanism	N/A
Position in subordination hierarchy in liquidation (specify instrument type immediately senior to instrument in the insolvency creditor hierarchy of the legal entity concerned).	N/A
Non-compliant transitioned features	No
If yes, specify non-compliant features	N/A

Table 19: Capital instruments main features, CBF

6.2. Balance sheet reconciliation

(in 000s of €)	Balance sheet as in published financial statements	Under regulatory scope of consolidation
	As at period end	As at period end
Assets - *Breakdown by asset clases according to the balance sheet in the published financial statements*		
Cash, cash balances at central banks and other demand deposits	10,622,518	8,187,153
Financial assets held for trading	91,323	88,941
Financial assets at fair value through other comprehensive income	6,943	6,943
Financial assets at amortized cost	3,734,964	6,164,470
of which Debt securities	*1,516,518*	*1,515,769*
of which Loans and Advances	*2,218,446*	*4,648,701*
Derivatives - hedge accounting	-	-
Investments in subsidiaries, joint ventures and associates	31,690	31,690
Tangible assets	13,298	13,277
Intangible assets	30,978	34,458
Tax assets	1,217	1,212
Other assets	43,854	43,681
Prepayments and accrued income	2,209	
Total assets	14,578,994	14,571,824
Liabilities - *Breakdown by liability clases according to the balance sheet in the published financial statements*		
Financial liabilities held for trading	2,860	3,133
Financial liabilities measured at amortised cost	12,965,421	12,959,996
Derivatives - hedge accounting	2,114	2,112
Provisions	23,896	23,881
Tax liabilities	22,062	22,062
Other liabilities	63,460	57,886
of which other liabilities	*11,224*	
of which Accruals and deferred income	*52,236*	
Total liabilities	13,079,813	13,069,069
Issued capital	92,000	92,000
Share premium account	229,935	229,935
Reserves	940,250	942,947
Accumulated other comprehensive income	69	69
Profit for the financial year	236,927	237,803
Interim dividends	-	-
Total shareholders' equity	1,499,181	1,502,755

Balance Sheet Reconciliation

Own Funds elements in the Annual Financial Statements	
Subscribed Capital	92,000
Share premium	229,935
Accumulated other comprehensive income	69
Capital Reserve	0
Legal Reserve	9,200
Other reserves and retained earnings	931,050
Profits for the financial year and accumulated profits	236,927
Total Own Funds Elements in Audited Financial Statements	1,499,181
Valuation differences allocated to other reserves with the approval of financial statements (i.e., after reporting of Own Funds)	2,697
Profits for the financial year and accumulated profits (i.e., after reporting of Own Funds)	-236,927
Eligible Capital (CET1) before regulatory adjustments	1,264,882
Regulatory adjustments	
Goodwill	-12,282
Deduction other intangible assets	-22,176
Other CET 1 capital adjustments	-16,287
Common Equity Tier 1 Capital/Total Eligible Own Funds	1,214,206

Table 20: Balance sheet reconciliation, CBL

(in 000s of €)	Balance sheet as in published financial statements As at period end	Under regulatory scope of consolidation As at period end
Assets - *Breakdown by asset clases according to the balance sheet in the published financial statements*		
Cash at central banks	1,546,078	1,546,078
Receivables from banks	452,728	459,894
Due daily	*452,728*	*256,967*
Other receivables	-	*202,927*
Receivables from non-banks	2,906	-
Bonds and other fixed-income securities	389,683	389,683
Public-sector issuers	*257,076*	
Other issuers	*132,606*	
Intangible assets	49	49
Property, plant and equipment	109	109
Other assets	61,411	58,447
Prepaid expenses	125	-
Excess of plan assets over post-employment benefit liability	54	-
Total assets	**2,453,143**	**2,454,260**
Liabilities - *Breakdown by liability clases according to the balance sheet in the published financial statements*		
Liabilities due to banks	1,341,782	1,374,020
Amounts due to customers and other liabilities	4,720	
Bonds issued	350,000	352,950
Other liabilities	50,316	2,226
Deferred income	1,377	-
Provisions	103,181	120,867
Provisions for pensions and other obligations	*6,332*	*6,332*
Provisions for taxation	*14,557*	*19,805*
Other provisions	*82,292*	*94,730*
Total liabilities	**1,851,376**	**1,850,063**
Shareholders' Equity		
Subscribed capital	25,000	25,000
Additional paid-in capital	297,000	297,000
Retained earnings	98,767	98,187
Legal reserve	*1,392*	-
Other retained earnings	*97,375*	-
Balance sheet surplus	181,000	181,580
Total shareholders' equity	**601,767**	**601,767**

Balance Sheet Reconciliation

Own Funds elements in the Annual Financial Statements	
Subscribed Capital	25,000
Share premium	297,000
Accumulated other comprehensive income	0
Capital Reserve	0
Legal Reserve	1,392
Other reserves and retained earnings	97,375
Profits for the financial year and accumulated profits	181,000
Total Own Funds Elements in Audited Financial Statements	601,767
Valuation differences allocated to other reserves with the approval of financial statements (i.e., after reporting of Own Funds)	0
Profits for the financial year and accumulated profits (i.e., after reporting of Own Funds)	-181,000
Eligible Capital (CET1) before regulatory adjustments	420,187
Regulatory adjustments	
Goodwill	0
Deduction other intangible assets	-49
Common Equity Tier 1 Capital/Total Eligible Own Funds	420,138

Table 21: Balance sheet reconciliation, CBF

6.3. Countercyclical buffer

Please refer to Appendix A for country-specific/geographic distribution of credit exposures that are relevant for the countercyclical buffer, and the institution-specific countercyclical buffer (CCyB1 and CCyB2) for each CH, CBL, and CBF.

6.4. Risk-Weighted Capital

(in 000s of €)	Total risk exposure amounts (TREA)		Total own funds requirements
	a	b	c
	31.12.2021	31.12.2020	31.12.2021
Credit risk (excluding CCR)	809,096	931,196	64,728
Of which the standardised approach	809,096	931,196	64,728
Of which the Foundation IRB (F-IRB) approach	-	-	-
Of which slotting approach	-	-	-
Of which equities under the simple riskweighted approach	-	-	-
Of which the Advanced IRB (A-IRB) approach	-	-	-
Counterparty credit risk - CCR	231,122	111,694	18,490
Of which the standardised approach	0	0	-
Of which internal model method (IMM)	0	0	-
Of which exposures to a CCP	2,342	1,103	187
Of which credit valuation adjustment - CVA	56,615	3,140	4,529
Of which other CCR	172,165	107,451	13,773
Position, foreign exchange and commodities risks (Market risk)	-	-	-
Of which the standardised approach	-	-	-
Of which IMA	-	-	-
Large exposures	-	-	-
Operational risk	4,356,900	5,658,070	348,552
Of which basic indicator approach	-	-	-
Of which standardised approach	-	-	-
Of which advanced measurement approach	4,356,900	5,658,070	348,552
Amounts below the thresholds for deduction (subject to 250% risk weight)	-	-	-
Total	5,397,118	6,700,960	431,769

Table 22: Risk-weighted exposure amounts, CH

(in 000s of €)	Risk weighted exposure amounts (RWEAs)		Total own funds requirements
	a	b	c
	31.12.2021	31.12.2020	31.12.2021
Credit risk (excluding CCR)	838,768	681,123	67,101
Of which the standardized approach	838,768	681,123	67,101
Of which the foundation IRB (FIRB) approach	-	-	-
Of which: slotting approach	-	-	-
Of which: equities under the simple risk-weighted approach	-	-	-
Of which the advanced IRB (AIRB) approach	-	-	-
Counterparty credit risk - CCR	183,090	17,010	14,647
Of which the standardized approach	-	-	-
Of which internal model method (IMM)	-	-	-
Of which exposures to a CCP	2,046	1,103	164
Of credit valuation adjustment - CVA	53,436	3,826	4,275
Of which other CCR	127,608	12,081	10,209
Position, foreign exchange and commodities risks (Market risk)	-	7,897	-
Of which the standardized approach	-	7,897	-
Of which IMA	-	-	-
Large exposures	-	-	-
Operational risk	3,015,410	3,842,961	241,233
Of which basic indicator approach	-		-
Of which standardized approach	-		-
Of which advanced measurement approach	3,015,410	3,842,961	241,233
Amounts below the thresholds for deduction (subject to 250% risk weight)	-		-
Total	4,037,268	4,548,991	322,981

Table 23: Risk-weighted exposure amounts, CBL

(in 000s of €)	Total risk exposure amounts (TREA)		Total own funds requirements
	a	b	c
	31.12.2021	31.12.2020	31.12.2021
Credit risk (excluding CCR)	78,507	60,481	6,281
Of which the standardised approach	78,507	60,481	6,281
Of which the Foundation IRB (F-IRB) approach	-	-	-
Of which slotting approach	-	-	-
Of which equities under the simple riskweighted approach	-	-	-
Of which the Advanced IRB (A-IRB) approach	-	-	-
Counterparty credit risk - CCR	9,151	3,346	732
Of which the standardised approach	-	-	-
Of which internal model method (IMM)	-	-	-
Of which exposures to a CCP	-	-	-
Of which credit valuation adjustment - CVA	3,331	-	267
Of which other CCR	5,820	3,346	466
Large exposures	-	-	-
Operational risk	1,475,638	1,815,109	118,051
Of which basic indicator approach	-	0	-
Of which standardised approach	-	0	-
Of which advanced measurement approach	1,475,638	1,815,109	118,051
Amounts below the thresholds for deduction (subject to 250% risk weight)	-	-	-
Total	**1,563,296**	**1,878,936**	**125,064**

Table 24: Risk-weighted exposure amounts, CBF

6.5. Asset Encumbrance

The EBA specified the disclosure of information on asset encumbrance under Art. 443 CRR 2 with the EBA Guidelines on the disclosure of encumbered and unencumbered assets on 26 June 2014[1]. The disclosures described below are made on the basis of this guideline. The values are calculated as medians for quarterly values reported in 2021.

	Carrying amount of encumbered assets		Fair value of encumbered assets		Carrying amount of unencumbered assets		Fair value of unencumbered assets	
		of which notionally eligible EHQLA and HQLA		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA		of which EHQLA and HQLA
(in 000s of €)	010	030	040	050	060	080	090	100
Assets of the disclosing institution	**10,657**	**8,317**			**13,910,465**	**6,553,547**		
Equity instruments	0	0	0	0	0	0	0	0
Debt securities	8,317	8,317	8,992	8,992	1,871,292	1,897,295	1,875,649	1,900,360
of which: covered bonds	0	0	0	0	0	0	0	0
of which: securitisations	0	0	0	0	0	0	0	0
of which: issued by general governments	8,317	8,317	8,992	8,992	847,352	867,919	850,643	871,300
of which: issued by financial corporations	0	0	0	0	985,950	987,222	987,625	988,917
of which: issued by non-financial corporations	0	0	0	0	205,269	0	205,269	0
Other assets	2,339	0			12,039,173	4,656,253		

Table 25: Assets of the reporting institution, encumbered and unencumbered, CH

[1] Guidelines on disclosure of encumbered and unencumbered assets: http://www.eba.europa.eu/documents/10180/741903/EBA-GL-2014-03+Guidelines+on+the+disclosure+of+asset+encumbrance.pdf/c65a7f66-9fa5-435b-b843-3476a8b58d66

(in 000s of €)	Carrying amount of encumbered assets		Fair value of encumbered assets		Carrying amount of unencumbered assets		Fair value of unencumbered assets	
		of which notionally eligible EHQLA and HQLA		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA		of which EHQLA and HQLA
	010	030	040	050	060	080	090	100
Assets of the reporting institution	299,890	-			18,288,752	9,427,615		
Equity instruments	-	-	-	-	6,007	-	6,007	-
Debt securities	-	-	-	-	1,475,701	1,475,701	1,475,903	1,475,903
of which: covered bonds	-	-	-	-	-	-	-	-
of which: securitizations	-	-	-	-	-	-	-	-
of which: issued by general governments	-	-	-	-	584,286	584,286	584,488	584,488
of which: issued by financial corporations	-	-	-	-	891,414	891,414	891,414	891,414
of which: issued by non-financial corporations	-	-	-	-	-	-	-	-
Other assets	299,890				16,807,044	7,951,915		

Table 26: Assets of the reporting institution, encumbered and unencumbered, CBL

(in 000s of €)	Carrying amount of encumbered assets		Fair value of encumbered assets		Carrying amount of unencumbered assets		Fair value of unencumbered assets	
		of which notionally eligible EHQLA and HQLA		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA		of which EHQLA and HQLA
	010	030	040	050	060	080	090	100
Assets of the disclosing institution	**353,795**	**353,795**			**2,614,470**	**1,590,261**		
Equity instruments	0	0	0		0	0	0	0
Debt securities	353,795	353,795	353,795	353,795	102,182	43,949	102,136	0
of which: covered bonds	0	0	0	0	0	0	0	0
of which: securitisations	0	0	0	0	0	0	0	0
of which: issued by general governments	224,340	224,340	224,340	224,340	43,979	43,949	43,979	0
of which: issued by financial corporations	78,571	78,571	78,571	78,571	58,203	0	58,157	0
of which: issued by non-financial corporations	50,885	50,885	50,885	50,885	0	0	0	0
Other assets	0	0			2,512,288	1,546,312		

Table 27: Assets of the reporting institution, encumbered and unencumbered, CBF

(in 000s of €)	Fair value of encumbered collateral received or own debt securities issued		Unencumbered: Fair value of collateral received or own debt securities issued available for encumbrance	
		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA
	010	030	040	060
Collateral received by the disclosing institution	289,855	536,323	6,721,423	6,215,233
Loans on demand	0	0	0	0
Equity instruments	0	0	0	0
Debt securities	289,855	536,323	6,721,423	6,215,233
of which: covered bonds	0	0	0	0
of which: securitisations	0	0	0	0
of which: issued by general governments	231,023	3,253,165	5,898,512	4,875,580
of which: issued by financial corporations	194,575	182,041	822,644	892,486
of which: issued by non-financial corporations	245	245	23,589,842	140
Loans and advances other than loans on demand	0	0	0	0
Other collateral received	0	0	0	0
Own debt securities issued other than own covered bonds or securitisations	0	0	0	0
Own covered bonds and securitisations issued and not yet pledged			0	0
TOTAL COLLATERAL RECEIVED AND OWN DEBT SECURITIES ISSUED	**292,219**	**544,641**		

Table 28: Collateral received and own debt securities issued, CH

(in 000s of €)	Fair value of encumbered collateral received or own debt securities issued		Unencumbered Fair value of collateral received or own debt securities issued available for encumbrance	
		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA
	010	030	040	060
Collateral received by the disclosing institution	757,042	744,509	5,836,423	5,822,016
Loans on demand				
Equity instruments				
Debt securities	757,042	744,509	5,836,423	5,822,016
of which: covered bonds	25,067		14,408	
of which: securitisations				
of which: issued by general governments	531,079	531,079	4,821,776	4,821,776
of which: issued by financial corporations	225,770	213,237	860,708	848,302
of which: issued by non-financial corporations	193	193		
Loans and advances other than loans on demand				
Other collateral received				
Own debt securities issued other than own covered bonds or securitisations				
Own covered bonds and securitisations issued and not yet pledged				
TOTAL COLLATERAL RECEIVED AND OWN DEBT SECURITIES ISSUED	1,056,932	744,509		

Table 29: Collateral received and own debt securities issued, CBL

(in 000s of €)	Fair value of encumbered collateral received or own debt securities issued		Unencumbered Fair value of collateral received or own debt securities issued available for	
		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA
	010	030	040	060
Collateral received by the disclosing institution	0	0	8,693,189	638,385
Loans on demand	0	0	0	0
Equity instruments	0	0	0	0
Debt securities	0	0	8,693,189	638,385
of which: covered bonds	0	0	0	0
of which: securitisations	0	0	0	0
of which: issued by general governments	0	0	2,341,571	403,676
of which: issued by financial corporations	0	0	3,698,977	234,709
of which: issued by non-financial corporations	0	0	2,239,579	2,239,579
Loans and advances other than loans on demand	0	0	0	0
Other collateral received	0	0	0	0
Own debt securities issued other than own covered bonds or securitisations	0	0	0	0
Own covered bonds and securitisations issued and not yet pledged			0	0
TOTAL COLLATERAL RECEIVED AND OWN DEBT SECURITIES ISSUED	353,789	353,789		

Table 30: Collateral received and own debt securities issued, CBF

The sources of encumbrance are shown in the following table:

(in 000s of €)	Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and securitisations encumbered
	010	030
Carrying amount of selected financial liabilities	561,390	289,855

Table 31: Sources of encumbrance, CH

(in 000s of €)	Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and securitisations encumbered
	010	030
Carrying amount of selected financial liabilities	719,563	1,056,932

Table 32: Sources of encumbrance, CBL

(in 000s of €)	Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and securitisations encumbered
	010	030
Carrying amount of selected financial liabilities	0	353,789

Table 33: Sources of encumbrance, CBF

7. Leverage Ratio

7.1. Leverage Ratio

As CH is exempted from the preparation of consolidated financial statements in line with § 291 (1) HGB, a reconciliation with the leverage ratio total exposure is abstained from the report. Below, adjustments completed are shown for CBL and CBF on 31 December 2021.

(in 000s of €)	Applicable amount
Total assets as per published financial statements	14,578,994
Adjustment for entities which are consolidated for accounting purposes but are outside the scope of regulatory consolidation	
(Adjustment for securitised exposures that meet the operational requirements for the recognition of risk transference)	
(Adjustment for temporary exemption of exposures to central bank (if applicable))	
(Adjustment for fiduciary assets recognised on the balance sheet pursuant to the applicable accounting framework but excluded from the leverage ratio total exposure measure in accordance with point (i) of point (i) of Article 429a(1) CRR)	
Adjustment for regular-way purchases and sales of financial assets subject to trade date accounting	0
Adjustment for eligible cash pooling transactions	0
Adjustments for derivative financial instruments	231,938
Adjustment for securities financing transactions (SFTs)	12,193
Adjustment for off-balance sheet items (ie conversion to credit equivalent amounts of off-balance sheet exposures)	918,388
(Adjustment for prudent valuation adjustments and specific and general provisions which have reduced Tier 1 capital)	
(Adjustment for exposures excluded from the leverage ratio total exposure measure in accordance with point (c) of Article 429a(1) CRR)	
(Adjustment for exposures excluded from the leverage ratio total exposure measure in accordance with point (j) of Article 429a(1) CRR)	
Other adjustments (CSD deduction and valuation differences)	(11,237,939)
Leverage ratio total exposure measure	**4,503,574**

Table 34: Summary reconciliation of accounting assets and leverage ratio exposures, CBL

(in 000s of €)	Applicable amount
Total assets as per published financial statements	2,062,488
Adjustment for entities which are consolidated for accounting purposes but are outside the scope of prudential consolidation	391,772
(Adjustment for securitised exposures that meet the operational requirements for the recognition of risk transference)	0
(Adjustment for temporary exemption of exposures to central banks (if applicable))	0
(Adjustment for fiduciary assets recognised on the balance sheet pursuant to the applicable accounting framework but excluded from the total exposure measure in accordance with point (i) of Article 429a(1) CRR)	0
Adjustment for regular-way purchases and sales of financial assets subject to trade date accounting	0
Adjustment for eligible cash pooling transactions	0
Adjustment for derivative financial instruments	14,833
Adjustment for securities financing transactions (SFTs)	(264,877)
Adjustment for off-balance sheet items (ie conversion to credit equivalent amounts of off-balance sheet exposures)	0
(Adjustment for prudent valuation adjustments and specific and general provisions which have reduced Tier 1 capital)	0
(Adjustment for exposures excluded from the total exposure measure in accordance with point (c) of Article 429a(1) CRR)	0
(Adjustment for exposures excluded from the total exposure measure in accordance with point (j) of Article 429a(1) CRR)	0
Other adjustments	(1,074,512)
Total exposure measure	1,129,704

Table 35: Summary reconciliation of accounting assets and leverage ratio exposures, CBF

(in 000s of €)	a 31.12.2021	b 31.12.2020
On-balance sheet exposures (excluding derivatives and SFTs)		
On-balance sheet items (excluding derivatives, SFTs, but including collateral)	12,819,646	11,434,906
(Asset amounts deducted in determining Tier 1 capital)	(52,372)	(148,376)
Total on-balance sheet exposures (excluding derivatives and SFTs)	**12,767,274**	**11,286,530**
Derivative exposures		
Replacement cost associated with SA-CCR derivatives transactions (ie net of eligible cash variation margin)	0	
Derogation for derivatives: replacement costs contribution	0	
Exposure determined under Original Exposure Method	333,921	54,758
Total derivatives exposures	**333,921**	**54,758**
Securities financing transaction (SFT) exposures		
adjustment for sales accounting transactions	4,269,324	5,511,026
Counterparty credit risk exposure for SFT assets	15,025	20,195
Total securities financing transaction exposures	**4,284,349**	**5,531,222**
Other off-balance sheet exposures		
Off-balance sheet exposures at gross notional amount	885,672	427,418
Off-balance sheet exposures	**885,672**	**427,418**
Excluded exposures		
(Excluded CSD related services of CSD/institutions in		
(Excluded CSD related services of designated institutions	(12,159,777)	0
(Total exempted exposures)	**(12,159,777)**	-
Capital and total exposure measure		
Tier 1 capital	**1,790,596**	**1,677,658**
Total exposure measure	**6,111,439**	17,299,928
Leverage ratio		
Leverage ratio (%)	29.30%	9.70%
Regulatory minimum leverage ratio requirement (%)	3%	

Table 36: Leverage ratio common disclosure, CH

(in 000s of €)	a 31.12.2021	b 31.12.2020
On-balance sheet exposures (excluding derivatives and SFTs)		
On-balance sheet items (excluding derivatives, SFTs, but including collateral)	10,213,442	9,134,104
(Asset amounts deducted in determining Tier 1 capital)	(35,845)	(37,828)
Total on-balance sheet exposures (excluding derivatives and SFTs)	**10,177,596**	**9,096,276**
Derivative exposures		
Replacement cost associated with SA-CCR derivatives transactions (ie net of eligible cash variation margin)	0	0
Exposure determined under Original Exposure Method	320,880	59,481
Total derivatives exposures	**320,880**	**59,481**
Securities financing transaction (SFT) exposures		
Gross SFT assets (with no recognition of netting), after adjustment for sales accounting transactions	4,269,441	5,510,994
(Netted amounts of cash payables and cash receivables of gross SFT assets)		
Counterparty credit risk exposure for SFT assets	12,193	7,610
Derogation for SFTs: Counterparty credit risk exposure in accordance with Articles 429e(5) and 222 CRR		
Agent transaction exposures	32,063	7,745
(Exempted CCP leg of client-cleared SFT exposure)		
Total securities financing transaction exposures	**4,313,697**	**5,526,350**
Other off-balance sheet exposures		
Off-balance sheet exposures at gross notional amount	886,325	428,059
Off-balance sheet exposures	**886,325**	**428,059**
Excluded exposures		
(Excluded CSD related services of CSD/institutions in accordance with point (o) of Article	(11,194,924)	
(Total exempted exposures)	**(11,194,924)**	-
Capital and total exposure measure		
Tier 1 capital	1,214,206	1,209,867
Leverage ratio total exposure measure	**4,503,574**	**15,110,165**
Leverage ratio		
Leverage ratio	27%	8%
Regulatory minimum leverage ratio requirement (%)	3%	
Disclosure of mean values		
Quarter-end value of gross SFT assets, after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables	6,465,408	

Table 37: Leverage ratio common disclosure, CBL

(in 000s of €)	a 31.12.2021	b 31.12.2020
On-balance sheet exposures (excluding derivatives and SFTs)		
On-balance sheet items (excluding derivatives, SFTs, but including collateral)	2,324,720	1,942,630
(Asset amounts deducted in determining Tier 1 capital)	(49)	(78)
Total on-balance sheet exposures (excluding derivatives and SFTs)	2,324,671	1,942,552
Derivative exposures		
Replacement cost associated with SA-CCR derivatives transactions (ie net of eligible cash variation margin)	0	
Derogation for derivatives: replacement costs contribution	0	
Exposure determined under Original Exposure Method	14,833	-
Total derivatives exposures	14,833	-
Securities financing transaction (SFT) exposures		
adjustment for sales accounting transactions	132,439	679,738
Counterparty credit risk exposure for SFT assets	-	-
Total securities financing transaction exposures	132,439	679,738
Other off-balance sheet exposures		
Off-balance sheet exposures at gross notional amount	0	0
Off-balance sheet exposures	-	-
Excluded exposures		
(Excluded CSD related services of CSD/institutions in	(1,342,238)	0
(Excluded CSD related services of designated institutions		
(Total exempted exposures)	(1,342,238)	-
Capital and total exposure measure		
Tier 1 capital	420,138	419,890
Total exposure measure	1,129,704	2,622,290
Leverage ratio		
Leverage ratio (%)	37.19%	16.01%
Regulatory minimum leverage ratio requirement (%)	3%	

Table 38: Leverage ratio common disclosure, CBF

8. Risk Management

8.1. Operational Risk

Operational risk is defined as the risk of loss resulting from inadequate or defective systems and internal processes, from human or technical failure, from inadequate or defective external processes, from damage to physical assets as well as from legal risks that could arise from non- or inappropriate compliance with new or existing laws and regulations and all contractual commitments. Based on this definition, Clearstream distinguishes between four types of operational risk:

- Availability risk (e.g. technical infrastructure, facilities, staff);
- Service deficiencies (e.g. errors & omissions, supplier deficiencies, product flaws);
- Damage to physical assets (e.g. accidents, natural hazards, terrorism, sabotage);
- Legal offences and business practices (e.g. non-compliance with laws & regulation).

8.2. Strategy and Processes

Clearstream's risk strategy, as described in 4.3. Risk management overview, also applies to the management of operational risk (hereinafter, "Operational risk," "OpRisk") and the two other risk categories: financial risk and business risk. Defined in this risk strategy is the risk capital dedicated to cover losses resulting from operational risk, setting a limit for this risk type.

Operational risk represents a major risk class for the Bank, and one that is systemically managed and controlled. Clearstream follows an Advanced Measurement Approach (AMA) for calculating the regulatory capital requirement for operational risk. Thus, Clearstream established a comprehensive framework and set of instruments meeting the requirements from both a regulatory and a business perspective.

Since receiving regulatory approval in January 2008, CBL and CBF applies the AMA to calculate the capital requirements for operational risk.

8.3. Structure and organisation

The ultimate responsibility for operational risk management lies with the members of the Executive Boards of Clearstream, who are supported by different units and functions. The five steps of the risk management process are key to the framework (please refer to chapter 4.5. Risk Management Process).

It is the responsibility of line management units to control operational risk within their area on a day-to-day basis. This includes the identification of suitable measures to mitigate operational risk, and to improve the effectiveness and efficiency of operational risk management. To achieve this target, the Executive Board appoints "operational risk representatives" for their respective area with a direct reporting line to the ultimate risk owner on the Executive Board.

The Operational Risk Representative is the key contact for both the employees in the respective organisational unit as well as for Clearstream Risk Management. They also support their line management with all tasks regarding operational risk and are especially responsible for the collection of operational risk event data within their organisational unit. In addition to this, the Operational Risk Representatives take an active role in further developing operational risk tools and instruments. They also coordinate operational risk training for their respective organisational unit.

It is the responsibility of the employees to support Clearstream Risk Management, line management, and the operational risk representative of their organisational unit regarding any operational risk matters. Every employee is required to participate in the collection of operational risk event data. Furthermore, individual employees may be asked by their line manager, their operational risk representative, or Clearstream Risk Management to take an active role in the operational risk management process, for example, as experts within the scenario analysis process.

8.4. Assessment

Operational risk can be differentiated according to the severity and frequency of losses. As operational risk management depends on the risk position of Clearstream, the general principles are as follows:

- All main risks are identified and analysed regarding the expected or real effect on frequency and severity;
- For risks with a low frequency but high severity, risk transfers are considered – for example, through insurance contracts; and,
- For risks with high frequency but low severity, risk reduction is considered – for example, by optimising processes.

The following chapter discloses the requirements laid down in Art. 446 CRR 2, concerning the approach for the assessment of own-funds requirements for operational risk and Art. 454 CRR 2 on the use of the Advanced Measurement Approach to operational risk. Approaches are disclosed in upcoming chapters.

Operational risk capital is intended to represent the required risk capital for unexpected operational risk losses. As part of the AMA within Clearstream, a model for calculating operational risk capital requirements has been developed, based on the individual risk profile of the institution. In line with the common practice in other risk areas, capital requirements are calculated using the Value at Risk (VaR) concept. Based on a statistical analysis of relevant data, a loss distribution is determined, which enables calculation of the required figures.

The model has been designed to have the following properties:

- Capital requirements reflect the risk profile of Clearstream Group and individual group entities.
- Confidence levels can be adjusted according to the risk appetite of the bank;
- Incentives for proper risk management can be included into the model;
- Major risk drivers can be identified;
- Risk mitigation effects can be taken into account; and,
- Insurance policy is not considered as a risk mitigating affect in the Operational Risk capital model.

The model is explained in detail in subsequent chapters.

Insurance is an additional tool used by Clearstream to mitigate the impact of operational risk by transferring risks above a certain threshold to third parties through a comprehensive insurance program. To achieve the optimum risk/benefit versus premium ratio, insurance policies are negotiated either through insurance brokers or directly with highly rated insurers to purchase tailor-made policies reflecting the specificities of CBL's business. It is mentioned that risk mitigation effects are being considered within the AMA.

8.5. Mitigation and control

As laid out in its risk strategy, Clearstream gives considerable attention to its risk mitigation process. The aim is to reduce the frequency and the severity of potential operational risk events. The process comprises several quality and control initiatives whose objective is to ensure that Clearstream's operations have sufficient controls to prevent any fraud or operational service deficiency. If an event of this kind occurs in Clearstream's operations, a thorough analysis is performed to be in the position to define measures to reduce the probability of recurrence.

The key preventive measures of risk mitigation consist of robust internal control processes and ongoing initiatives to further reduce errors and omissions. This is supported by many measures that will take effect at the time or after an incident, such as Business Continuity Management (BCM) and insurance programs.

8.5.1. Internal Control Systems

The Executive Boards of Clearstream have implemented an internal control system, designed to ensure the effectiveness and profitability of the business operations, prevent, or detect financial loss and thus protect all its business assets. Clearstream's internal control system, an integral part of the risk management system, is continuously developed and adjusted to reflect changing conditions. It comprises both integrated and independent control and safety measures. In 2018, Clearstream established the Control Assurance & Monitoring (CAM) function to further enhance the documentation and monitoring of the internal control system. Internal Audit carries out risk-oriented and process-independent controls to assess the effectiveness and appropriateness of the internal control system.

8.5.2. Business Continuity Management

Within the operational risk framework, business continuity management provides the Clearstream the comfort we have the capabilities of meeting disruptions to the business while providing market infrastructure. In the unlikely event we experience the unavailability of core processes and resources, this represents a substantial risk for Clearstream and potential systemic risk to financial markets, and as a result, Clearstream has implemented a comprehensive Business Continuity Management (BCM) approach as key mitigation of availability risk. Related tests are performed throughout the year.

8.5.2.1. BCM organisation at Clearstream

The Executive Board is responsible for ensuring the continuity of business at Clearstream. This responsibility is delegated to the various organisational units, which are directly responsible for the operational resilience and disaster tolerance of their respective business areas. Reporting to executive management, the Business Continuity Management function is responsible for the overall coordination, monitoring, and assessment of Clearstream's preparedness to deal with incidents and crises.

The organisational roles and responsibilities and the guiding principles to ensure operational resilience are documented in a formal BCM policy.

8.5.2.2. BCM arrangements

The implemented BCM arrangements aim to minimise the impact of the unavailability of key resources and address the unavailability of systems, workspace, and suppliers, but also the loss of significant numbers of staff in order to ensure the continuity of the most critical operations in cases of catastrophic events. Clearstream also leverage on its operational locations in Cork, Eschborn, London, Luxembourg, Prague, and Singapore to maintain the continuity of its services.

8.5.2.3. Systems unavailability

Data centres are geographically distributed to form active centres, acting as backups of each other. Data is mirrored in real time across the data centres. The infrastructure is designed to ensure the online availability and integrity of all transactions to limit the impact due to any disruption.

8.5.2.4. Workspace unavailability

Exclusively dedicated work facilities provide backup office space for mission-critical functions requiring onsite presence if an office location becomes unavailable. These backup facilities are always fully equipped and connected to the distributed data centres, and are operational at all times. Also, business transfer plans between Clearstream's different operations locations and remote working can be used to mitigate workspace unavailability.

8.5.2.5. Staff unavailability

Business continuity solutions also cover the significant unavailability of staff, e.g., during a pandemic-related incident or terrorist attacks. Solutions are designed to ensure that the minimum staff and skills required are available outside the impacted location. Staff dispersal and business transfer plans between Clearstream's different operations locations are in place so that, if one of these locations is impacted, mission-critical activities can be continued by staff in other locations. Measures are defined to mitigate the availability risks during a widescale pandemic, either with a regional or cross regional impact. Focus is on ensuring the well-being of staff e.g., by rotational working or remote working, thus ensuring staff availability. Measures are adaptable to also adhere to any recommendations or directives issued by local authorities.

8.5.2.6. Supplier unavailability

Clearstream ensures the continuous provision of critical supplier services by several means, such as regular due diligence reviews of suppliers' BCM arrangements, provision of services by alternative suppliers where possible, and service level agreements describing minimum service levels and contingency procedures.

8.5.2.7. Incident and crisis management process

Clearstream has implemented a Group-wide incident and crisis management process that, in a structured and effective manner, facilitates a coordinated response and rapid reaction to an incident or crisis. The process aims to minimise business and market impact, enabling a swift recovery and return to regular business activity.

Incident managers have been appointed in the respective business areas as single points of contact in case of incidents and crises to ensure the appropriate response mechanisms are in place to ensure an escalation up to the Executive Board and the notification of customers and other relevant external parties.

8.5.2.8. "Real-life" simulation testing

Clearstream adopts a comprehensive and ambitious business continuity testing approach that simulates scenarios as close as possible to real-life situations while reducing associated risks and avoiding customer impacts. BCM plans are tested on a regular basis, at least annually and mostly unannounced.

BCM test results are validated against the following objectives:

- Functional effectiveness: validating all technical functionalities.
- Execution ability: staff must be familiar with and knowledgeable in the execution of BCM procedures.
- Recovery time: the functions in the scope of the business continuity plans must be operational within the defined recovery time objective.

Test results are reported to the Executive Board. Customers are regularly invited to participate in Clearstream's BCM tests to provide them with the direct assurance of Clearstream's BCM preparedness.

8.6. Insurance

Insurance is an additional tool used by Clearstream to mitigate the impact of operational risk by transferring risks above a certain threshold to third parties through a comprehensive insurance program. To achieve the optimum risk/benefit versus premium ratio, insurance policies are negotiated either through insurance brokers or directly with highly rated insurers to purchase tailor-made policies reflecting the specificities of CH's business.

8.7. Measurement

	a	b	c	d	e
Banking activities	Relevant indicator			Own funds requirements	Risk exposure amount
	Year-3	Year-2	Last year		
Banking activities subject to basic indicator approach (BIA)					
Banking activities subject to standardised (TSA) / alternative standardised (ASA) approaches					
Subject to TSA:					
Subject to ASA:					
Banking activities subject to advanced measurement approaches AMA	1,139,318	1,093,399	1,027,664	348,552	4,356,900

Table 39: Own funds requirements for operational risk under AMA, CH

Banking activities	a	b	c	d	e
	Relevant indicator			Own funds requirements	Risk weighted exposure amount
	Year-3	Year-2	Last year		
Banking activities subject to basic indicator approach (BIA)					
Banking activities subject to standardised (TSA) / alternative standardised (ASA) approaches					
Subject to TSA:					
Subject to ASA:					
Banking activities subject to advanced measurement approaches AMA	96,997	102,060	104,699	241,233	3,015,410

Table 40: Own funds requirements for operational risk under AMA, CBL

Banking activities	a	b	c	d	e
	Relevant indicator			Own funds requirements	Risk exposure amount
	Year-3	Year-2	Last year		
Banking activities subject to basic indicator approach (BIA)					
Banking activities subject to standardised (TSA) / alternative standardised (ASA) approaches					
Subject to TSA:					
Subject to ASA:					
Banking activities subject to advanced measurement approaches AMA	468,747	361,982	335,665	118,051	1,475,638

Table 41: Own funds requirements for operational risk under AMA, CBF

8.8. Monitoring and reporting

The reporting approach laid out in 4.8. Risk monitoring and reporting also applies to the management of operational risk. Operational risk is monitored in the context of the Internal Capital Adequacy Assessment (ICAAP) of Clearstream, which is defined centrally and calculated on a regular basis. For detailed information on ICAAP please refer to 4.9. ICAAP information

9. Credit Risk

9.1. Concise risk statement

As an O-SII, Clearstream has a dedicated focus on maintaining strong internal risk controls, limits, processes, and having a framework that encompasses a safe and stable financial institution. One example of this is through setting credit limits, which are mainly granted for the purpose of facilitating the settlement of securities transactions. Credit risk for CBL and CBF mainly arises from intraday credit, as well as from custody, treasury operations, and for CBL from securities financing settlement over the Bridge with Euroclear..

Sources of credit risk are assessed after considering all business segments, products, and services. The Bank's list of sources of credit risk is updated annually (should changes occur) as part of our policies and risk inventory. These sources of credit risk include:

Credit risk from settlement activities (including income events), i.e., when CBL or CBF grants intraday credit (cash loans) to its participants, mainly to facilitate settlement activities, but also for cash withdrawals (i.e., the credit risk relating to income events, FX trades, corporate actions requiring payment of exercise fees).

Credit risk from its securities financing business in CBL: In the securities financing business, the ASL program provides opportunities for borrowers to avoid settlement failures, and for lenders to earn additional income from their portfolios. Regarding ASL, the Bank is exposed to credit risk as it acts as a guarantor. Moreover, credit risk may arise from the ASLplus and ASL principal programs, where CBL acts as a principal.

Credit risk from treasury activities in CBL or CBF, including repos, reverse repos, FX trades, interest rate and currency swaps, and unsecured placements. This credit risk arises in case the counterparty defaults prior to the performance of the respective obligation.

Additionally, from a treasury investment perspective, issuer risk may arise from a credit event affecting an issuer of securities and resulting in either the deterioration of the market value of the securities or in the issuer's inability to pay amounts due. Collateral resulting from treasury investments are government bonds only with a minimum rating of AA- as documented in the investment policy.

Credit risk from Bridge activities in CBL, in case of a default of Euroclear Bank before having paid for securities already delivered by Clearstream.

In addition, Clearstream may grant credit limits that are used to facilitate the settlement of securities transactions and support the securities financing business. Credit is granted exclusively on a collateralised basis where prudent haircuts are applied to the pertinent collateral, apart from certain unsecured settlement limits granted to sovereign and supranational institutions based on the strong credit quality of these counterparts where zero risk weight is applied in line with Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 (CRR), Regulation (EU) No 876/2019 (CRR 2), and with specific approval by the Executive Board. Furthermore, credit limits are set for the placement of funds with counterparties; credit processing is arranged in guidelines and work instructions.

Continuing in the scope of credit limits, these are set in accordance with the customer's financial standing, as indicated by factors such as the customer's credit rating and net worth taking into account the level of activity in the customer's accounts and level of collateralisation.

The evaluation of counterparties and the credit risk classification takes place within the "credit assessment," which is performed by the Bank's credit division. A quarterly internal rating benchmarking exercise with regard to external sources is performed, and internal ratings are adjusted when deemed necessary. The collateral recoverability is part of the tests performed by the Credit Default Management Team.

From a governance point of view, the Executive Board determines the governing principles within Clearstream's Credit Strategy. This includes overall credit granting criteria and ensuring that the Bank's credit activities executed within the framework are articulated within the Credit Strategy. The credit risk management function of Clearstream provides independent monitoring on all credit risk-related activities. It is also responsible for implementing the credit strategy, and developing policies and procedures aimed at identifying, measuring, monitoring, controlling, and reporting credit risk for all activities throughout Clearstream.

The credit risk management function is responsible for ensuring credit exposures remain within levels consistent with prudential standards and therefore within predefined limits. It ensures that exceptions to the Credit Policy, procedures, and limits are reported on a timely basis to the Executive Board, and other relevant functions. All members of the Executive Board are ultimately responsible for the risk strategy, which reflects the Bank's risk appetite in defining the maximum loss the Executive Board is willing to assume in one year, the risk tolerance, and desired performance levels.

Furthermore, risk management is a fundamental component of Clearstream's management and control framework. Overall effective and efficient risk management is vital to protect Clearstream's interests and simultaneously enabling it to achieve its corporate goals. Clearstream has established a Group-wide risk management system comprising roles, processes, and responsibilities applicable to all employees and organisational units of Clearstream. This ensures that emerging risks are identified and managed as early as possible.

Clearstream's risk strategy is based upon the business strategy and regulates the extent of risks taken throughout the various business activities of Clearstream. Clearstream ensures this by determining conditions for risk management, risk control, and risk limitation. Thus, Clearstream gives considerable attention to its risk mitigation process, and ensures that appropriate measures are taken to avoid, reduce, and transfer risk or, alternatively, to intentionally accept it. This means that timely and adequate control of risk must be ensured, and information required for controlling risk is assessed using structured and consistent methods and processes. The results are collated and incorporated into a reporting system enabling measurement and control of risks. Consequently, risk reporting is based on reliable information and carried out on a regular basis and ad hoc, if necessary.

According to Art. 178 CRR, a debtor is in default when either or both of the following conditions apply:

The institution has material reason to consider that the obligor is unlikely to pay its (credit) obligations in full, without recourse by the institution to actions such as realising collateral (if held).

The obligor is past due more than 90 successive calendar days on any material part of its overall credit obligation to the institution.

Clearstream's internal definition of "impairment" according to the International Financial Reporting Standards (IFRS) is compliant with the definition of "default" outlined in Art. 178 of CRR.

9.2. Strategy and processes

Given the unique nature of the Clearstream business, its lending operations cannot be compared with those of other credit institutions. Firstly, the loans are extended solely on an extremely short-term basis. Secondly, they are extended solely for the purposes of increasing the efficiency of securities settlement. With a few exceptions of selected central banks, these loans are fully collateralised. Moreover, loans are only granted to creditworthy customers and credit lines granted are uncommitted and can be revoked at any time.

Credit risk is classified as material risk in Clearstream's risk strategy. The risk strategy for credit risk follows the overall risk strategy laid out in 4.3. Risk strategy. The risk management process for credit risk follows the overall risk management process as presented in Chapter 4.5. Risk Processes.

9.3. Structure and organisation

The credit risk management function is performed by dedicated organisational units and governing bodies based on the *Credit Policy*. In particular, the following tasks are performed, and responsibilities are assigned:

- The creditworthiness of potential new counterparties and the creditworthiness of issuers of collateral accepted by Clearstream is assessed by Credit Section.
- The creditworthiness of existing counterparts is regularly reviewed and continuously monitored.
- Collateral eligibility is defined and approved by the Credit Section. The monitoring of recoverability of collateral is also operated by the Clearstream Default Management.
- Any exception to the *Credit Policy* must be approved by the respective Executive Board.

9.4. Assessment

In the natural course of day-to-day business transactions, Clearstream is exposed to credit risk from a multitude of sources. Credit risk is present in all of Clearstream's primary businesses – this includes custody (mainly related to asset servicing activities), settlement, securities financing, treasury operations and from settlement over the Bridge with Euroclear.

Sources of credit risk are assessed after considering all business segments, products, and services. The list of sources of credit risk is updated annually. Moreover, the list of sources of credit risk is updated as per the Material Change Procedure requiring new products/services to be subjected to a Clearstream Risk Committee (CRC) decision prior to approval.

Please see Appendix D for the credit quality of loans and advances by industry for CH, CBL, and CBF.

9.4.1.Use of Standardised Approach

Prior to August 2020, for the exposure class pertaining to central governments and central banks, Clearstream used the credit assessments by the OECD[2]. In addition, Clearstream also nominated the external credit assessment institution (ECAI) Standard & Poor's for the same exposure class because the OECD stopped assessing so-called "high-income countries" in 2013.

The exposures of Clearstream are mainly to the exposure classes of institutions, corporates, and central governments or central banks; the remainder are shown below with the accompanying risk weight. The current exposures to central governments and central banks are mainly risk-weighted at 0%. Exposures to institutions generally have a short original maturity of less than or equal to three months; therefore, under Art. 120 paragraph 2 CRR the risk weight is 20%. The risk weighting for multilateral development banks is in most cases 0%. Covered bonds obtain a risk weighting based on the risk weightings assigned to senior unsecured claims on the credit institution that issues the covered bond. All other exposures in the different exposure classes mostly achieve the prescribed risk weighting of an unrated position ("unrated" implies that no credit rating by an eligible ECAI exists or no ECAI has been nominated for that purpose).

Exposure classes (in 000s of €)	Risk weight							Total
	0%	2%	20%	50%	75%	100%	150%	
	a	b	e	g	i	j	k	p
Central governments or central banks	9,013,857	-	2,072	305	-	268	119	9,016,622
Regional government or local authorities	271,131	-	19	-	-	-	-	271,150
Public sector entities	950,183	-	-	-	-	-	-	950,183
Multilateral development banks	497,059	-	-	-	-	12	-	497,071
International organisations	184,363	-	-	-	-	-	-	184,363
Institutions	-	0	935,787	89	-	1,832	-	937,709
Corporates	-	-	-	-	-	500,208	529	500,737
Retail exposures	-	-	-	-	1	-	-	1
Exposures secured by mortgages on immovable property	-	-	-	-	-	-	-	-
Exposures in default	-	-	-	-	-	-	-	-
Exposures associated with particularly high risk	-	-	-	-	-	-	-	-
Covered bonds	-	-	-	-	-	-	-	-
Exposures to institutions and corporates with a short-term credit assessment	-	-	-	-	-	-	-	-
Units or shares in collective investment undertakings	-	-	-	-	-	-	-	-
Equity exposures	-	-	-	-	-	20,331	-	20,331
Other items	50,002	-	-	-	-	97,699	-	147,701
TOTAL	**10,966,596**	**0**	**937,878**	**394**	**1**	**620,351**	**648**	**12,525,868**

Table 42: Standardised approach with risk weights, CH

[2] Country risk classification: http://www.oecd.org/tad/xcred/crc.htm.

Exposure classes	Risk weight						Total
	0%	20%	50%	100%	150%	250%	
	a	e	g	j	k	l	p
Central governments or central banks	7,411,558	2,246	455	738	-	-	7,414,998
Regional government or local authorities	180,421	3	-	-	-	-	180,423
Public sector entities	753,137	-	-	-	-	-	753,137
Multilateral development banks	449,408	22	-	-	-	-	449,430
International organisations	133,749	-	-	-	-	-	133,749
Institutions	-	29,716,510	57,124	-	-	-	29,773,634
Corporates	-	-	-	17,047,727	284	-	17,048,011
Retail exposures	-	-	-	-	-	-	-
Exposures secured by mortgages on immovable property	-	-	-	-	-	-	-
Exposures in default	-	-	-	-	4,987	-	4,987
Exposures associated with particularly high risk	-	-	-	-	-	-	-
Covered bonds	-	-	-	-	-	-	-
Exposures to institutions and corporates with a short-term credit assessment	-	-	-	-	-	-	-
Units or shares in collective investment undertakings	-	-	-	-	-	-	-
Equity exposures	-	-	-	10,288	-	27,410	37,697
Other items	2	-	-	22,108	-	-	22,110
TOTAL	8,928,276	29,718,781	57,579	17,080,861	5,271	27,410	55,818,178

Table 43: Standardised approach with risk weights, CBL

Exposure classes (in 000s of €)	Risk weight			Total
	0%	20%	100%	
	a	e	j	p
Central governments or central banks	1,601,968	-	-	1,601,968
Regional government or local authorities	90,743	-	-	90,743
Public sector entities	201,685	-	-	201,685
Multilateral development banks	50,748	-	-	50,748
International organisations	51,284	-	-	51,284
Institutions	-	312,170	0	312,170
Corporates	-	-	8,796	8,796
Retail exposures	-	-	-	-
Exposures secured by mortgages on immovable property	-	-	-	-
Exposures in default	-	-	-	-
Exposures associated with particularly high risk	-	-	-	-
Covered bonds	-	-	-	-
Exposures to institutions and corporates with a short-term credit assessment	-	-	-	-
Units or shares in collective investment undertakings	-	-	-	-
Equity exposures	-	-	6,621	6,621
Other items	-	-	657	657
TOTAL	1,996,428	312,170	16,073	2,324,671

Table 44: Standardised approach with risk weights, CBF

9.4.2. Limits

With regards to credit risk, the credit risk strategy is translated into a limit system, which is monitored on a regular basis and ad hoc.

Credit is exclusively granted on a collateralised basis, with the exception of certain unsecured settlement limits granted to sovereign and supranational institutions (as per the exemption foreseen in Art.23.2 of CSDR (EU) No 2017/390). Borrowers in Clearstream are central banks, banks and financial institutions. Furthermore, credit limits are set for the placement of funds with counterparties. The credit processing is arranged in guidelines and work instructions.

All credit risk exposures are regularly reviewed and monitored. The exposure limits (on level of each single customer, on level of each customer group and on level of each country) are set to ensure that Clearstream does not take too large an exposure, and therefore risk, on too few participants or counterparties.

Similarly, in the event of items that are deemed past due, the CRR classifies an exposure as "past due" if a counterparty has failed to make a payment when contractually due, when the debtor has exceeded an external limit communicated to it, as well as when the debtor has utilised credit without prior consent. Please see Appendix B for the performing and non-performing exposures, and related provisions for CH, CBL, and CBF; and, the maturity of exposures, and changes in the stock of non-performing loans & advances can be found for CBL. CH and CBF report empty reports and fields for these templates.

Similar to Appendix B, the breakdown of exposure in default and non-performing exposures, according to country are included in the Appendix C, quality of non-performing exposures by geography for CH, CBL, and CBF.

9.4.3. Stress testing

The term "stress test" comprises the entirety of qualitative and quantitative analysis methods of rare but plausible events. There are several stress tests performed for credit risk, for example:

- The "Default of the Largest Counterparty Group Stress Test," where the default of the counterparty group with the largest unsecured exposure is simulated on a monthly basis, after utilisation of all respective collateral and after taking the recovery rate into account.
- The "Economic Deterioration Stress Test", where the impact of a deterioration of the economic environment on Clearstream is simulated on a monthly basis. To capture the worsening of the economy, certain credit risk model parameters are adjusted compared to the standard VaR simulation.
- The results of the "Default of the Largest Counterparty Group Stress Test," and the "Economic Deterioration Stress Test" are compared to limits, which are defined as a fraction of the available risk bearing capacity. The stress test results are reported to the Executive Boards on a quarterly basis and to the Supervisory Board on at least half-yearly basis.

In addition to the stress tests defined above, a "Reverse Credit Stress Test" is yearly being performed, whose aim is to identify the number of unsecured credit lines that exceed the available risk bearing capacity.

9.4.3.1. Ad-hoc stress testing

Ad-hoc stress tests may be triggered by a certain scenario proposed by Executive Board or a Financial risk metric traffic light turned red. The relevant markets, countries and market rates are defined by expert judgement based on each entity's risk profile.

The ad-hoc stress scenarios are based on the currently established methodology for stress scenarios, where the specific parameters relevant for the respective risks are additionally stressed. The stress degree is based on expert judgement.

If the ad-hoc stress test leads to an increased result compared to the regular stress test, the ad-hoc stress test is reported. The ad-hoc stress test may also replace the regular stress test in the event it persists being relevant for longer than one quarter.

9.5. Mitigation and control

Credit risk mitigation techniques, used by Clearstream, are composed of hedging and collateralisation.

Collateral eligibility is recommended and reviewed on a yearly basis by the Credit Section, and approved by the respective Executive Board. Eligibility and haircut are dependent on the credit, market, liquidity, and legal risks of the security. Securities that are eligible are subject to a margin deduction from their market value. Securities issued by or correlated to the customer are not eligible as collateral. Any transaction on a given account that would exceed the available collateral is automatically blocked by the system.

Collateralisations are also used in connection with the settlement credit limits. To facilitate the settlement of securities transactions against payment two types of credit limits are currently available:

- The Technical Overdraft Facility (TOF); and,
- The Unconfirmed Funds Facility (UCF).

Under the terms and conditions of the TOF and the UCF contracts Clearstream has a right of pledge on all the customer's assets held on the customer's account(s) defined as pledge account(s) to secure obligations towards Clearstream by the customer for the services rendered to this customer.

The following tables disclose a comprehensive view of the methods used to calculate CCR regulatory requirements and the main parameters used within each method.

(in 000s of €)	Replacement cost (RC)	Potential future exposure (PFE)	EEPE	Alpha used for computing regulatory exposure value	Exposure value pre-CRM	Exposure value post-CRM	Exposure value	RWEA
EU - Original Exposure Method (for derivatives)	90,745	147,770		1.4	-	333,921	333,921	115,204
EU - Simplified SA-CCR (for derivatives)	-	-		1.4	-	-	-	-
SA-CCR (for derivatives)	-	-		1.4	-	-	-	-
Financial collateral comprehensive method (for SFTs)					44,907,727	194,625	194,625	57,257
Total					**44,907,727**	**528,545**	**528,545**	**172,462**

Table 45: Analysis of CRR exposure, by approach, CH

(in 000s of €)	Replacement cost (RC)	Potential future exposure (PFE)	EEPE	Alpha used for computing regulatory exposure value	Exposure value pre-CRM	Exposure value post-CRM	Exposure value	RWEA
EU - Original Exposure Method (for derivatives)	88,943	140,257		1.4	320,880	320,880	320,880	127,608
EU - Simplified SA-CCR (for derivatives)	-	-		1.4	-	-	-	-
SA-CCR (for derivatives)	-	-		1.4	-	-	-	-
Financial collateral comprehensive method (for SFTs)					45,159,771	390,273	390,273	196,439
Total					45,480,650	711,153	711,153	324,047

Table 46: Analysis of CRR exposure, by approach, CBL

(in 000s of €)	Replacement cost (RC)	Potential future exposure (PFE)	EEPE	Alpha used for computing regulatory exposure value	Exposure value pre-CRM	Exposure value post-CRM	Exposure value	RWEA
EU - Original Exposure Method (for derivatives)	-	10,595		1.4	-	14,833	14,833.13	5,192
EU - Simplified SA-CCR (for derivatives)	-	-		1.4	-	-	-	-
SA-CCR (for derivatives)	-	-		1.4	-	-	-	-
Financial collateral comprehensive method (for SFTs)					132,439	3,140	3,140	628
Total					132,439	17,974	17,974	5,820

Table 47: Analysis of CRR exposure, by approach, CBF

With respect to CVA risk, the following tables provide a summary of the CVA regulatory calculations.

(in 000s of €)	Exposure value	RWEA
Total transactions subject to the Advanced method	-	-
(i) VaR component (including the 3× multiplier)		-
(ii) stressed VaR component (including the 3× multiplier)		-
Transactions subject to the Standardised method	333,921	56,615
Transactions subject to the Alternative approach (Based on the Original Exposure Method)	-	-
Total transactions subject to own funds requirements for CVA risk	**333,921**	**56,615**

Table 48: Transactions subject to own funds requirements for CVA risk, CH

(in 000s of €)	Exposure value	RWEA
Total transactions subject to the Advanced method	-	-
(i) VaR component (including the 3× multiplier)		-
(ii) stressed VaR component (including the 3× multiplier)		-
Transactions subject to the Standardized method	320,880	53,436
Transactions subject to the Alternative approach (Based on the Original Exposure Method)	-	-
Total transactions subject to own funds requirements for CVA risk	**320,880**	**53,436**

Table 49: Transactions subject to own funds requirements for CVA risk, CBL

(in 000s of €)	Exposure value	RWEA
Total transactions subject to the Advanced method	-	-
(i) VaR component (including the 3× multiplier)		-
(ii) stressed VaR component (including the 3× multiplier)		-
Transactions subject to the Standardised method	333,921	56,615
Transactions subject to the Alternative approach (Based on the Original Exposure Method)	-	-
Total transactions subject to own funds requirements for CVA risk	**333,921**	**56,615**

Table 50: Transactions subject to own funds requirements for CVA risk, CBF

As per point 117 of the EBA guidelines on the disclosure requirements for this report, the following tables disclose a breakdown of CCR exposures by exposure class and by risk weight (riskiness attributed):

Exposure classes (in 000s of €)	Risk weight				
	b	e	f	i	l
	2%	20%	50%	100%	Total exposure value
Central governments or central banks	-	-	-	-	-
Regional government or local authorities	-	-	-	-	-
Public sector entities	-	-	-	-	-
Multilateral development banks	-	-	-	-	-
International organisations	-	-	-	-	-
Institutions	14,809	422,329	7,417	-	444,554
Corporates	-	-	-	83,991	83,991
Retail	-	-	-	-	-
Institutions and corporates with a short-term credit assessment	-	-	-	-	-
Other items	-	-	-	-	-
Total exposure value	**14,809**	**422,329**	**7,417**	**83,991**	**528,545**

Table 51: Standardised approach, CCR exposures by regulatory exposure class and risk weights, CH

Exposure class (in 000s of €)	Risk weight			
	e	f	i	l
	20%	50%	100%	Total exposure value
Central governments or central banks	-	-	-	-
Regional government or local authorities	-	-	-	-
Public sector entities	-	-	-	-
Multilateral development banks	-	-	-	-
International organizations	-	-	-	-
Institutions	41,177	28,562	-	69,739
Corporates	-	-	57,869	57,869
Retail	-	-	-	-
Institutions and corporates with a short-term credit assessment	-	-	-	-
Other items	-	-	-	-
Total exposure value	**41,177**	**28,562**	**57,869**	**127,608**

Table 52: Standardised approach, CCR exposures by regulatory exposure class and risk weights, CBL

Exposure classes (in 000s of €)	Risk weight		
	e	f	l
	20%	50%	Total exposure value
Central governments or central banks	-	-	-
Regional government or local authorities	-	-	-
Public sector entities	-	-	-
Multilateral development banks	-	-	-
International organisations	-	-	-
Institutions	10,557	7,417	17,974
Corporates	-	-	-
Retail	-	-	-
Institutions and corporates with a short-term credit assessment	-	-	-
Other items	-	-	-
Total exposure value	10,557	7,417	17,974

Table 53: Standardised approach, CCR exposures by regulatory exposure class and risk weights, CBF

9.6. Collateralised placing

CBL places a major part of the Group's liquidity on the basis of reverse repo agreements with a maximum maturity of six months. Repo transactions must be governed by a Global Master Repurchase Agreement (GMRA) and are only closed with banking counterparties fulfilling minimum rating criteria. Securities eligible for these transactions must also fulfil a specific set of requirements (e.g. daily pricing, minimum rating or a maximum remaining life to maturity, etc.) specified in the Clearstream Investment Policy.

Cross-currency collateralisation is in general possible. It was not used for bilateral transactions but in the context of triparty repos. Bilateral transactions must be "plain vanilla" on a single fixed-income security. In triparty transactions, multiple fixed-income securities may be taken as collateral. Structured transactions are not allowed.

Haircuts on the securities are applied within triparty repo transactions. All collateral is valued daily. To secure the cash lent through reverse repurchase agreements, CBL agrees to margin calls with the repo counterparty daily to keep cash and collateral in balance.

For EUR, CBL holds an account with the Central Bank of Luxembourg, cash in this currency is placed here.

Below are tables covering credit risk exposures, standardised approach, pre- and post-collateral.

Exposure classes	Exposures before CCF and before CRM		Exposures post CCF and post CRM		RWAs and RWAs density	
	On-balance-sheet exposures	Off-balance-sheet exposures	On-balance-sheet exposures	Off-balance-sheet exposures	RWAs	RWAs density (%)
(in 000s of €)	a	b	c	d	e	f
Central governments or central banks	9,016,657	-	9,016,622	-	1,014	0.01%
Regional government or local authorities	271,150	-	271,150	-	4	0.00%
Public sector entities	950,183	-	950,183	-	-	0.00%
Multilateral development banks	497,071	-	497,071	-	12	0.00%
International organisations	184,363	-	184,363	-	-	0.00%
Institutions	967,768	458,660	933,336	4,372	189,034	20.16%
Corporates	706,779	427,012	495,504	5,233	501,001	100.05%
Retail	1	-	1	-	1	75.00%
Secured by mortgages on immovable property	-	-	-	-	-	0.00%
Exposures in default	-	-	-	-	-	0.00%
Exposures associated with particularly high risk	-	-	-	-	-	0.00%
Covered bonds	-	-	-	-	-	0.00%
Institutions and corporates with a short-term credit	-	-	-	-	-	0.00%
Collective investment undertakings	-	-	-	-	-	0.00%
Equity	20,331	-	20,331	-	20,331	100.00%
Other items	147,701	-	147,701	-	97,699	66.15%
TOTAL	12,762,005	885,672	12,516,263	9,605	809,096	6.46%

Table 54: Credit risk exposures, standardised approach, pre- and post-collateral, CH

Exposure classes	Exposures before CCF and before CRM		Exposures post CCF and post CRM		RWAs and RWAs density	
	On-balance-sheet exposures	Off-balance-sheet exposures	On-balance-sheet exposures	Off-balance-sheet amount	RWAs	RWAs density (%)
Central governments or central banks	7,414,998	-	7,414,998	-	1,415	0.02%
Regional government or local authorities	180,423	-	180,423	-	1	0.00%
Public sector entities	753,137	-	753,137	-	-	0.00%
Multilateral development banks	449,430	-	449,430	-	4	0.00%
International organizations	133,749	-	133,749	-	-	0.00%
Institutions	4,204,115	25,569,519	905,018	452,272	288,595	21.26%
Corporates	1,246,566	15,801,446	379,774	188,044	567,960	100.03%
Retail	-	-	-	-	-	0.00%
Secured by mortgages on immovable property	-	-	-	-	-	0.00%
Exposures in default	4,987	-	4,987	-	7,481	150.00%
Exposures associated with particularly high risk	-	-	-	-	-	0.00%
Covered bonds	-	-	-	-	-	0.00%
Institutions and corporates with a short-term credit assessment	-	-	-	-	-	0.00%
Collective investment undertakings	-	-	-	-	-	0.00%
Equity	37,697	-	37,697	-	78,812	209.07%
Other items	22,110	-	22,110	-	22,108	99.99%
TOTAL	14,447,213	41,370,965	10,281,324	640,316	966,376	8.85%

Table 55: Credit risk exposures, standardised approach, pre- and post-collateral, CBL

Exposure classes	Exposures before CCF and before CRM		Exposures post CCF and post CRM		RWAs and RWAs density	
	On-balance-sheet exposures	Off-balance-sheet exposures	On-balance-sheet exposures	Off-balance-sheet exposures	RWAs	RWAs density (%)
(in 000s of €)						
	a	b	c	d	e	f
Central governments or central banks	1,601,968	-	1,601,968	-	-	0.00%
Regional government or local authorities	90,743	-	90,743	-	-	0.00%
Public sector entities	201,685	-	201,685	-	-	0.00%
Multilateral development banks	50,748	-	50,748	-	-	0.00%
International organisations	51,284	-	51,284	-	-	0.00%
Institutions	312,170	-	312,170	-	62,434	20.00%
Corporates	8,796	-	8,796	-	8,796	100.00%
Retail	-	-	-	-	-	0.00%
Secured by mortgages on immovable property	-	-	-	-	-	0.00%
Exposures in default	-	-	-	-	-	0.00%
Exposures associated with particularly high risk	-	-	-	-	-	0.00%
Covered bonds	-	-	-	-	-	0.00%
Institutions and corporates with a short-term credit	-	-	-	-	-	0.00%
Collective investment undertakings	-	-	-	-	-	0.00%
Equity	6,621	-	6,621	-	6,621	100.00%
Other items	657	-	657	-	657	100.00%
TOTAL	2,324,671	-	2,324,671	-	78,507	3.38%

Table 56: Credit risk exposures, standardised approach, pre- and post-collateral, CBF

9.7. ASL

ASL (Automated Securities Lending) is a lending programme that allows customers who are short of securities due to settlement failure to borrow securities from other Clearstream customers (lenders).

CBL acts as:

- Lending agent, offering:
  - Automatic detection of loan requirements to cover a failed trade;
  - Automatic identification of loan supply from ASL lenders;
  - Anonymous transfer of securities to the ASL borrower (the undisclosed relationship between lender and borrower); and,
  - Administration of the loan.
- Collateral agent, monitoring the quality and sufficiency of collateral regarding:
  - Eligibility;
  - Collateral value;
  - Concentration limits;
  - Fluctuations in the market values of positions pledged as collateral (mark-to-market of the loan and the collateral);
  - Securities prices, reviewed several times a day depending on the closing time of the market; and,
  - Automatic collateral substitution.
- Guarantor for the collateralised loans:
  - Underwriting the risk involved if the borrower defaults on its obligations;
  - Managing collateral securities pledged by the borrower to CBL; and,
  - Assigning loan limits to borrowers to avoid any new loan opening if the limit is reached.

9.8. ASLplus

The ASLplus Programme is a Securities Lending programme that enables customers to enhance the revenues that can be realised as a lender by offering access to the wholesale trading market. CBL acts as principal (borrower) to the lenders in ASLplus and lends on securities to market participants through various counterparties. CBL further undertakes administrative functions and provides a secure settlement environment.

The Credit Section defines collateralised securities borrowing limits for each borrower and credit limits are agreed on the basis of standard framework agreements between CBL and each borrower.

Collateral for ASLplus business is delivered in a collateral pool serving several loans. Out of the pool, collateral valued at least to the requested collateral value based on internal credit rules is blocked for the total of the associated loans. No allocation on a loan-by-loan basis is done for credit purposes.

As for the collateralised placing, a zero weighting by the application of Article 227 CRR is, in general, possible. As the lending business is covering a wider scope of securities that do not fulfil the criteria as laid down in Article 227 CRR, while the collateral given by the ultimate lender only partially fulfils these criteria, only a portion is zero weighted. For the remainder, the supervisory haircuts are applied. As there is a notable portion of cross-currency collateralisation additional FX haircuts are applied.

9.9. Monitoring and Reporting

The Credit Section reports new credit lines and changes of credit lines (increases as well as reductions), changes of the internal rating for customers and credit exposures to the Group Risk Management section. Besides that, limit breaches, if any, are reported to the relevant Executive Board and to Group Risk Management.

The reporting approach as described under 4.8. Risk monitoring and reporting also applies to the management of credit risk. On this basis, Group Risk Management assesses the credit risk and reports VaR results as well as risk issues to the Executive Boards. Besides the assessment of the VaR, Group Risk Monitoring also measures credit risk concentration and performs stress test calculations on credit risk (see 4.8. Risk monitoring and reporting).

9.10. Mitigation

Disclosure requirements concerning credit risk mitigation are laid down in Section C EBA Guidelines on disclosure requirements under Part Eight Regulation (EU) No. 575/2013 and 876/2019 in conjunction with Art. 453 CRR and CRR 2.

The following tables disclose all unsecured carrying amounts on 31 December 2021, and made up of other term loans, trade receivables, and overnight balances (on demand [call] and short noticed [current account]).

	Unsecured carrying amount	Secured carrying amount			
			Of which secured by collateral	Of which secured by financial guarantees	
					Of which secured by credit derivatives
(in 000s of €)	a	b	c	d	e
Loans and advances	14,695,742	204,660	204,660	-	-
Debt securities	1,897,295	-	-	-	
Total	16,593,037	204,660	204,660	-	-
Of which non-performing exposures	-	-	-	-	-
Of which defaulted	n/a	n/a			

Table 57: Credit risk mitigation techniques, CH

(in 000s of €)	Unsecured carrying amount	Secured carrying amount	Of which secured by collateral	Of which secured by financial guarantees	Of which secured by credit derivatives
	a	b	c	d	e
Loans and advances	379,260	4,269,441	4,269,441	-	0
Debt securities	1,515,769		-	-	
Total	1,895,028	4,269,441	4,269,441	-	0
Of which non-performing exposures	729	-	-	-	0
Of which defaulted	-	-			

Table 58: Credit risk mitigation techniques, CBL

(in 000s of €)	Unsecured carrying amount	Secured carrying amount	Of which secured by collateral	Of which secured by financial guarantees	Of which secured by credit derivatives
	a	b	c	d	e
Loans and advances	2,005,972	-	-	-	-
Debt securities	389,683	-	-	-	
Total	2,395,654	-	-	-	-
Of which non-performing exposures	-	-	-	-	-
Of which defaulted	n/a	n/a			

Table 59: Credit risk mitigation techniques, CBF

9.11. CBF Credit Risk Disclosure (Art. 28 CSDR)

As defined in paragraph 1.5.1.4. Clearstream Banking AG, Frankfurt/Main, CBF applied for an authorisation as CSD according to Article 17 of Regulation (EU) No 909/2014 ("Central Securities Depositories Regulation", "CSDR"), for which authorisation has been granted on 21 January 2020. Additionally, CBF applied for an authorisation for providing banking-type ancillary services according to Article 54 paragraph 2 lit. granted in 2021.

Clearstream has a dedicated focus on maintaining strong internal risk controls, limits, processes, and having a framework that encompasses a safe and stable financial institution. One example of this is through setting credit limits, which are mainly granted for the purpose of facilitating the settlement of securities transactions. Credit risk in CBF mainly arises from intraday credit, as well as from custody and, treasury operation.

Sources of credit risk are assessed after considering all business segments, products, and services. The Bank's list of sources of credit risk is updated annually (should changes occur) as part of our policies and risk inventory. These sources of credit risk include:

- Credit risk from settlement activities (including income events), i.e., when CBF grants intraday credit (cash loans) to its participants, mainly to facilitate settlement activities, but also for cash withdrawals (i.e., the credit risk relating to income events, FX trades, corporate actions requiring payment of exercise fees).
- Credit risk from treasury activities, including repos, reverse repos, FX trades, interest rate and currency swaps, and unsecured placements. This credit risk arises in case the counterparty defaults prior to the performance of the respective obligation.
    - Additionally, from a treasury investment perspective, issuer risk may arise from a credit event affecting an issuer of securities and resulting in either the deterioration of the market value of the securities or in the issuer's inability to pay amounts due.

As per CSD-Regulation Commission Delegated Regulation (EU) 2017/390 [CSDR Level II], for the purposes of the Art. 18(1), provides that a CSD-banking service provider shall design and implement policies and procedures that comply with the following requirements:

- Measure intraday and overnight credit risk;
- Monitor intraday and overnight credit risk;
- Manage intraday and overnight credit risk; and,
- Publicly disclose its credit risks.

For the purposes of the above last point (h) of Art. 18(1), Art. 28 states that the CSD-banking service provider shall publicly disclose annually a comprehensive qualitative statement that specifies how credit risks, including intraday credit risks are measured, monitored, and managed.

9.12. Measurement, Monitoring, Management of Intraday and Overnight Credit Exposures

Given the nature of Clearstream's business and core role through clearing and settling securities in addition to custody, credit risk is present in CBF in following business lines: custody (mainly related to asset servicing activities), settlement, and treasury operations. To respond to these identified sources of credit risks including intraday credit risk, CBF has put in place adequate controls and an operational framework to manage its activities under the Regulation (EU) No 909/2014. The latter requires CBF to measure, monitor, and manage on an ongoing basis its intraday and overnight credit exposure for each banking-type ancillary service provided.

In conformity with Articles 19 to 23 and Article 27 and 28 of CSDR Level 2, CBF identifies and measures intraday credit risk exposures by way of operational and analytical tools that identify and measure intraday credit exposures on an ongoing basis. Accordingly, CBF meets the requirements of the measurement referred to in EBA RTS Article 19, as the reports generated in relation to this article are established either on an ad-hoc, daily, or monthly basis, as described below.

- Measurement of intraday and overnight Credit Exposures: to identify and measure intraday credit risk exposure, Clearstream, through analytical tools as the Credit Exposure Monitoring Tool (CEMT). These tools enable the measurement and monitoring of credit exposures and credit limits at: (i) account level, (ii) institution level, and (iii) Principal Holding level. More specifically, the identification and measurement of intraday credit risk is calculated at least daily for the metrics depending on external data availability and on ongoing basis. The CEMT relies on the latest intraday capture of the data from several source systems (credit, collateral, settlement, treasury, income, etc.) enriching its data set for an in-depth analysis and monitoring.
- Monitoring and Management of intraday and overnight Credit Exposures: the monitoring activity is performed through a set of daily reports and processes. These are used to monitor and report intraday and overnight credit exposures against limits and collateral. Through the combination of, among others, predefined credit limits, the monitoring of the creditworthiness of the individual participants, the collateral classification and valuation, early-warning signals, as well as the intraday and overnight credit exposure monitoring and reporting, Clearstream has appropriate risk-management tools in place to manage and control the identified credit risks.

9.13. Counterparty Credit Risk

Derivatives are only held at CBL to hedge against interest and foreign exchange risk. The derivative position includes forward foreign exchange contracts. As of 31 December 2020, the positions correspond to economic hedges and do not opt for IFRS9 hedge accounting for the Luxembourg entity. The dealings with interest rate or foreign exchange risks (measurement, assignment of internal capital and limits etc.) are described in detail in 11.3.1. Interest Rate Risk and 11.3.2. Foreign exchange risk.

In cases where a certain level of foreign exchange exposure, and therefore counterparty credit risk, is exceeded, the risk of each individual currency exposure should be hedged. For Clearstream, the level of materiality is expressed as 10% of consolidated EBITDA of the budget year to be hedged for each individual currency exposure.

Foreign exchange contracts for the purpose of hedging are settled via Continuous Linked Settlement (CLS)[3], to minimise settlement risk, and executed with counterparties only where a Credit Support Annex (CSA) is signed to mitigate credit risk resulting from market movement.

The Mark-to-Market Method pursuant to Article 274 CRR is used by Clearstream to calculate the exposure value for OTC derivative instruments and long settlement transactions. The original exposure thus obtained is the exposure value.

Currencies where a repo market is not liquid are swapped on an overnight basis into USD and EUR. The proceeds are then investment via reverse repos and central bank deposits.

On 31 December 2020 Clearstream did not hold any credit derivatives on its books. Hence, the report does not include a table containing information in conjunction with Art.439 (g) and (h) CRR concerning credit derivatives.

The following table discloses a comprehensive view of the methods used to calculate CCR regulatory requirements and the main parameters used within each method for CH, CBL, and CBF.

(in 000s of €)	Collateral used in SFTs			
Collateral type	Fair value of collateral received		Fair value of posted collateral	
	Segregated	Unsegregated	Segregated	Unsegregated
Cash – domestic currency	-	-	-	-
Cash – other currencies	-	-	-	-
Domestic sovereign debt	-	4,822,554	-	-
Other sovereign debt	-	19,557,825	-	-
Government agency debt	-	9,665,400	-	-
Corporate bonds	-	6,210,350	-	15,315,912
Equity securities	-	-	-	-
Other collateral	-	7,435,897	-	25,322,491
Total	**-**	**47,692,026**	**-**	**40,638,403**

Table 60: Composition of collateral for CCR exposures, CH

[3] CLS (Continuous Linked Settlement): CLS is a global multi-currency settlement system that aims to eliminate foreign exchange (FX) settlement risk due to time-zone differences by settling both legs of an FX transaction simultaneously (payment vs. payment).

(in 000s of €)	Collateral used in SFTs			
Collateral type	Fair value of collateral received		Fair value of posted collateral	
	Segregated	Unsegregated	Segregated	Unsegregated
Cash – domestic currency	-	-	-	-
Cash – other currencies	-	-	-	-
Domestic sovereign debt	-	229,890	-	-
Other sovereign debt	-	27,675,412	-	-
Government agency debt	-	10,020,906	-	-
Corporate bonds	-	929,501	-	-
Equity securities	-	-	-	-
Other collateral	-	7,600,833	-	-
Total	**-**	**46,456,541**	**-**	**-**

Table 61: Composition of collateral for CCR exposures, CBL

	e	f	g	h
(in 000s of €)	Collateral used in SFTs			
Collateral type	Fair value of collateral received		Fair value of posted collateral	
	Segregated	Unsegregated	Segregated	Unsegregated
Cash – domestic currency	-	-	-	-
Cash – other currencies	-	-	-	-
Domestic sovereign debt	-	-	-	-
Other sovereign debt	-	141	-	-
Government agency debt	-	110,063	-	-
Corporate bonds	-	1,538	-	-
Equity securities	-	-	-	-
Other collateral	-	28,622	-	-
Total	**-**	**140,364**	**-**	**-**

Table 62: Composition of collateral for CCR exposures, CBF

9.14. Equities in the non-trading book

Equities held in the non-trading book concern strategic participations in companies with business related to the business of Clearstream and a mandatory participation in the Society for Worldwide Interbank Financial Telecommunication (SWIFT), as CBL and CBF are some of the largest users of SWIFT. Due to the strategic alignment, no participation is held in order to make short-term profits (no trading intent).

Please Chapter 2. Organisation structure Clearstream for the participations held.

Due to the conditions laid out in Art. 19 CRR, these entities are excluded from the scope of prudential consolidation of Clearstream Group. Therefore, these participations are held as equity in the non-trading book. Owing to the SWIFT constitution, CBL and CBF must hold a participation in SWIFT as well.

For valuation and accounting purposes the German GAAP according to the German Commercial Code (HGB) is relevant for CH-Group on a consolidated level and for CBF's equities in the non-trading book. According to the specifications of HGB, equities in the non-trading book are defined as long-term financial assets.

10. Liquidity Risk

Liquidity risk is the risk arising from the inability to meet short-term payment obligations in case of mismatches between liquidity needs and liquidity sources.

10.1. Strategy and processes

The aim of Clearstream's liquidity management is the ability to respond to daily, including intraday, changing customer net long/short cash balances. Customers maintain cash balances with Clearstream and may additionally draw on credit facilities (unconfirmed funds facility (UCF) and intraday technical overdraft facilities (i-TOFs)) as a result of their securities settlement activities.

As Treasury's investment strategy is driven by the cash amounts customers leave on their settlement accounts with Clearstream, mismatch limits are established to limit term maturities that arise from Treasury investments. Funds are invested with the objective to enable fulfilling the organisation payment obligations on a timely basis.

Liquidity Stress Tests in line with CSDR are in place to ensure sufficient liquid resources are in place to ensure all payment obligations are fulfilled in case of contingency, this includes the default of the two largest credit exposures per currency.

On an annual basis, Clearstream Risk Management reviews the liquidity risk inventory, which is a comprehensive and complete list of all the potential liquidity risk items that Clearstream may be exposed to due to its current and future business operations. This risk inventory should include all risks that Clearstream is aware of and represents a key input into the subsequent risk management processes. Once identified, the liquidity risks are assessed, controlled, and monitored/reported on a regular basis. Please refer to the following paragraphs for a more detailed description of the respective processes.

Once identified, the liquidity risks are assessed, controlled, and monitored/reported on a regular basis. Please refer to the following paragraphs for a more detailed description of the respective processes.

10.2. Structure and organisation

The liquidity strategy is defined in Clearstream's *Liquidity Management Policy*.

Within Clearstream, the liquidity management function is performed by Treasury Front, Middle, and Back Office with the following main objectives:

- Access to and control over Clearstream's liquid assets at all times;
- Availability and diversification of sufficient liquidity sources including committed lines; and,
- Avoidance of an excessive currency mismatch.

Clearstream Risk Management oversees the liquidity risk and validates assessments, monitoring, and reporting activities. In addition, the Asset and Liabilities Committee (ALCO) of Clearstream entities monitor and oversee those activities and make recommendations to the relevant Executive Boards.

10.3. Assessment

10.3.1. Key Liquidity Indicators

In line with regulatory standards, Clearstream has established a comprehensive set of liquidity indicators to detect critical developments early and initiate mitigating measures in time. In the following, the key liquidity indicators are outlined.

In order to identify potential liquidity shortfalls in advance, Clearstream implemented early warning triggers as well as recovery triggers for all Key Liquidity Indicators.

10.3.2. Liquidity Coverage Ratio (LCR)

The LCR ratio focuses on the resilience of the liquidity risk profile and requires Clearstream to hold an adequate stock of unencumbered high-quality liquid assets (liquidity buffer) that can be converted into cash easily and immediately in private markets to meet its liquidity needs (net liquidity outflows) within a 30-calendar-day horizon. Regulation (EU) No 575/2013 (CRR) and Regulation (EU) No 876/2019 (CRR 2) supplemented by Commission Delegated Regulation (EU) 2018/1620 with regard to liquidity coverage requirements for credit institutions set out the detailed rules for the calculation of the LCR.

In addition to the LCR, Treasury Front Office manages liquidity including intraday per entity, per currency and per cash correspondent bank or depository acting as cash agent with the aid of an intraday liquidity management tool capable to monitor actual cash flows as reported online by its cash correspondent banks / agents as well as expected forthcoming cash flows from its customers, corporate actions, or other activities such as payment flows.

10.3.3. Liquidity Stress testing

Clearstream uses scenario analysis as part of its regular stress testing in reference to the BaFin minimum requirements for risk management as defined in the MaRisk of 27 October 2017 (BaFin Circular 09/2017) and CSSF Circular 09/403 requiring that institutions conduct liquidity stress tests that enable them to assess the potential impact of extreme but plausible stress scenarios on their liquidity positions and their current contemplated risk mitigation.

To analyse the liquidity risk of Clearstream and to ensure that sufficient liquid financial resources are maintained at all times, comprehensive daily and quarterly stress test calculations are carried out at holding level. Clearstream has implemented various scenarios, including market disruption and idiosyncratic events as well as a combination of both, and performs reverse stress testing on a regular basis.

In addition, Clearstream entities conduct regular liquidity stress tests at entity level. The stress scenarios are in line with the requirements stipulated in the Central Securities Depository Regulation (CSDR) and comprise amongst others the default of the two customers with the largest liquidity exposure (Cover 2), the temporary unavailability of a liquidity provider, a multiple default event and the downrating of Clearstream.

The conducted liquidity stress tests show Clearstream's ability to generate sufficient liquidity to fulfil its contractual payment obligations.

10.4. Mitigation and control

§ 25a KWG in combination with Chapter BTR 3 'Liquidity Risk' of MaRisk require institutions to develop effective contingency plans considering the outcome of alternative scenarios.

Treasury Front Office is responsible for designing and monitoring a Funding Plan which includes a Contingency Funding Plan. In addition, the Recovery Plan includes such measures to strengthen the liquidity position in case of a breach of an early warning or recovery indicator.

Within those documents, a wide range of measures is outlined which may be initiated in case of a severe deterioration of its liquidity profile. Such measures include:

- Intragroup funding;
- Cancellation of customer UCF/TOF lines;
- Prioritisation of payments;
- Usage of committed facilities (FX Swap, Repo and unsecured lines);
- Liquidity generation via CCP cleared repo markets;
- Liquidation of customer collateral;
- Liquidation of Clearstream's securities from Treasury activities; and,
- Marginal lending facility.

10.5. Monitoring and reporting

Clearstream's liquidity risk exposure and breaches of limits are monitored and reported by the Treasury Middle Office. Reports are provided daily and monthly to Executive Board, Clearstream Risk Management, and Treasury. Limit breaches occurring within the Treasury activity are reported by Treasury Middle Office to Executive Board.

Liquidity stress tests are calculated and reported on a regular basis by Risk Management. In case the liquidity stress tests result in a limit breach, Clearstream Risk Management (CRM) will report without delay to the ALCO and the relevant Executive Boards of Clearstream. Treasury, Credit, Product, Risk, and the responsible Risk Committee evaluate the result of the liquidity stress tests and agree on mitigating actions to follow including adjustments of the liquidity framework and updates of the contingency liquidity funding plan if needed.

The Executive Board is informed on a monthly basis about liquidity indicators, and on a quarterly basis, the Executive Board receives a comprehensive liquidity risk reporting.

CBL needs to hold a liquidity buffer of high-quality liquid assets (HQLA) to cover the net cash outflows in stressed conditions over thirty days. The HQLA at CBL consist of cash held with central banks, own securities and securities received in reverse repo transactions. For the last three months of 2021, CBL had an average LCR of 120%. See below for unweighted average value and weighted average value.

The LCR of CH is driven by the outflows and inflows from the group members of CBF and CBL, as well on its own to maintain liquidity requirements. The LCR over time has fluctuated due to the outflows having a different weighting, again from the group members of CH (CBL and CBF). The LCR has remained stabled over the last year. June 2021 was driven by reverse repos. See currency mismatch in the report for further explanation. The liquidity buffer is described in prior sections. The CBF LCR has fluctuated however its due to the fact of the relative size of CBF in comparison to CH and CBL. The liquidity requirements of CBF remain above regulatory requirements. The changes are due largely to the outflows, which can have a material impact on the LCR, for all entities here.

The LCR is made up of inflows, outflows, and HQLA, where net outflow inflows the inflows subject to a 75% cap and outflows can have a range of 20% to 100% weighting.

(in 000s of €)	Total unweighted value (average)				Total weighted value (average)			
Quarter ending on (DD Month YYY)	31.12.2021	30.09.2021	30.06.2021	31.03.2021	31.12.2021	30.09.2021	30.06.2021	31.03.2021
Number of data points used in the calculation of averages	3	3	3	3	3	3	3	3
HIGH-QUALITY LIQUID ASSETS								
Total high-quality liquid assets (HQLA)					14,654,131	19,074,351	16,583,626	17,915,241
CASH - OUTFLOWS								
Retail deposits and deposits from small business customers, of which:	60	6	19	0	-	-	-	-
Stable deposits	-	-	-	-	-	-	-	-
Less stable deposits	0	0	0	0	0	0	0	0
Unsecured wholesale funding	13,125,835	17,642,776	17,662,143	19,948,210	12,377,932	16,745,890	16,852,797	19,225,062
Operational deposits (all counterparties) and deposits in networks of cooperative banks	0	0	0	0	0	0	0	0
Non-operational deposits (all counterparties)	12,700,768	17,517,772	17,462,079	19,948,210	11,952,866	16,620,885	16,652,734	19,225,062
Unsecured debt	425,066	125,005	200,063	-	425,066	125,005	200,063	-
Secured wholesale funding					-	-	-	-
Additional requirements	2,113	951	2,410	3,884	2,113	951	2,410	3,884
Outflows related to derivative exposures and other collateral requirements	2,113	951	2,410	3,884	2,113	951	2,410	3,884
Outflows related to loss of funding on debt products	-	-	-	-	-	-	-	-
Credit and liquidity facilities	-	-	-	-	-	-	-	-
Other contractual funding obligations	14,274	9,745	141,792	-	14,274	9,745	141,792	-
Other contingent funding obligations	886,333	872,764	1,636,761	936,341	-	-	-	9,363
TOTAL CASH OUTFLOWS					12,394,319	16,756,585	16,997,000	19,238,309
CASH - INFLOWS								
Secured lending (e.g. reverse repos)	43,863,248	44,692,027	5,874,173	52,006,357	40,292	20,283	1,022,756	527
Inflows from fully performing exposures	931,205	1,899,237	2,238,532	4,836,785	931,205	1,870,394	2,052,493	4,811,907
Other cash inflows	79,917	211,708	653,229	398,075	43,088	42,566	130,880	80,267
(Difference between total weighted inflows and total weighted outflows arising from transactions in third countries where there are transfer restrictions or which are denominated in non-convertible currencies)					0	0	0	0
(Excess inflows from a related specialised credit institution)					0	0	0	0
TOTAL CASH INFLOWS	44,874,370	46,802,972	57,978,493	57,241,217	1,014,585	1,933,243	3,206,129	4,892,701
Fully exempt inflows	-	-	-	-	-	-	-	-
Inflows subject to 90% cap	-	-	-	-	-	-	-	-
Inflows subject to 75% cap	4,710,610	8,188,471	8,765,934	10,977,419	1,014,585	1,933,243	3,206,129	4,892,701
TOTAL ADJUSTED VALUE								
LIQUIDITY BUFFER					14,654,131	19,074,351	16,583,626	17,915,241
TOTAL NET CASH OUTFLOWS					11,379,734	14,823,343	13,790,871	14,345,607
LIQUIDITY COVERAGE RATIO					128.77%	128.68%	120.25%	124.88%

Table 63: LCR, CH

(in 000s of €)	Total unweighted value (average)				Total weighted value (average)			
Quarter ending on	31-Dec-21	30-Sep-21	30-Jun-21	31-Mar-21	T	30-Sep-21	30-Jun-21	31-Mar-21
Number of data points used in the calculation of averages	3	3	3	3	3	3	3	3
HIGH-QUALITY LIQUID ASSETS								
Total high-quality liquid assets (HQLA)					15,235,190	13,838,003	14,502,665	13,900,645
CASH - OUTFLOWS								
Retail deposits and deposits from small business customers, of which:	-	-	-	-	-	-	-	-
Stable deposits	-	-	-	-	-	-	-	-
Less stable deposits	-	-	-	-	-	-	-	-
Unsecured wholesale funding	14,561,106	13,204,663	14,676,530	16,098,009	13,825,884	12,414,585	13,859,340	15,163,759
Operational deposits (all counterparties) and deposits in networks of cooperative banks	-	-	-	-	-	-	-	-
Non-operational deposits (all counterparties)	14,345,832	13,162,995	14,539,765	16,023,540	13,610,609	12,372,917	13,722,575	15,089,291
Unsecured debt	215,275	41,668	136,765	74,469	215,275	41,668	136,765	74,469
Secured wholesale funding					8,049	383	1,275	788
Additional requirements	110,760	110,609	110,537	150,212	110,760	110,609	110,537	137,852
Outflows related to derivative exposures and other collateral requirements	110,760	110,609	110,537	136,479	110,760	110,609	110,537	136,479
Outflows related to loss of funding on debt products	-	-	-	-	-	-	-	-
Credit and liquidity facilities	-	-	-	13,733	-	-	-	1,373
Other contractual funding obligations	99,494	98,278	104,511	117,781	85,589	70,172	72,592	71,342
Other contingent funding obligations	1,238,709	877,061	1,229,946	1,099,971	-	-	-	-
TOTAL CASH OUTFLOWS					14,030,281	12,595,748	14,043,744	15,373,741
CASH - INFLOWS								
Secured lending (e.g. reverse repos)	45,470,664	48,719,499	52,526,764	50,242,377	68,633	21,177	23,561	57,514
Inflows from fully performing exposures	1,188,625	1,274,380	1,619,723	3,826,882	1,184,826	1,265,453	1,607,292	3,817,782
Other cash inflows	243,581	132,508	250,410	167,052	98,198	51,892	75,537	52,440
(Difference between total weighted inflows and total					-	-	-	-
(Excess inflows from a related specialised credit institution)					-	-	-	-
TOTAL CASH INFLOWS	46,902,869	50,126,387	54,396,897	54,236,311	1,351,657	1,338,521	1,706,389	3,927,736
Fully exempt inflows	-	-	-	-	-	-	-	-
Inflows subject to 90% cap	-	-	-	-	-	-	-	-
Inflows subject to 75% cap	6,704,597	6,484,172	7,637,339	9,477,272	1,351,657	1,338,521	1,706,389	3,927,736
TOTAL ADJUSTED VALUE								
LIQUIDITY BUFFER					15,235,190	13,838,003	14,502,665	13,900,645
TOTAL NET CASH OUTFLOWS					12,678,624	11,257,227	12,337,354	11,446,005
LIQUIDITY COVERAGE RATIO					120%	123%	118%	121%

Table 64: LCR, CBL

(in 000s of €)	Total unweighted value (average)				Total weighted value (average)			
Quarter ending on (DD Month YYY)	T	T-1	T-2	T-3	T	T-1	T-2	T-3
Number of data points used in the calculation of averages	3	3	3	3	3	3	3	3
HIGH-QUALITY LIQUID ASSETS								
Total high-quality liquid assets (HQLA)					1,685,177	2,147,457	2,139,510	2,636,692
CASH - OUTFLOWS								
Retail deposits and deposits from small business customers, of which:	-	2	-	-	-	-	-	-
Stable deposits	-	-	-	-	-	-	-	-
Less stable deposits	-	-	-	-	-	-	-	-
Unsecured wholesale funding	1,338,865	1,789,758	1,705,386	1,276,237	1,335,234	1,751,178	1,693,289	1,272,704
Operational deposits (all counterparties) and deposits in networks of cooperative banks	-	-	-	-	-	-	-	-
Non-operational deposits (all counterparties)	1,338,865	1,789,758	1,705,386	1,276,237	1,335,234	1,751,178	1,693,289	1,272,704
Unsecured debt	-	-	-	-	-	-	-	-
Secured wholesale funding					-	-	-	-
Additional requirements	172	85	-	-	172	85	-	-
Outflows related to derivative exposures and other collateral requirements	172	85	-	-	172	85	-	-
Outflows related to loss of funding on debt products	-	-	-	-	-	-	-	-
Credit and liquidity facilities	-	-	-	-	-	-	-	-
Other contractual funding obligations	14,274	9,745	141,792	60,482	14,274	9,745	141,792	60,482
Other contingent funding obligations	-	-	-	-	-	-	-	-
TOTAL CASH OUTFLOWS					1,349,679	1,761,007	1,835,082	1,333,186
CASH - INFLOWS								
Secured lending (e.g. reverse repos)	132,439	240,629	653,517		20	20	50,389	
Inflows from fully performing exposures	253,811	195,965	177,452	153,064	253,811	191,107	177,403	152,467
Other cash inflows	3,341	3,389	6,708	3,011	668	684	1,342	602
(Difference between total weighted inflows and total weighted outflows arising from transactions in third					-	-	-	-
(Excess inflows from a related specialised credit institution)					-	-	-	-
TOTAL CASH INFLOWS	389,591	439,983	837,678	156,075	254,499	191,811	229,134	153,069
Fully exempt inflows	-	-	-	-	-	-	-	-
Inflows subject to 90% cap	-	-	-	-	-	-	-	-
Inflows subject to 75% cap	389,591	439,983	837,678	156,075	254,499	191,811	229,134	153,069
TOTAL ADJUSTED VALUE								
LIQUIDITY BUFFER					1,685,177	2,147,457	2,139,510	2,636,692
TOTAL NET CASH OUTFLOWS					1,095,180	1,569,196	1,605,948	1,180,117
LIQUIDITY COVERAGE RATIO					153.87%	136.85%	133.22%	223.43%

Table 65: LCR, CBF

11. Market Risk

11.1. Strategy and process

The risk strategy and risk management process for market risk follows the overall risk management process as presented in 4.5 Risk Management Process. The described five steps of the risk management process is therefore applicable for market risk as well.

As national and international central securities depository Clearstream follows a restrictive investment policy. Clearstream is not involved in proprietary trading activities and does not maintain a trading book. Thus, Clearstream's investment activities, i.e., the placement of clearing members' cash collateral and the investment of Clearstream's own liquidity, are allocated to the non-trading book in accordance with the CRR.

As the leading principle, placements shall be collateralised to the extent possible. Direct security purchases shall be permitted if mismatch, interest rate risk and stop loss limits have been approved by the responsible Executive Board. Uninvested cash shall be deposited with central banks or be placed with several financial institutions to avoid concentration. Transactions in derivative instruments shall be allowed only for hedging purposes.

11.2. Structure and organisation

Clearstream Treasury activities are governed by Deutsche Börse *Group Treasury Policy* including limits and responsibilities. The processes are further detailed by Clearstream Banking *Liquidity Management Policy* and *Clearstream Banking Investment Policy*.

Treasury Front Office performs daily cash and risk management within predefined limits. This includes the application of mitigating measures to reduce market risk if necessary. Treasury Middle Office monitors compliance with the limits on a daily basis.

11.3. Assessment

The market risks are calculated using statistical simulations under Pillar II (Monte Carlo simulation), and the calculations of Interest Rate Risk in the Banking Book (IRRBB) are measured using sensitivity analysis. Clearstream monitors currency and interest rate exposures by means of reports generated by the general ledger accounting system and its customer cash ledgers or the Treasury ledger.

11.3.1. Interest Rate Risk

The interest rate risk at Clearstream stems primarily from asset liabilities mismatch. The non-exhaustive list of positions under scope contain customer cash and its placement either secured (reverse repo) or unsecured (nostros or overnight placements), loros, FX swaps, FX forwards, coupons of fixed bonds, pension assets and liabilities. These positions are quantified and monitored.

For the protection of Clearstream's budgeted net interest income, Treasury Front Office may hedge the budgeted net interest income for up to 50% of the customer credit balances for the upcoming budget period(s) through approved hedging instruments.

11.3.1.1. Interest Rate Risk Limits for CH, CBL, and CBF

Clearstream's assets and liabilities are managed to contain interest rate risk (IRR) within the limits established by the *Clearstream Banking Investment Policy*. In particular, due to the short-term nature of Clearstream's liabilities its asset side is structured accordingly. The close matching of investments and customer deposits ensures that Clearstream can control its IRR.

To manage and measure the IRR positions, an IRR limit shall be maintained. The IRR limit defines the maximum acceptable opportunity loss which can be caused by an adverse shift in the yield curve. IRR shall be calculated daily on the basis of the net present value of a predefined hypothetical yield change calculated for the remaining days to maturity.

Interest rate risk is calculated by Risk Management under Pillar II and checked against the allocated risk bearing capacity. The IRR calculation takes places on a monthly basis and it is reported to Executive Board quarterly.

	31 December 2021 (€' 000)				31 December 2020 (€' 000)			
	Mismatch/Portfolio		Interest Rate Risk (IRR)		Mismatch/Portfolio		Interest Rate Risk (IRR)	
	Exposure	Limit	Exposure	Limit	Exposure	Limit	Exposure	Limit
CBL Investment portfolio (Fixed and FRN)	1,487,016	2,500,000	67,456	72,000	1,139,487	2,500,000	42,117	72,000
CBF Investment portfolio (Fixed and FRN)	26,426	175,000	6,959	8,000	257,000	175,000	26,601	35,000
Clearstream Investment portfolio (Fixed and FRN)	1,513,442	2,675,000	74,416	80,000	882,487	2,675,000	68,717	107,000
CBL MM portfolio	344,861	5,800,000	560	18,000	1,546,585	5,800,000	13,982	18,000
CBF MM portfolio	0	300,000	0	1,000	13,150	300,000	3	1,000
Clearstream MM portfolio	344,861	6,100,000	560	19,000	1,559,735	6,100,000	13,968	34,000

Table 66: Interest rate risk limits

11.3.1.2. Stop-loss limits

To identify unfavourable changes in market conditions, stop-loss limits are established. The stop-loss limit defines the amount up to which the fair value of a portfolio can decline upon which a prompt review of the portfolio shall be conducted, and actions shall be implemented to reduce the interest rate risk sensitive position to cut further losses. The unrealised loss is calculated daily based on the yield difference between position yield and market yield over the remaining life to maturity.

11.3.2. Foreign exchange risk

Clearstream provides settlement and custody services in more than 40 different currencies. Amounts in currency transmitted to Clearstream by customers are registered on the respective customers' account(s) in that currency. The same is true for any withdrawal of funds by customers (for example, for settlement purposes or for custody payments).

Debits and credits of all customers in the same currency are held by the respective Clearstream legal entity at its cash correspondent banks (CCBs). Treasury analyses balances per currency as a basis for placings. Where there is a requirement to fund net currency, such takings are always made in that currency.

A limited amount of local currency is held on entity level as well as at CBL representative offices, to cover expenses. In addition, interest earned on currency placings above interest payable to customers on currency balances will cause (generally long) currency positions. Invoices in foreign currencies will cause short currency positions. These FX positions are monitored daily and covered in the foreign exchange market to remain within the approved limits set in the Clearstream Banking Treasury Investment Policy.

Additionally, Clearstream provides foreign exchange services to its customers. Foreign exchange risk resulting from the execution of customer foreign exchange requests is covered daily in the foreign exchange market to remain within the approved limits set in the Clearstream Banking Treasury Investment Policy.

11.3.2.1. Foreign exchange risk limits

The foreign exchange positions are monitored against approved limits on a daily basis. Reports to the Executive Board are submitted in case of limit violations.

11.3.3. Equity price risk

Equity price risk could only arise in the Defined Benefit Clearstream pension fund portfolio in Luxembourg and in the Deutsche Börse Group pension plan assets (Contractual Trust Arrangement) in Germany.

The pension fund in Germany is managed by an external asset manager and the pension fund in Luxembourg is managed by selected asset managers in the Luxembourg Treasury department both with an aligned and restricted investment policy. The investments are administrated and reported by the asset managers. If the performance of the portfolio reaches an upper or lower threshold, the asset managers of Luxembourg need to alert the board of directors and the asset manager of Germany needs to inform the CTA investment committee.

Equity price risk is calculated by Risk Management under Pillar II and checked against the allocated risk bearing capacity. The IRR calculation takes place monthly and it is reported to the Executive Board quarterly.

11.3.4. Stress testing

In order to achieve a better understanding of the largest risks, help gauge the potential vulnerability to extreme but plausible events and assess the impact on the capital, Clearstream Risk Management runs stress tests. The stress tests focus on extreme but plausible events based on historical simulations.

Additionally, in accordance with the BaFin circular 06/2019 (BA)[4], Treasury computes and reports to BaFin the level of interest rate risk in its banking book (IRRBB).

11.4. Mitigation and control

Compliance with IRR and stop-loss limits shall be controlled by Treasury Middle Office. Treasury Middle Office reports limit breaches to the board members responsible for Treasury and Risk. Interest sensitive and stop-loss relevant positions may be closed to mitigate increased risk.

Forward foreign exchange transactions may be undertaken in anticipation of expected future exposures in foreign currencies to hedge the expected foreign exchange exposure resulting from CBL's budgeted USD-based net interest income (NII). No such hedge was executed in 2021. If a foreign exchange hedge is undertaken, testing of the effectiveness of hedging transactions is performed on a regular basis in compliance with IFRS9.

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[4] BaFin Circular (BA) -Interest rate risk in the Banking book:
https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Rundschreiben/2019/rs_06-2019_ZAER.html

11.5. Monitoring and reporting

As described in 11.3.1.1., 11.3.2.2., Treasury Middle Office, independent of the Treasury Front Office department, is responsible for monitoring compliance with limits and issues monthly reports to the Executive Board and to Group Risk Management. Limit excesses are monitored daily and are reported immediately to the Head of Treasury, Group Risk Management, the Chief Compliance Officer of Clearstream, and Clearstream's Executive Board Members.

Source : IRRBB Stress Test Tool – Financial Risk

Interest Rate Risk – Banking Book (IRRBB) as per BaFin Rundschreiben 09/2018 (BA) as of		***31 Dec 2021***	
	Currency	Scenario result	Scenario as percentage of own funds
Base EVE (in EUR equivalent)	EUR	1,494,683,777	-
(a) Standard shock: +200bps shift up	EUR	-48,587,291	-2.71%
(b) Standard shock: -200bps shift down	EUR	23,716,262	1.32%
(c) Scenario 1: Parallel shift up	EUR	-48,587,291	-2.71%
(d) Scenario 2: Parallel shift down	EUR	23,716,262	1.32%
(e) Scenario 3: Steepened curve	EUR	9,737,961	0.54%
(f) Scenario 4: Flattened curve	EUR	-26,788,315	-1.50%
(g) Scenario 5: Short rate up	EUR	-44,381,841	-2.48%
(h) Scenario 6: Short rate down	EUR	20,638,120	1.15%
Eligible own funds (source: Regulatory Reporting - December 2021)	EUR	1,790,596,399	
(a) IRRBB standard shock (+200bps) as percentage of own funds		-2.71%	
(b) IRRBB standard shock (-200bps) as percentage of own funds		1.32%	
Early warning trigger		-15%	
Threshold set by Bafin and Deutsche Bundesbank		-20%	
Weighted Average Maturity in days			
Assets		283	
Liabilities		6,059	

Table 67: IRRBB, CH

Source : IRRBB Stress Test Tool - Financial Risk

Interest Rate Risk - Banking Book (IRRBB) as per circular CSSF 16/642 as of	*31 Dec 2021*		
	Currency	Scenario result	Scenario as percentage of own funds
Base EVE (in EUR equivalent)	EUR	1,029,820,179	-
(a) Standard shock: +200bps shift up	EUR	-64,245,873	-5.29%
(b) Standard shock: -200bps shift down	EUR	28,151,492	2.32%
(c) Scenario 1: Parallel shift up	EUR	-64,602,998	-5.32%
(d) Scenario 2: Parallel shift down	EUR	28,151,492	2.32%
(e) Scenario 3: Steepened curve	EUR	6,450,603	0.53%
(f) Scenario 4: Flattened curve	EUR	-26,000,733	-2.14%
(g) Scenario 5: Short rate up	EUR	-47,731,129	-3.93%
(h) Scenario 6: Short rate down	EUR	20,852,772	1.72%
Eligible own funds (source: Regulatory Reporting - December 2021)	EUR	1,214,206,197	
(a) IRRBB standard shock (+200bps) as percentage of own funds		-5.29%	
(b) IRRBB standard shock (-200bps) as percentage of own funds		2.32%	
Early warning trigger		-15%	
Threshold set by CSSF		-20%	
Weighted Average Maturity in days			
Assets		87	
Liabilities		31	

Table 68: IRRBB, CBL

Source : IRRBB Stress Test Tool - Financial Risk

Interest Rate Risk - Banking Book (IRRBB) as per BaFin Rundschreiben 09/2018 (BA) as of		*31 Dec 2021*	
	Currency	Scenario result	Scenario as percentage of own funds
Base EVE (in EUR equivalent)	EUR	456,741,602	-
(a) Standard shock: +200bps shift up	EUR	10,283,700	2.45%
(b) Standard shock: -200bps shift down	EUR	-6,703,929	-1.60%
(c) Scenario 1: Parallel shift up	EUR	10,283,700	2.45%
(d) Scenario 2: Parallel shift down	EUR	-6,703,929	-1.60%
(e) Scenario 3: Steepened curve	EUR	3,729,665	0.89%
(f) Scenario 4: Flattened curve	EUR	-4,775,868	-1.14%
(g) Scenario 5: Short rate up	EUR	1,309,955	0.31%
(h) Scenario 6: Short rate down	EUR	227,654	0.05%
Eligible own funds (source: Regulatory Reporting - December 2021)	EUR	420,137,539	
(a) IRRBB standard shock (+200bps) as percentage of own funds		2.45%	
(b) IRRBB standard shock (-200bps) as percentage of own funds		-1.60%	
Early warning trigger		-15%	
Threshold set by Bafin and Deutsche Bundesbank		-20%	
Weighted Average Maturity in days			
Assets		154	
Liabilities		280	

Table 69: IRRBB, CBF

Appendix A

	a	b	c	d	e	f	g	h	i	j	k	l	m
	General credit exposures		Relevant credit exposures – Market risk		Securitisation exposures Exposure value for non-trading book	Total exposure value	Own fund requirements				Risk-weighted exposure amounts	Own fund requirements weights (%)	Countercyclical buffer rate (%)
(in 000s of €)	Exposure value under the standardised approach	Exposure value under the IRB approach	Sum of long and short positions of trading book exposures for SA	Value of trading book exposures for internal models			Relevant credit risk exposures - Credit risk	Relevant credit exposures – Market risk	Relevant credit exposures – Securitisation positions in the non-trading book	Total			
Breakdown by country:													
AD	5	0	0	0	0	5	0	0	0	0	5	0.001%	0.00%
AE	574	0	0	0	0	574	46	0	0	46	574	0.082%	0.00%
AM	11	0	0	0	0	11	1	0	0	1	11	0.001%	0.00%
AR	26	0	0	0	0	26	3	0	0	3	38	0.005%	0.00%
AT	321	0	0	0	0	321	26	0	0	26	321	0.046%	0.00%
AU	60	0	0	0	0	60	5	0	0	5	60	0.009%	0.00%
BA	2	0	0	0	0	2	0	0	0	0	2	0.000%	0.00%
BE	8,610	0	0	0	0	8,610	689	0	0	689	8,610	1.225%	0.00%
BH	74	0	0	0	0	74	6	0	0	6	74	0.011%	0.00%
BM	144	0	0	0	0	144	12	0	0	12	144	0.021%	0.00%
BN	2	0	0	0	0	2	0	0	0	0	2	0.000%	0.00%
BR	1	0	0	0	0	1	0	0	0	0	1	0.000%	0.00%
BS	1	0	0	0	0	1	0	0	0	0	1	0.000%	0.00%
CA	108	0	0	0	0	108	9	0	0	9	108	0.015%	0.00%
CH	6,463	0	0	0	0	6,463	517	0	0	517	6,463	0.919%	0.00%
CL	43	0	0	0	0	43	3	0	0	3	43	0.006%	0.00%
CN	2	0	0	0	0	2	0	0	0	0	2	0.000%	0.00%
CO	43	0	0	0	0	43	3	0	0	3	43	0.006%	0.00%
CR	69	0	0	0	0	69	5	0	0	5	69	0.010%	0.00%
CW	29	0	0	0	0	29	2	0	0	2	29	0.004%	0.00%
CY	0	0	0	0	0	0	0	0	0	0	0	0.000%	0.00%
CZ	1,254	0	0	0	0	1,254	100	0	0	100	1,254	0.178%	0.50%
DE	516,565	0	0	0	0	516,565	37,325	0	0	37,325	466,563	66.365%	0.00%
DO	34	0	0	0	0	34	3	0	0	3	34	0.005%	0.00%
EC	8	0	0	0	0	8	1	0	0	1	8	0.001%	0.00%
EG	65	0	0	0	0	65	5	0	0	5	65	0.009%	0.00%
ES	64	0	0	0	0	64	5	0	0	5	64	0.009%	0.00%
FI	1	0	0	0	0	1	0	0	0	0	1	0.000%	0.00%
FR	52	0	0	0	0	52	4	0	0	4	52	0.007%	0.00%
GB	130,141	0	0	0	0	130,141	10,411	0	0	10,411	130,141	18.512%	0.00%
GE	237	0	0	0	0	237	19	0	0	19	237	0.034%	0.00%
GG	22	0	0	0	0	22	2	0	0	2	22	0.003%	0.00%
GR	15	0	0	0	0	15	1	0	0	1	15	0.002%	0.00%
GT	20	0	0	0	0	20	2	0	0	2	20	0.003%	0.00%
HK	23	0	0	0	0	23	2	0	0	2	23	0.003%	1.00%
HN	1	0	0	0	0	1	0	0	0	0	1	0.000%	0.00%
ID	17	0	0	0	0	17	1	0	0	1	17	0.002%	0.00%

IE	73	0	0	0	0	73	6	0	0	6	73	0.010%	0.00%
IL	0	0	0	0	0	0	0	0	0	0	0	0.000%	0.00%
IM	45	0	0	0	0	45	4	0	0	4	45	0.006%	0.00%
IN	1	0	0	0	0	1	0	0	0	0	1	0.000%	0.00%
IT	214	0	0	0	0	214	17	0	0	17	214	0.030%	0.00%
JE	74	0	0	0	0	74	6	0	0	6	74	0.011%	0.00%
JO	3	0	0	0	0	3	0	0	0	0	3	0.000%	0.00%
JP	153	0	0	0	0	153	12	0	0	12	153	0.022%	0.00%
KE	5	0	0	0	0	5	0	0	0	0	5	0.001%	0.00%
KR	72	0	0	0	0	72	6	0	0	6	72	0.010%	0.00%
KW	38	0	0	0	0	38	3	0	0	3	38	0.005%	0.00%
KY	11	0	0	0	0	11	1	0	0	1	11	0.002%	0.00%
KZ	1,169	0	0	0	0	1,169	94	0	0	94	1,169	0.166%	0.00%
LB	78	0	0	0	0	78	9	0	0	9	117	0.017%	0.00%
LI	0	0	0	0	0	0	0	0	0	0	0	0.000%	0.00%
LK	4	0	0	0	0	4	0	0	0	0	5	0.001%	0.00%
LU	71,480	0	0	0	0	71,480	5,718	0	0	5,718	71,480	10.167%	0.50%
LV	48	0	0	0	0	48	4	0	0	4	48	0.007%	0.00%
LY	14	0	0	0	0	14	1	0	0	1	14	0.002%	0.00%
MA	4	0	0	0	0	4	0	0	0	0	4	0.001%	0.00%
MK	7	0	0	0	0	7	1	0	0	1	7	0.001%	0.00%
MO	65	0	0	0	0	65	5	0	0	5	65	0.009%	0.00%
MT	8	0	0	0	0	8	1	0	0	1	8	0.001%	0.00%
MU	0	0	0	0	0	0	0	0	0	0	0	0.000%	0.00%
MX	6	0	0	0	0	6	0	0	0	0	6	0.001%	0.00%
MY	3,536	0	0	0	0	3,536	283	0	0	283	3,536	0.503%	0.00%
NL	135	0	0	0	0	135	11	0	0	11	135	0.019%	0.00%
NO	8	0	0	0	0	8	1	0	0	1	8	0.001%	1.00%
OM	41	0	0	0	0	41	3	0	0	3	41	0.006%	0.00%
PA	40	0	0	0	0	40	3	0	0	3	40	0.006%	0.00%
PE	23	0	0	0	0	23	2	0	0	2	23	0.003%	0.00%
PH	281	0	0	0	0	281	22	0	0	22	281	0.040%	0.00%
PL	37	0	0	0	0	37	3	0	0	3	37	0.005%	0.00%
QA	85	0	0	0	0	85	7	0	0	7	85	0.012%	0.00%
RO	5	0	0	0	0	5	0	0	0	0	5	0.001%	0.00%
RU	2,570	0	0	0	0	2,570	206	0	0	206	2,570	0.366%	0.00%
SA	1	0	0	0	0	1	0	0	0	0	1	0.000%	0.00%
SG	88	0	0	0	0	88	7	0	0	7	88	0.013%	0.00%
SM	25	0	0	0	0	25	2	0	0	2	25	0.004%	0.00%
SV	4	0	0	0	0	4	0	0	0	0	4	0.001%	0.00%
TH	2,129	0	0	0	0	2,129	170	0	0	170	2,129	0.303%	0.00%
TT	33	0	0	0	0	33	3	0	0	3	33	0.005%	0.00%
TW	1,400	0	0	0	0	1,400	112	0	0	112	1,400	0.199%	0.00%
UA	2	0	0	0	0	2	0	0	0	0	2	0.000%	0.00%
US	2,247	0	0	0	0	2,247	180	0	0	180	2,247	0.320%	0.00%
UY	158	0	0	0	0	158	13	0	0	13	158	0.022%	0.00%
VE	421	0	0	0	0	421	51	0	0	51	632	0.090%	0.00%
VN	2	0	0	0	0	2	0	0	0	0	2	0.000%	0.00%
Other countries	813	0	0	0	0	813	65	0	0	65	813	0.116%	0.00%
Total	**752,762**	**0**	**0**	**0**	**0**	**752,762**	**56,242**	**0**	**0**	**56,242**	**703,023**	**1**	

Countercyclical buffer, country breakdown, CH

(in 000s of €)	a
Total risk exposure amount	5,397,118
Institution specific countercyclical capital buffer rate	0.052%
Institution specific countercyclical capital buffer requirement	2,794

Institution-specific countercyclical buffer, CH

(in 000s of €)	General credit exposures		Relevant credit exposures – Market risk		Securitization exposures	Total exposure value	Own fund requirements				Risk-weighted exposure amounts	Own fund requirements weights (%)	Countercyclical buffer rate (%)
	Exposure value under the standardized approach	Exposure value under the IRB approach	Sum of long and short positions of trading book exposures for SA	Value of trading book exposures for internal models	Exposure value for non-trading book		Relevant credit risk exposures - Credit risk	Relevant credit exposures – Market risk	Relevant credit exposures – Securitization positions in the non-trading book	Total			
Breakdown by country:													
Andorra	4,933					4,933	395			395	4,933	0.00	-
United Arab Emirates	1,982,849	0	0	0	0	1,982,849	155,976	0	0	155,976	1,949,705	0.29	-
Armenia	10,514					10,514	841			841	10,514	0.00	-
Argentina	17,961	0	0	0	0	17,961	2,155	0	0	2,155	26,942	0.00	-
Austria	432,007	0	0	0	0	432,007	3,284	0	0	3,284	41,052	0.01	-
Australia	36,794,671	0	0	0	0	36,794,671	6,232,750	0	0	6,232,750	77,909,375	11.57	-
Bosnia and Herzegovina	2,079	0	0	0	0	2,079	166	0	0	166	2,079	0.00	-
Belgium	6,049,012	0	0	0	0	6,049,012	483,921	0	0	483,921	6,049,012	0.90	-
Bahrain	572,147	0	0	0	0	572,147	45,772	0	0	45,772	572,148	0.08	-
Bermuda	144,401	0	0	0	0	144,401	11,552	0	0	11,552	144,401	0.02	-
Brunei	2,370	0	0	0	0	2,370	190	0	0	190	2,370	0.00	-
Brazil	5,793	0	0	0	0	5,793	463	0	0	463	5,793	0.00	-
Bahamas	1,212	0	0	0	0	1,212	97	0	0	97	1,212	0.00	-
Canada	901,285	0	0	0	0	901,285	77,107	0	0	77,107	963,835	0.14	-
Switzerland	56,629,822	0	0	0	0	56,629,822	4,530,386	0	0	4,530,386	56,629,822	8.41	-
Chile	43,364	0	0	0	0	43,364	3,469	0	0	3,469	43,364	0.01	-
China	644	0	0	0	0	644	52	0	0	52	644	0.00	-
Colombia	43,347	0	0	0	0	43,347	3,468	0	0	3,468	43,348	0.01	-
Costa Rica	68,716	0	0	0	0	68,716	5,497	0	0	5,497	68,716	0.01	-
Curaçao	29,382	0	0	0	0	29,382	2,351	0	0	2,351	29,382	0.00	-
Cyprus	196,535	0	0	0	0	196,535	15,723	0	0	15,723	196,535	0.03	-
Czech Republic	1,407,914	0	0	0	0	1,407,914	112,633	0	0	112,633	1,407,914	0.21	0.50
Germany	45,590,658	0	0	0	0	45,590,658	3,351,209	0	0	3,351,209	41,890,108	6.22	-
Denmark	0	0	0	0	0	0	0	0	0	0	0	-	-
Dominican Republic	33,683	0	0	0	0	33,683	2,695	0	0	2,695	33,683	0.01	-
Ecuador	16,515	0	0	0	0	16,515	1,321	0	0	1,321	16,515	0.00	-
Egypt	68,162	0	0	0	0	68,162	5,453	0	0	5,453	68,162	0.01	-
Spain	63,978	0	0	0	0	63,978	5,118	0	0	5,118	63,978	0.01	-
Finland	965	0	0	0	0	965	77	0	0	77	965	0.00	-
France	3,255,233	0	0	0	0	3,255,233	337,251	0	0	337,251	4,215,641	0.63	-
United Kingdom	320,444,221	0	0	0	0	320,444,221	26,005,733	0	0	26,005,733	325,071,661	48.26	-
Georgia	236,661	0	0	0	0	236,661	18,933	0	0	18,933	236,661	0.04	-
Guernsey	22,560	0	0	0	0	22,560	1,843	0	0	1,843	23,039	0.00	-
Gibraltar	2,515	0	0	0	0	2,515	201	0	0	201	2,515	0.00	-
Greece	13,974	0	0	0	0	13,974	1,118	0	0	1,118	13,974	0.00	-
Guatemala	20,282	0	0	0	0	20,282	1,623	0	0	1,623	20,282	0.00	-
Hong Kong	489,498	0	0	0	0	489,498	39,169	0	0	39,169	489,610	0.07	1.00
Indonesia	1,557,208	0	0	0	0	1,557,208	124,577	0	0	124,577	1,557,208	0.23	-
Ireland	1,764,465	0	0	0	0	1,764,465	152,680	0	0	152,680	1,908,501	0.28	-
Israel	50	0	0	0	0	50	4	0	0	4	50	0.00	-
Isle of Man	61,874	0	0	0	0	61,874	4,950	0	0	4,950	61,874	0.01	-
India	4,929	0	0	0	0	4,929	394	0	0	394	4,929	0.00	-
Italy	3,315,110	0	0	0	0	3,315,110	265,992	0	0	265,992	3,324,903	0.49	-
Jersey	114,190	0	0	0	0	114,190	9,707	0	0	9,707	121,340	0.02	-
Japan	5,410,693	0	0	0	0	5,410,693	432,855	0	0	432,855	5,410,693	0.80	-
Kenia	5,191	0	0	0	0	5,191	415	0	0	415	5,191	0.00	-
Korea, Republic of	2,128,969	0	0	0	0	2,128,969	172,622	0	0	172,622	2,157,770	0.32	-
Kuwait	37,118	0	0	0	0	37,118	2,969	0	0	2,969	37,118	0.01	-
Cayman Islands	1,051,458	0	0	0	0	1,051,458	84,117	0	0	84,117	1,051,458	0.16	-
Kazakhstan	1,146,971	0	0	0	0	1,146,971	91,758	0	0	91,758	1,146,971	0.17	-
Lebanon	78,155	0	0	0	0	78,155	9,379	0	0	9,379	117,232	0.02	-
Sri Lanka	3,678	0	0	0	0	3,678	441	0	0	441	5,517	0.00	-
Luxembourg	64,924,518	0	0	0	0	64,924,518	5,257,862	0	0	5,257,862	65,723,277	9.76	0.50
Latvia	48,049	0	0	0	0	48,049	3,844	0	0	3,844	48,049	0.01	-

Libya	13,702	0	0	0	0	13,702	1,096	0	0	1,096	13,702	0.00	-
Morocco	4,031	0	0	0	0	4,031	322	0	0	322	4,031	0.00	-
Monaco	24,412	0	0	0	0	24,412	1,953	0	0	1,953	24,413	0.00	-
North Macedonia	7,108	0	0	0	0	7,108	569	0	0	569	7,108	0.00	-
Macau	65,194	0	0	0	0	65,194	5,216	0	0	5,216	65,194	0.01	-
Malta	7,614	0	0	0	0	7,614	609	0	0	609	7,614	0.00	-
Mauritius	115	0	0	0	0	115	9	0	0	9	115	0.00	-
Mexico	6,113	0	0	0	0	6,113	489	0	0	489	6,113	0.00	-
Malaysia	3,536,410	0	0	0	0	3,536,410	282,913	0	0	282,913	3,536,410	0.53	-
Netherlands	1,657,531	0	0	0	0	1,657,531	132,755	0	0	132,755	1,659,437	0.25	-
Norway	2,340,865	0	0	0	0	2,340,865	187,269	0	0	187,269	2,340,865	0.35	1.00
Oman	41,021	0	0	0	0	41,021	3,282	0	0	3,282	41,021	0.01	-
Panama	39,662	0	0	0	0	39,662	3,173	0	0	3,173	39,662	0.00	-
Peru	22,999	0	0	0	0	22,999	1,840	0	0	1,840	22,999	0.00	-
Philippines	539,155	0	0	0	0	539,155	43,132	0	0	43,132	539,155	-	-
Poland	37,274	0	0	0	0	37,274	2,982	0	0	2,982	37,274	0.00	-
Portugal	2,166,098	0	0	0	0	2,166,098	173,288	0	0	173,288	2,166,098	0.32	-
Puerto Rico	3,908	0	0	0	0	3,908	313	0	0	313	3,908	0.32	-
Qatar	95,758	0	0	0	0	95,758	7,661	0	0	7,661	95,758	-	-
Romania	5,390	0	0	0	0	5,390	431	0	0	431	5,390	0.00	-
Russian Federation	2,564,308	0	0	0	0	2,564,308	205,145	0	0	205,145	2,564,308	-	-
Saudi Arabia	1,172	0	0	0	0	1,172	94	0	0	94	1,172	-	-
Sweden	0	0	0	0	0	0	0	0	0	0	0	-	-
Singapore	842,340	0	0	0	0	842,340	67,387	0	0	67,387	842,340	-	-
Slovakia	0	0	0	0	0	0	0	0	0	0	0	-	1.00
San Marino	24,949	0	0	0	0	24,949	1,996	0	0	1,996	24,949	-	-
El Salvador	558,416	0	0	0	0	558,416	44,673	0	0	44,673	558,416	-	-
Thailand	2,118,138	0	0	0	0	2,118,138	169,451	0	0	169,451	2,118,138	-	-
Turkey	252,459	0	0	0	0	252,459	20,197	0	0	20,197	252,459	0.20	-
Trinidad and Tobago	32,643	0	0	0	0	32,643	2,611	0	0	2,611	32,643	0.00	-
Taiwan, Province of China	1,284,974	0	0	0	0	1,284,974	102,798	0	0	102,798	1,284,974	0.00	-
Ukraine	2,187	0	0	0	0	2,187	175	0	0	175	2,187	0.00	-
United States	8,966,622	0	0	0	0	8,966,622	698,708	0	0	698,708	8,733,853	1.30	-
Uruguay	157,790	0	0	0	0	157,790	12,623	0	0	12,623	157,790	0.00	-
Venezuela	596,493	0	0	0	0	596,493	71,579	0	0	71,579	894,739	0.11	-
Virgin Islands, British	453,928	0	0	0	0	453,928	36,391	0	0	36,391	454,886	0.00	-
Viet Nam	2,741	0	0	0	0	2,741	258	0	0	258	3,220	0.00	-
South Africa	2,742,600	0	0	0	0	2,742,600	219,408	0	0	219,408	2,742,600	0.25	-
OtherCountries	41,335,464	0	0	0	0	41,335,464	3,306,837	0	0	3,306,837	41,335,464	3.34	-
Total	**629,804,075**	**0**	**0**	**0**	**0**	**629,804,075**	**53,884,190**	**0**	**0**	**53,884,190**	**673,552,373**		

Countercyclical buffer, country breakdown, CBL

(in 000s of €)	a
Total risk exposure amount	4,037,268
Institution specific countercyclical capital buffer rate	0.05%
Institution specific countercyclical capital buffer requirement	2,182

Institution-specific countercyclical buffer, CBL

(in 000s of €)	General credit exposures		Relevant credit exposures – Market risk		Securitisation exposures Exposure value for non-trading book	Total exposure value	Own fund requirements				Risk-weighted exposure amounts	Own fund requirements weights (%)	Countercyclical buffer rate (%)
	Exposure value under the standardised approach	Exposure value under the IRB approach	Sum of long and short positions of trading book exposures for SA	Value of trading book exposures for internal models			Relevant credit risk exposures - Credit risk	Relevant credit exposures – Market risk	Relevant credit exposures – Securitisation positions in the non-trading book	Total			
Breakdown by country:													
AT	280	0	0	0	0	280	22	0	0	22	280	1.739%	0.00%
BE	6,621	0	0	0	0	6,621	530	0	0	530	6,621	41.191%	0.00%
CH	466	0	0	0	0	466	37	0	0	37	466	2.900%	0.00%
CN	1	0	0	0	0	1	0	0	0	0	1	0.007%	0.00%
CY	0	0	0	0	0	0	0	0	0	0	0	0.003%	0.00%
CZ	993	0	0	0	0	993	79	0	0	79	993	6.177%	0.50%
DE	3,317	0	0	0	0	3,317	265	0	0	265	3,317	20.635%	0.00%
ES	1	0	0	0	0	1	0	0	0	0	1	0.004%	0.00%
FR	6	0	0	0	0	6	1	0	0	1	6	0.040%	0.00%
GB	522	0	0	0	0	522	42	0	0	42	522	3.250%	0.00%
GR	1	0	0	0	0	1	0	0	0	0	1	0.004%	0.00%
IE	176	0	0	0	0	176	14	0	0	14	176	1.097%	0.00%
IT	182	0	0	0	0	182	15	0	0	15	182	1.130%	0.00%
JP	1	0	0	0	0	1	0	0	0	0	1	0.009%	0.00%
KZ	22	0	0	0	0	22	2	0	0	2	22	0.140%	0.00%
LI	0	0	0	0	0	0	0	0	0	0	0	0.000%	0.00%
LU	3,436	0	0	0	0	3,436	275	0	0	275	3,436	21.377%	0.50%
LV	0	0	0	0	0	0	0	0	0	0	0	0.000%	0.00%
NL	0	0	0	0	0	0	0	0	0	0	0	0.001%	0.00%
US	24	0	0	0	0	24	2	0	0	2	24	0.152%	0.00%
Other countries	23	0	0	0	0	23	2	0	0	2	23	0.145%	0.00%
Total	**16,073**	**0**	**0**	**0**	**0**	**16,073**	**1,286**	**0**	**0**	**1,286**	**16,073**	**1**	

Countercyclical buffer, country breakdown, CBF

(in 000s of €)	a
Total risk exposure amount	1,563,296
Institution specific countercyclical capital buffer rate	0.138%
Institution specific countercyclical capital buffer requirement	2,154

Institution-specific countercyclical buffer, CBF

Appendix B

(in 000s of €)	Gross carrying amount/nominal amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions				Accumulated partial write-off	Collateral and financial guarantees received	
	Performing exposures			Non-performing exposures			Performing exposures – accumulated impairment and provisions			Non-performing exposures – accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions		On performing exposures	On non-performing exposures
		Of which stage 1	Of which stage 2		Of which stage 2	Of which stage 3		Of which stage 1	Of which stage 2				
Cash balances at central banks and other demand deposits	9,848,745	-	-	-	-	-	-	-	-	-	-	41,170	-
Loans and advances	5,051,656	-	-	-	-	-	-	-	-	-	-	204,660	-
Central banks	*8,312*	-	-	-	-	-	-	-	-	-	-	-	-
General governments	*4,567*	-	-	-	-	-	-	-	-	-	-	*0*	-
Credit institutions	*4,088,020*	-	-	-	-	-	-	-	-	-	-	-	-
Other financial corporations	*947,353*	-	-	-	-	-	-	-	-	-	-	*204,633*	-
Non-financial corporations	*3,403*	-	-	-	-	-	-	-	-	-	-	*27*	-
Of which SMEs	*0*	-	-	-	-	-	-	-	-	-	-	-	-
Households	*1*	-	-	-	-	-	-	-	-	-	-	-	-
Debt securities	1,897,295	-	-	-	-	-	-	-	-	-	-	-	-
Central banks	-	-	-	-	-	-	-	-	-	-	-	-	-
General governments	*910,072*	-	-	-	-	-	-	-	-	-	-	-	-
Credit institutions	*778,273*	-	-	-	-	-	-	-	-	-	-	-	-
Other financial corporations	*208,949*	-	-	-	-	-	-	-	-	-	-	-	-
Non-financial corporations	-	-	-	-	-	-	-	-	-	-	-	-	-
Off-balance-sheet exposures	*885,672*	-	-	-	-	-	-	-	-	-		-	-
Central banks	-	-	-	-	-	-	-	-	-	-		-	-
General governments	-	-	-	-	-	-	-	-	-	-		-	-
Credit institutions	-	-	-	-	-	-	-	-	-	-		-	-
Other financial corporations	-	-	-	-	-	-	-	-	-	-		-	-
Non-financial corporations	-	-	-	-	-	-	-	-	-	-		-	-
Households	-	-	-	-	-	-	-	-	-	-		-	-
Total	*17,683,368*	-	-	-	-	-	-	-	-	-	-	*245,830*	-

Performing and non-performing exposures, and related provisions, CH

(in 000s of €)	Gross carrying amount/nominal amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions						Accumulated partial write-off	Collateral and financial guarantees received	
	Performing exposures			Non-performing exposures			Performing exposures – accumulated impairment and provisions			Non-performing exposures – accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions				On performing exposures	On non-performing exposures
		Of which stage 1	Of which stage 2		Of which stage 2	Of which stage 3		Of which stage 1	Of which stage 2		Of which stage 2	Of which stage 3			
Cash balances at central banks and other demand deposits	8,187,151	8,187,150	-	-	-	-	-	-	-	-	-	-		-	-
Loans and advances	4,647,973	4,647,973	-	1,391	-	-	(1)	(1)	-	(662)	-	-		4,257,248	-
Central banks	5,915	5,915	-	-	-	-	-	-	-	-	-	-		-	-
General governments	3,223	3,223	-	-	-	-	-	-	-	-	-	-		-	-
Credit institutions	3,864,308	3,864,308	-	842	-	-	(0)	(0)	-	(231)	-	-		3,785,281	-
Other financial corporations	761,768	761,768	-	342	-	-	(0)	(0)	-	(274)	-	-		471,967	-
Non-financial corporations	12,759	12,759	-	207	-	-	(0)	(0)	-	(156)	-	-		-	-
Of which SMEs	-	-	-	-	-	-	-	-	-	-	-	-		-	-
Households	-	-	-	-	-	-	-	-	-	-	-	-		-	-
Debt securities	1,516,006	1,516,006	-	-	-	-	(237)	(237)	-	-	-	-		-	-
Central banks	-	-	-	-	-	-	-	-	-	-	-	-		-	-
General governments	623,768	623,768	-	-	-	-	(237)	(237)	-	-	-	-		-	-
Credit institutions	892,238	892,238	-	-	-	-	-	-	-	-	-	-		-	-
Other financial corporations	-	-	-	-	-	-	-	-	-	-	-	-		-	-
Non-financial corporations	-	-	-	-	-	-	-	-	-	-	-	-		-	-
Off-balance-sheet exposures	*886,325*	*886,325*	-	-	-	-	-	-	-	-	-	-		-	-
Central banks															
General governments															
Credit institutions															
Other financial corporations															
Non-financial corporations															
Households															
Total	*15,237,455*	*15,237,454*	-	*1,391*	-	-	*(239)*	*(239)*	-	*(662)*	-	-	-	*4,257,248*	-

Performing and non-performing exposures, and related provisions, CBL

(in 000s of €)	Gross carrying amount/nominal amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions				Accumulated partial write-off	Collateral and financial guarantees received	
	Performing exposures			Non-performing exposures			Performing exposures – accumulated impairment and provisions			Non-performing exposures – accumulated impairment, accumulated negative changes in fair value due to credit risk		On performing exposures	On non-performing exposures
		Of which stage 1	Of which stage 2		Of which stage 2	Of which stage 3		Of which stage 1	Of which stage 2				
Cash balances at central banks and other demand deposits	1,803,045	-	-	-	-	-	-	-	-	-		-	-
Loans and advances	202,927	-	-	-	-	-	-	-	-	-		-	-
Central banks	*3,374*	-	-	-	-	-	-	-	-	-		-	-
General governments	*1,547*	-	-	-	-	-	-	-	-	-		-	-
Credit institutions	*186,710*	-	-	-	-	-	-	-	-	-		-	-
Other financial corporations	*5,292*	-	-	-	-	-	-	-	-	-		-	-
Non-financial corporations	*6,003*	-	-	-	-	-	-	-	-	-		-	-
Of which SMEs													
Households	-	-	-	-	-	-	-	-	-	-			
Debt securities	389,683	-	-	-	-	-	-	-	-	-		-	
Central banks	-	-	-	-	-	-	-	-	-	-		-	-
General governments	*251,265*	-	-	-	-	-	-	-	-	-		-	-
Credit institutions	*87,883*	-	-	-	-	-	-	-	-	-		-	-
Other financial corporations	*50,535*	-	-	-	-	-	-	-	-	-		-	-
Non-financial corporations	-	-	-	-	-	-	-	-	-	-		-	-
Off-balance-sheet exposures	-	-	-	-	-	-	-	-	-	-			
Central banks													
General governments													
Credit institutions													
Other financial corporations													
Non-financial corporations													
Households													
Total	*2,395,654*	-	-	-	-	-	-	-	-	-			

Performing and non-performing exposures, and related provisions, CBF

(in 000s of €)	Net exposure value					
	On demand	<= 1 year	> 1 year <= 5 years	> 5 years	No stated maturity	Total
Loans and advances	212,327	4,436,374	-	-	-	4,648,701
Debt securities		394,254	1,091,039	30,475	-	1,515,769
Total	212,327	4,830,627	1,091,039	30,475	-	6,164,469

Maturity of exposures, CBL

(in 000s of €)	Gross carrying amount
Initial stock of non-performing loans and advances	2,985
Inflows to non-performing portfolios	747
Outflows from non-performing portfolios	(2,341)
Outflows due to write-offs	(2,341)
Outflow due to other situations	-
Final stock of non-performing loans and advances	1,391

Changes in the stock of non-performing loans & advances

(in 000s of €)	Gross carrying amount/nominal amount											
	Performing exposures			Non-performing exposures								
		Not past due or past due ≤ 30 days	Past due > 30 days ≤ 90 days		Unlikely to pay that are not past due or are past due ≤ 90 days	Past due > 90 days ≤ 180 days	Past due > 180 days ≤ 1 year	Past due > 1 year ≤ 2 years	Past due > 2 years ≤ 5 years	Past due > 5 years ≤ 7 years	Past due > 7 years	Of which defaulted
Cash balances at central banks and other demand deposits	9,848,745	9,848,745	-	-	-	-	-	-	-	-	-	-
Loans and advances	5,051,656	5,051,656	-	-	-	-	-	-	-	-	-	-
Central banks	8,312	8,312	-	-	-	-	-	-	-	-	-	-
General governments	4,567	4,567	-	-	-	-	-	-	-	-	-	-
Credit institutions	4,088,020	4,088,020	-	-	-	-	-	-	-	-	-	-
Other financial corporations	947,353	947,353	-	-	-	-	-	-	-	-	-	-
Non-financial corporations	3,403	3,403	-	-	-	-	-	-	-	-	-	-
Of which SMEs	-	-	-	-	-	-	-	-	-	-	-	-
Households	1	1	-	-	-	-	-	-	-	-	-	-
Debt securities	1,897,295	1,897,295	-	-	-	-	-	-	-	-	-	-
Central banks	-	-	-	-	-	-	-	-	-	-	-	-
General governments	910,072	910,072	-	-	-	-	-	-	-	-	-	-
Credit institutions	778,273	778,273	-	-	-	-	-	-	-	-	-	-
Other financial corporations	208,949	208,949	-	-	-	-	-	-	-	-	-	-
Non-financial corporations	-	-	-	-	-	-	-	-	-	-	-	-
Off-balance-sheet exposures	885,672	-	-	-	[redacted]							
Central banks												
General governments												
Credit institutions												
Other financial corporations												
Non-financial corporations												
Households												
Total	***17,683,368***	***16,797,696***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Credit quality of performing and non-performing exposures by past due days, CH

(in 000s of €)	Gross carrying amount/nominal amount											
	Performing exposures			Non-performing exposures								
		Not past due or past due ≤ 30 days	Past due > 30 days ≤ 90 days		Unlikely to pay that are not past due or are past due ≤ 90 days	Past due > 90 days ≤ 180 days	Past due > 180 days ≤ 1 year	Past due > 1 year ≤ 2 years	Past due > 2 years ≤ 5 years	Past due > 5 years ≤ 7 years	Past due > 7 years	Of which defaulted
Cash balances at central banks and other demand deposits	8,187,151	8,187,151	-	-	-	-	-	-	-	-	-	-
Loans and advances	4,647,973	4,647,782	192	1,391	-	177	492	233	336	93	60	-
Central banks	5,915	5,915	-	-	-	-	-	-	-	-	-	-
General governments	3,223	3,223	-	-	-	-	-	-	-	-	-	-
Credit institutions	3,864,308	3,864,208	100	842	-	152	461	158	53	17	1	-
Other financial corporations	761,768	761,732	36	342	-	10	12	71	236	13	0	-
Non-financial corporations	12,759	12,704	56	207	-	15	19	4	47	63	59	-
Of which SMEs	-	-	-	-	-	-	-	-	-	-	-	-
Households	-	-	-	-	-	-	-	-	-	-	-	-
Debt securities	1,516,006	1,516,006	-	-	-	-	-	-	-	-	-	-
Central banks	-	-	-	-	-	-	-	-	-	-	-	-
General governments	623,768	623,768	-	-	-	-	-	-	-	-	-	-
Credit institutions	892,238	892,238	-	-	-	-	-	-	-	-	-	-
Other financial corporations	-	-	-	-	-	-	-	-	-	-	-	-
Non-financial corporations	-	-	-	-	-	-	-	-	-	-	-	-
Off-balance-sheet exposures	886,325											-
Central banks												
General governments												
Credit institutions												
Other financial corporations												
Non-financial corporations												
Households												
Total	*15,237,455*	*14,350,938*	*192*	*1,391*	*-*	*177*	*492*	*233*	*336*	*93*	*60*	-

Credit quality of performing and non-performing exposures by past due days, CBL

(in 000s of €)	Gross carrying amount/nominal amount											
	Performing exposures			Non-performing exposures								
		Not past due or past due ≤ 30 days	Past due > 30 days ≤ 90 days		Unlikely to pay that are not past due or are past due ≤ 90 days	Past due > 90 days ≤ 180 days	Past due > 180 days ≤ 1 year	Past due > 1 year ≤ 2 years	Past due > 2 years ≤ 5 years	Past due > 5 years ≤ 7 years	Past due > 7 years	Of which defaulted
Cash balances at central banks and other demand deposits	1,803,045	1,803,045	-	-	-	-	-	-	-	-	-	-
Loans and advances	202,927	202,927	-	-	-	-	-	-	-	-	-	-
Central banks	3,374	3,374	-	-	-	-	-	-	-	-	-	-
General governments	1,547	1,547	-	-	-	-	-	-	-	-	-	-
Credit institutions	186,710	186,710	-	-	-	-	-	-	-	-	-	-
Other financial corporations	5,292	5,292	-	-	-	-	-	-	-	-	-	-
Non-financial corporations	6,003	6,003	-	-	-	-	-	-	-	-	-	-
Of which SMEs	-	-	-	-	-	-	-	-	-	-	-	-
Households	-	-	-	-	-	-	-	-	-	-	-	-
Debt securities	389,683	389,683	-	-	-	-	-	-	-	-	-	-
Central banks	-	-	-	-	-	-	-	-	-	-	-	-
General governments	251,265	251,265	-	-	-	-	-	-	-	-	-	-
Credit institutions	87,883	87,883	-	-	-	-	-	-	-	-	-	-
Other financial corporations	50,535	50,535	-	-	-	-	-	-	-	-	-	-
Non-financial corporations	-	-	-	-	-	-	-	-	-	-	-	-
Off-balance-sheet exposures	-	-	-	-								
Central banks												
General governments												
Credit institutions												
Other financial corporations												
Non-financial corporations												
Households												
Total	2,395,654	2,395,654	-	-	-	-	-	-	-	-	-	-

Credit quality of performing and non-performing exposures by past due days, CBF

Appendix C

(in 000s of €)	Gross carrying/Nominal amount	of which: non-performing	of which: defaulted	of which: subject to impairment	Accumulated impairment	Provisions on off-balance sheet commitments and financial	Accumulated negative changes in fair value due to credit risk on non-performing exposures
On balance sheet exposures							
AD	5	-	-	5			
AE	600	-	-	600			
AM	12	-	-	12			
AR	25	-	-	25			
AT	1,875	-	-	1,875			
AU	606,442	-	-	606,442			
BA	2	-	-	2			
BD	56	-	-	56			
BE	101,095	-	-	101,095			
BG	182	-	-	182			
BH	113	-	-	113			
BM	144	-	-	144			
BN	2	-	-	2			
BR	101	-	-	101			
BS	2	-	-	2			
CA	177,235	-	-	177,235			
CH	66,053	-	-	66,053			
CL	32	-	-	32			
CM	0	-	-	0			
CN	3,265	-	-	3,265			
CO	43	-	-	43			
CR	69	-	-	69			
CV	1	-	-	1			
CW	29	-	-	29			
CY	182	-	-	182			
CZ	1,636	-	-	1,636			
DE	1,368,336	-	-	1,368,336			
DK	344	-	-	344			
DO	34	-	-	34			
EC	8	-	-	8			
EE	3	-	-	3			
EG	57	-	-	57			
ES	1,357	-	-	1,357			
FI	163	-	-	163			
FJ	2	-	-	2			
FR	1,037,181	-	-	1,037,181			
GB	2,069,150	-	-	2,069,150			
GE	15	-	-	15			
GG	99	-	-	99			
GI	3	-	-	3			
GR	198	-	-	198			
GT	20	-	-	20			
HK	3,223	-	-	3,223			
HN	1	-	-	1			
HR	148	-	-	148			

HU	188	-	-	188			
ID	17	-	-	17			
IE	2,675	-	-	2,675			
IL	186	-	-	186			
IM	46	-	-	46			
IN	111	-	-	111			
IR	0	-	-	0			
IS	147	-	-	147			
IT	2,680	-	-	2,680			
JE	183	-	-	183			
JO	21	-	-	21			
JP	298	-	-	298			
KE	5	-	-	5			
KR	335	-	-	335			
KW	35	-	-	35			
KY	16	-	-	16			
KZ	55	-	-	55			
LA	1	-	-	1			
LB	78	-	-	78			
LI	174	-	-	174			
LK	4	-	-	4			
LT	1	-	-	1			
LU	315,855	-	-	315,855			
LV	89	-	-	89			
LY	37	-	-	37			
MA	4	-	-	4			
MC	72	-	-	72			
ME	1	-	-	1			
MK	7	-	-	7			
MN	1	-	-	1			
MO	232	-	-	232			
MR	0	-	-	0			
MT	148	-	-	148			
MU	0	-	-	0			
MV	4	-	-	4			
MX	77	-	-	77			
MY	67	-	-	67			
NL	1,655	-	-	1,655			
NO	484,190	-	-	484,190			
NZ	4	-	-	4			
OM	42	-	-	42			
PA	43	-	-	43			
PE	7	-	-	7			
PH	364	-	-	364			

PL	589	-	-	589			
PT	196	-	-	196			
QA	148	-	-	148			
RO	40	-	-	40			
RS	24	-	-	24			
RU	164	-	-	164			
SA	226	-	-	226			
SE	11	-	-	11			
SG	2,636	-	-	2,636			
SI	67	-	-	67			
SK	161	-	-	161			
SM	32	-	-	32			
SN	1	-	-	1			
SV	4	-	-	4			
TH	80	-	-	80			
TN	18	-	-	18			
TR	124	-	-	124			
TT	1	-	-	1			
TW	1,298	-	-	1,298			
UA	112	-	-	112			
US	11,380	-	-	11,380			
UY	232	-	-	232			
VA	78	-	-	78			
VE	204	-	-	204			
VN	10	-	-	10			
VU	2	-	-	2			
ZA	14	-	-	14			
Other countries	681,402	-	-	681,402			
Off balance sheet exposures							
AU	28						
DE	255,507						
ES	15,441						
FR	157,642						
GB	446,209						
IT	10,846						
Total	***7,834,623***			***6,948,951***			

Credit quality of loans and advances by geography, CH

(in 000s of €)	Gross carrying/nominal amount				Accumulated impairment	Provisions on off-balance-sheet commitments and financial guarantees given	Accumulated negative changes in fair value due to credit risk on non-performing exposures
		Of which non-performing		Of which subject to impairment			
			Of which defaulted				
On-balance-sheet exposures							
Andorra	*5*	-	-		-		-
United Arab Emirates	*2,152*	-	-		*(0)*		-
Armenia	*23*	-	-		-		-
Argentina	*4,703*	-	-		-		-
Austria	*1,381*	*0*	-		*(0)*		-
Australia	*607,423*	-	-		*(0)*		-
Bosnia and Herzegovina	*2*	-	-		-		-
Bangladesh	*56*	-	-		-		-
Belgium	*385,416*	*0*	-		*(0)*		-
Bulgaria	*423*	-	-		*(0)*		-
Bahrain	*132*	-	-		-		-
Bermuda	*144*	-	-		-		-
Brunei Darussalam	*2*	-	-		-		-
Brazil	*120*	-	-		*(0)*		-

Bahamas	2	-	-		-		-
Canada	180,703	9	-		(5)		-
Switzerland	143,604	1	-		(1)		-
Chile	43	-	-		-		-
Cameroon	0	-	-		-		-
China	3,680	-	-		-		-
Colombia	43	-	-		-		-
Costa Rica	69	-	-		(0)		-
Cape Verde	1	-	-		-		-
Curaçao	29	-	-		-		-
Cyprus	204	-	-		(0)		-
Czech Republic	5,372	-	-		(0)		-
Germany	817,731	21	-		(2)		-
Denmark	11,037	-	-		-		-
Dominican Republic	34	-	-		-		-
Algeria	50	-	-		-		-
Ecuador	17	-	-		-		-
Estonia	45	-	-		-		-
Egypt	68	-	-		-		-
Spain	2,425	-	-		(0)		-
Finland	127	-	-		-		-
Fiji	2	-	-		-		-
France	949,960	34	-		(210)		-
United Kingdom	2,100,404	357	-		(296)		-
Georgia	244	-	-		-		-
Guernsey	111	9	-		(8)		-
Gibraltar	3	-	-		-		-
Greece	1,377	0	-		(0)		-
Guatemala	20	-	-		-		-
Hong Kong	7,061	9	-		(8)		-
Croatia	2,978	-	-		-		-
Hungary	237	-	-		(0)		-
Indonesia	8,889	-	-		-		-

Ireland	*23,408*	*317*	-		*(32)*		-
Israel	*1,490*	-	-		-		-
Isle of Man	*63*	-	-		*(0)*		-
India	*111*	-	-		-		-
Iran, Islamic Republic of	*35*	-	-		-		-
Iceland	*33,017*	-	-		*(0)*		-
Italy	*2,989*	*52*	-		*(45)*		-
Jersey	*200*	*18*	-		*(15)*		-
Jordan	*21*	-	-		-		-
Japan	*19,399*	-	-		-		-
Kenya	*5*	-	-		-		-
Korea, Republic of	*369*	*1*	-		*(0)*		-
Kuwait	*39*	-	-		-		-
Cayman Islands	*91*	-	-		-		-
Kazakhstan	*1,154*	-	-		*(0)*		-
Lao People's Democratic Republic	*1*	-	-		-		-
Lebanon	*78*	*0*	-		*(0)*		-
Liechtenstein	*174*	-	-		-		-
Sri Lanka	*4*	-	-		-		-
Lithuania	*1*	-	-		-		-
Luxembourg	*7,710,649*	*359*	-		*(98)*		-
Latvia	*188*	-	-		-		-
Libya	*168*	-	-		-		-
Morocco	*111*	-	-		-		-
Monaco	*72*	-	-		-		-
Montenegro	*1*	-	-		-		-
Macedonia, the Former Yugoslav Republic of	*7*	-	-		-		-
Mongolia	*1*	-	-		-		-
Macao	*232*	-	-		-		-
Mauritania	*1*	-	-		-		-
Malta	*153*	-	-		-		-
Mauritius	*0*	-	-		-		-
Maldives	*4*	-	-		-		-

Mexico	87	-	-		-		-
Malaysia	3,571	-	-		(0)		-
Netherlands	824	13	-		(10)		-
Norway	484,310	0	-		(0)		-
New Zealand	1,042	-	-		-		-
Oman	42	-	-		(0)		-
Panama	43	-	-		-		-
Peru	23	-	-		-		-
Philippines	616	-	-		-		-
Poland	758	-	-		(0)		-
Puerto Rico	4	-	-		-		-
Portugal	292	-	-		-		-
Qatar	163	0	-		(0)		-
Romania	953	-	-		-		-
Serbia	27	-	-		-		
Russia	2,567	-	-		(0)		
Saudi Arabia	321	-	-		(0)		-
Sweden	908	-	-		(0)		-
Singapore	49,145	0	-		(0)		-
Slovenia	67	-	-		(0)		-
Slovakia	168	-	-		(0)		-
San Marino	32	-	-		(0)		-
Senegal	1	-	-		-		-
El Salvador	4	-	-		-		-
Thailand	2,119	0	-		(0)		-
Tunisia	18	-	-		-		-
Turkey	9,085	-	-		(0)		-
Trinidad and Tobago	33	-	-		-		-
Taiwan, Province of China	1,387	-	-		(0)		-
Ukraine	282	-	-		-		-
United States	269,966	21	-		(15)		-
Uruguay	241	-	-		(0)		-
Holy See (Vatican City State)	78	-	-		-		-
Venezuela, Bolivarian Republic of	673	140	-		(77)		-
Virgin Islands, British	18	18	-		(16)		-

Credit quality of loans and advances by geography, CBL

(in 000s of €)	Gross carrying/Nominal amount				Accumulated impairment	Provisions on off-balance sheet commitments and financial guarantees given	Accumulated negative changes in fair value due to credit risk on non-performing exposures	
		of which: non-performing		of which: subject to impairment				
			of which: defaulted					
On balance sheet exposures								
AT	604	-	-	604				
AU	0	-	-	0				
BE	1,773	-	-	1,773				
CA	0	-	-	0				
CH	1,362	-	-	1,362				
CN	1	-	-	1				
CY	0	-	-	0				
CZ	994	-	-	994				
DE	228,522	-	-	228,522				
DK	15	-	-	15				
ES	169	-	-	169				
FI	36	-	-	36				
FR	111,445	-	-	111,445				
GB	1,107	-	-	1,107				
GR	15	-	-	15				
IE	1,285	-	-	1,285				
IT	561	-	-	561				
JP	1	-	-	1				
KZ	22	-	-	22				
LI	0	-	-	0				
LU	144,261	-	-	144,261				
LV	0	-	-	0				
MT	1	-	-	1				
NL	891	-	-	891				
PT	2	-	-	2				
SE	5	-	-	5				
SK	1	-	-	1				
US	1,642	-	-	1,642				
Other countries	102,032	-	-	102,032				
Total	***596,747***	-	-	***596,747***	-	-	-	-

Credit quality of loans and advances by geography, CBF

Appendix D

(in 000s of €)	Gross carrying amount				Accumulated impairment	Accumulated negative changes in fair value due to credit risk on non-performing exposures
		Of which non-performing		Of which loans and advances subject to impairment		
			Of which defaulted			
Agriculture, forestry and fishing	-	-	-	-	-	-
Mining and quarrying	1	-	-	1	-	-
Manufacturing	268	-	-	268	-	-
Electricity, gas, steam and air conditioning supply	87	-	-	87	-	-
Water supply	0	-	-	0	-	-
Construction	-	-	-	-	-	-
Wholesale and retail trade	82	-	-	82	-	-
Transport and storage	79	-	-	79	-	-
Accommodation and food service activities	10	-	-	10	-	-
Information and communication	2,226	-	-	2,226	-	-
Financial and insurance actvities	-	-	-	-	-	-
Real estate activities	41	-	-	41	-	-
Professional, scientific and technical activities	503	-	-	503	-	-
Administrative and support service activities	76	-	-	76	-	-
Public administration and defense, compulsory social security	-	-	-	-	-	-
Education	7	-	-	7	-	-
Human health services and social work activities	5	-	-	5	-	-
Arts, entertainment and recreation	12	-	-	12	-	-
Other services	6	-	-	6	-	-
Total	3,403	-	-	3,403	-	-

Credit quality of loans and advances by industry, CH

(in 000s of €)	a	b	c	d	e	f
	Gross carrying amount				Accumulated impairment	Accumulated negative changes in fair value due to credit risk on non-performing exposures
		Of which non-performing		Of which loans and advances subject to impairment		
			Of which defaulted			
Agriculture, forestry and fishing	-	-	-	-	-	-
Mining and quarrying	0	-	-	0	-	-
Manufacturing	12	-	-	12	-	-
Electricity, gas, steam and air conditioning supply	6	-	-	6	-	-
Water supply	-	-	-	-	-	-
Construction	-	-	-	-	-	-
Wholesale and retail trade	69	-	-	69	-	-
Transport and storage	20	-	-	20	-	-
Accommodation and food service activities	10	-	-	10	-	-
Information and communication	11,271	95	-	11,271	(79)	-
Financial and insurance actvities	1,241	-	-	1,241	-	-
Real estate activities	-	-	-	-	-	-
Professional, scientific and technical activities	203	30	-	203	(7)	-
Administrative and support service activities	57	16	-	57	(12)	-
Public administration and defense, compulsory social security	-	-	-	-	-	-
Education	7	-	-	7	-	-
Human health services and social work activities	-	-	-	-	-	-
Arts, entertainment and recreation	1	-	-	1	-	-
Other services	69	66	-	69	(59)	-
Total	*12,967*	*207*	-	*12,967*	*(157)*	-

Credit quality of loans and advances by industry, CBL

(in 000s of €)	Gross carrying amount				Accumulated impairment	Accumulated negative changes in fair value due to credit risk on non-performing exposures
		Of which non-performing		Of which loans and advances subject to impairment		
			Of which defaulted			
Agriculture, forestry and fishing	-	-	-	-	-	-
Mining and quarrying	0	-	-	0	-	-
Manufacturing	255	-	-	255	-	-
Electricity, gas, steam and air conditioning supply	79	-	-	79	-	-
Water supply	0	-	-	0	-	-
Construction	-	-	-	-	-	-
Wholesale and retail trade	6	-	-	6	-	-
Transport and storage	59	-	-	59	-	-
Accommodation and food service activities	0	-	-	0	-	-
Information and communication	8,680	-	-	8,680	-	-
Financial and insurance actvities	-	-	-	-	-	-
Real estate activities	41	-	-	41	-	-
Professional, scientific and technical activities	208	-	-	208	-	-
Administrative and support service activities	18	-	-	18	-	-
Public administration and defense, compulsory social security	-	-	-	-	-	-
Education	0	-	-	0	-	-
Human health services and social work activities	5	-	-	5	-	-
Arts, entertainment and recreation	11	-	-	11	-	-
Other services	0	-	-	0	-	-
Total	**9,364**	**-**	**-**	**9,364**	**-**	**-**

Credit quality of loans and advances by industry, CBF

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Published by
Clearstream Holding AG

Address
Clearstream Holding AG.
60485 Frankfurt/Main
Germany

July 2022

Document number: 6475