Euroclear Holding SA/NV

Consolidated financial statements
at 31 December 2021

Contents

Directors' report

The directors of Euroclear Holding SA/NV (the ‘Company’) are pleased to present their report, together with the audited consolidated financial statements of the Company and its subsidiaries (the ‘group’), for the year ended 31 December 2021.

Group overview and principal activities

The Euroclear group is the world's leading provider of post-trade services. The group provides settlement, safekeeping and servicing of domestic and cross-border securities, with asset classes covered including bonds, equities and investment funds. The Euroclear group includes the Central Securities Depository (CSD) with a Banking Licence, Euroclear Bank, based in Brussels, as well as the domestic (CSDs) Euroclear Belgium, Euroclear Finland, Euroclear France, Euroclear Nederland, Euroclear Sweden and Euroclear UK & International. Euroclear Bank, as a single purpose bank, is the only credit institution in the Euroclear group. Euroclear SA/NV provides system development and support services to the other companies of the group.

Euroclear SA/NV acquired in September 2021 100% of the shares of MFEX group for a total price consideration of €513.2 million, including a capital contribution of €7.5 million.

Euroclear Holding SA/NV is the ultimate parent company of the Euroclear group. Based in Brussels, it owns, directly or indirectly, the entire issued share capital of these companies.

Euroclear SA/NV, headquartered in Brussels, operates three branches, in Amsterdam, London and Paris. The group’s domestic CSDs are headquartered in their local markets. Euroclear Bank, headquartered in Brussels, operates branches in Hong Kong, Krakow and Tokyo.

By the end of 2021, Euroclear Bank’s branch in Krakow, Euroclear Bank (Spółka Akcyjna) - Oddział w Polsce, had grown to 669 employees who serve Euroclear’s global client base. The Krakow branch provides a dual-office arrangement with Euroclear Bank’s existing operations in Belgium.

With 151 employees, the Hong Kong Branch of Euroclear Bank SA/NV is an important contributor to client servicing in Asia. Through the Hong Kong office, Euroclear Bank is able to provide clients with a global service offering, despite the time zone difference with its headquarters in Europe.

In 2021, the branch in Tokyo which supports Japan based users of its securities settlement system counted 17 employees.

Euroclear Bank issued various intra-group recovery capital instruments for €800 million in total. These instruments aimed at structuring a relevant loss absorption mechanism to restore the capital position of the Bank in recovery and resolution scenarios in accordance with the Banking Recovery and Resolution Directive applicable to the Company. These instruments were fully subscribed by Euroclear Investments SA. €300 million out of the total amount issued were recognised as Category 2 regulatory capital by the National Bank of Belgium.

Besides the above Long-Term Notes issued, Euroclear Bank launched in 2018 a €5 billion Euro Medium-Term Note (EMTN) and a €20 billion Certificate of Deposits (CD) multi-currency program to increase its Qualifying Liquidity Sources under the European Central Securities Depository Regulation. The CD multi-currency program addresses unforeseen liquidity shortfalls beyond extreme but plausible liquidity stress scenarios consistent with the recovery plan of the Bank.

Euroclear Bank had a total amount equivalent to €2.4 billion in issuance in euro (EUR) and United States dollar (USD) by the end of 2021 through its EMTN programme. The Bank also actively issued under the CD Program in 2021, mainly in USD and British pound sterling (GBP) but also in EUR for maturities from one week to one year with a total of €2.1 billion of CDs amount end 2021.

Strategy and Business Review

As a provider of financial market infrastructure, Euroclear is trusted to operate a secure, neutral platform where a wide network of the world’s largest financial firms and central banks hold and transact securities issued by companies and governments.
Euroclear provides financial market infrastructure services across asset classes via its international CSD (Euroclear Bank) and the group’s CSDs serving seven markets (Belgium, Finland, France, Ireland, the Netherlands, Sweden and the United Kingdom).

Together, these highly regulated CSDs provide solutions for domestic and global financial market participants to either issue or access securities issued by governments, supranationals, corporations and asset managers. In addition, the group facilitates financing in capital markets by reducing risk, increasing post-trade process efficiency, and optimising collateral mobility and access to liquidity.

Euroclear extended this presence in 2021 with the acquisition of MFEX, a leading European and global funds distribution platform.

The Euroclear network comprises 2,000 financial institutions which use its platform to access 50 different markets and settle transactions in 50 currencies. On their behalf, the group holds €37.6 trillion of assets under custody, and enables over 276 million transactions per year, worth an equivalent of €1 quadrillion (1,000,000,000,000,000) or approximately 12.5 times global GDP.

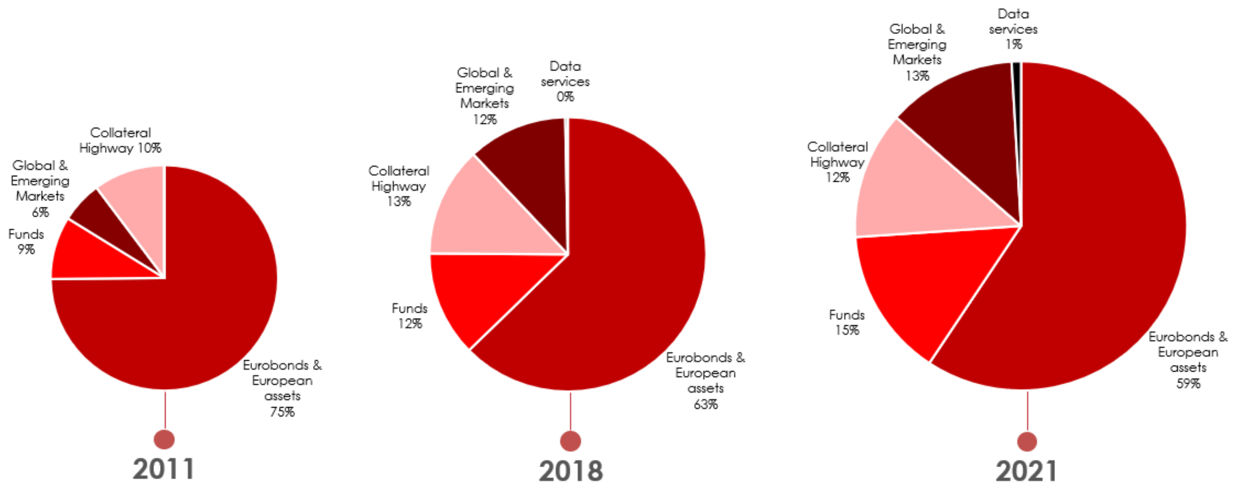
In 2021, Euroclear again demonstrated its operational reliability, despite disruption caused by the COVID-19 pandemic. Consequently, the group attained record operating metrics and a best-ever financial performance, reaching its key 2023 targets two years ahead of plan.

Underpinning this performance was accelerating progress on the group's three strategic objectives:

- **Strengthening our network** in Eurobonds, European securities and investment fund asset classes
- **Growing our network** by expanding internationally and by connecting global collateral pools
- **Reshaping our network** by exploring innovative value-add solutions that ensure long-term relevance to clients

Achieving its key multi-year performance targets early confirms Euroclear's strategic direction is sound and that the business is performing very well. The scale of this transformation is even more apparent when looking over a ten-year time horizon. In 2011, growth business lines contributed just 25% of income compared to 41% by 2021. Having a stronger, more diversified business positions Euroclear well for its future strategic evolutions.

Excludes MFEX



Management and the Board have reviewed to further evolve the strategy for the future and set ambitious new targets, with further information to be communicated in the second quarter of 2022.

Strengthening Euroclear's European network

Euroclear entities play an especially crucial role in the functioning of European capital markets. They hold approximately 55% of all European capital market securities and over 60% of Eurobonds, which is testament to Euroclear's attractiveness to its home region's issuers and its investors.

The group's European network, which comprises Eurobond and European assets, generates 59% of Euroclear's business income.

Resilient and scalable infrastructure

By investing consistently in the group's technology capabilities and infrastructure platforms, we have ensured that Euroclear's core European business remains both reliable and scalable to meet growing market demand.

Our resilience was demonstrated as the group met its systems uptime targets despite the unprecedented market volatility of the past two years, during which time transaction volumes have risen by 23%. In 2021, netted transaction volumes increased by 7% to 295 million.

Undoubtedly, such exceptional growth in volumes in financial markets has been influenced by uncertainty resulting from the COVID-19 pandemic as well as other macro-economic and geopolitical considerations. This trend, along with extensive issuance of securities by businesses and governments, has continued throughout 2021.

Euroclear has supported this broad-based volume increase while being in a long-lasting contingency situation, with almost all staff working fully from home since COVID-19 reached Europe in early 2020. As local restrictions are gradually lifted, we expect our people to be able to use our office facilities, in line with governmental guidance, and progressively shift towards hybrid working practices.

Further information is contained in the responsibility section.

Sustained investment to upgrade technology capabilities

Highest priority is given to ensuring operational risks remain strictly controlled, with continued investment in cyber-defence and business resilience to meet an ever-evolving risk environment.

This focus is reflected in the group's technology investments where Euroclear is upgrading core systems and infrastructure, as well as optimising its technology to future-proof the organisation and enhance its service offering to clients. By moving towards hyper-converged technology solutions, the group is seeking to structurally optimise the costs related to acquiring and running hardware.

Several initiatives are underway to explore IT process automation, digital customer interfaces. These include Application Programming Interfaces (APIs),via the EasyWay product, as well as hybrid cloud solutions. EasyWay, a web-based interface that helps clients to work efficiently and manage their operational risks, is now used by the majority of Euroclear Bank clients and achieves high levels of customer satisfaction and platform stability.

In parallel, initiatives are underway to embed further agile ways of working and optimise the IT operating model by leveraging group synergies/experience and global partner support. Such efforts continue to make Euroclear an attractive place to work for talented and skilled technology professionals.

Supporting European ambitions

Providing robust infrastructure and a global investor network, Euroclear is a natural partner for European authorities as they raise funds for the sustainable post-pandemic economic recovery of the region. For example, Euroclear supported the European Union's €750 billion NextGenerationEU issuance, launched to help build a greener, more digital Europe.

Euroclear is also well placed to contribute further to the European Union's longstanding ambition to develop integrated European capital markets. In 2021, Euroclear Bank signed an agreement with the European Central Bank (ECB) and the central banks of the euro (EUR) area to join the ECB's TARGET2-Securities (T2S) settlement system.

By connecting to this platform, Euroclear Bank will become the first ICSD to offer clients the choice between euro settlement in commercial bank money and/or euro settlement in central bank money.

Consequently, Euroclear Bank will provide clients with access to a single pool of liquidity and collateral, across multiple currencies and jurisdictions, enabling them to greatly optimise liquidity management and reduce their financing costs. Clients will also continue to benefit from the existing asset protection and high-quality collateral management and asset servicing.

Connecting Euroclear Bank to T2S builds on the group's existing contributions to European harmonisation. Euroclear's ESES CSDs (Euroclear Belgium, France and Nederland) have been connected to T2S since 2016.

ESES is proving to be an attractive place of issuance for domestic and pan-European issuers, with 2021 assets under custody reaching more than €10 trillion for the first time (up 14% year on year) and hosting a record 47 initial public offerings (IPOs) in 2021 (vs. 13 in 2020).

Euroclear Finland is scheduled to join T2S in 2023. In addition, the Swedish Riksbanken has taken the directional decision to migrate the SEK payments and securities settlements to the Eurosystem's T2/T2S.

To help chart the path forward, Euroclear Sweden sponsored a market wide study around this topic, which was conducted by Oliver Wyman. This resulted in an independent impetus to the market harmonisation and helped to assess the implications of what lies ahead for the entire Swedish market.

Championing efficiency and safety during regulatory transitions

Euroclear continues to actively embrace – and enable – efforts to make the financial industry safer and more efficient. Over the past decade, pan-European legislation - including MIFID II, EMIR, the CSD Regulation (CSDR), the Shareholder Rights Directive II (SRD II) and new banking regulations - have continued to transform the financial landscape with a primary focus on fostering capital market safety.

Euroclear has invested extensively in its own regulatory compliance as it adapts to these new requirements. Every group CSD is fully licenced under CSDR, making Euroclear the first major group of (I)CSDs to achieve such regulatory compliance.

We are now accompanying market participants in each of the group (I)CSDs through the adoption of the CSDR settlement discipline regime which entered into force on 1 February 2022.

Furthermore, as explained later in this report, Euroclear is supporting clients as they adapt to the new regulatory requirements in other areas of its business strategy such as the expansion of global collateral management services and by providing data insights that foster high standards of corporate governance.

Euroclear also supported clients through the changes resulting from the United Kingdom's decision to leave the European Union (EU).

In March 2021, Euroclear successfully migrated all Irish corporate securities to its international CSD, Euroclear Bank, which already acted as issuer CSD for Irish government securities. This migration, which provided long-term certainty to the €100 billion Irish securities market, was unique, and involved close market co-operation.

A new brand for Euroclear's UK CSD

Following this migration, the UK CSD changed its name to Euroclear UK & International (EUI). The new brand more accurately represents EUI's current business and services, as well as the growing importance of international securities to the UK financial markets.

The new brand represents the next phase of the UK business, given the new commercial strategy and the continuous diligent focus on stability and resilience. The commercial strategy has already delivered tangibles including developing a new service to provide continued access to euro Central Bank money and an upgrade to the collateral management functionality to improve market efficiencies.

Throughout 2021, EUI's focus has been on continuing to develop its operational resilience across three dimensions, including the delivery of post-incident remediation actions resulting from the September 2020 settlement interruption and associated internal and third-party reviews.

As required by the Bank of England's s191 direction in accordance with s166 of the 2000 Financial Services and Markets Act, EUI appointed a Skilled Person to access and report on its implementation of the recommendations from the independent review of the causes of the aforementioned incident.

On the regulatory agenda, EUI has progressed its plan to comply with the Operational Resilience Framework supervisory statement. The supervisory statement is designed to improve the operational robustness of firms and FMIs in order to protect the financial community and economy.

Growing a highly attractive funds business

As well as offering access to securities, the group also provides significant coverage of the funds industry as part of its diversified business model. In September 2021, this access was strengthened through the acquisition of MFEX, a leading funds distribution platform.

Today, the Euroclear's funds business generates 15% of the group's business income.

MFEX purchase for €505.7 million, is the most significant acquisition by the group in the past decade. By combining MFEX's well established fund distribution platforms with Euroclear's post-trade expertise, Euroclear is creating a new end-to-end funds offering for our clients, providing access to over 2,000 fund distributors and 2,500 fund companies. Fund assets under administration reached €3.1 trillion across the Euroclear group.

The integration of MFEX is progressing well. We expect to deliver revenue and cost synergies of at least €25 million after the integration has been completed, and the acquisition is expected to be accretive to group profits from 2023. The funds market is highly attractive, and we believe that the purchase of MFEX will deliver meaningful long-term value for our shareholders.

Meanwhile, Euroclear's existing funds business performed well in 2021 reflecting an attractive proposition to asset managers who wish to enable broad and efficient access to their issuances and specific post-trade services. Fund assets under custody were up 23% to €3.2 trillion, before inclusion of the MFEX business.

With FundsPlace services including automated order routing, settlement and asset servicing, clients benefit from reduced costs, risks and the complexity associated with processing fund orders.

Such an offer is attractive at a time when the funds industry is going through a period of significant evolution. Innovative business models that meet the needs of an increasingly global and technology-savvy customer base, as well as pressures for increased transparency and efficiency throughout the investment chain, are disrupting traditional practices.

Euroclear is well placed to support these evolving trends, including those occurring through the proliferation of Exchange-Traded Products (ETPs). Having already supported the rapid development of the international Exchange Traded Funds (ETF) model over the past years, this offer was broadened to include a wider array of ETPs such as Exchange-Traded Notes (ETNs) and Exchange-Traded Commodities (ETCs).

Growing Euroclear's network globally

We seek to grow Euroclear's network internationally and support the evolving requirements of clients as they look to benefit from the opportunities created by an inter-connected global economy.

To achieve this, Euroclear is focused on two opportunities:

- mobilising collateral across borders and time zones
- connecting international markets to Euroclear

Together, these business lines contributed around 25% of the group's revenues in 2021.

Providing global collateral management solutions

The Euroclear Collateral Highway supports the financial market's requirement for a neutral, interoperable utility to source, mobilise and segregate collateral. It provides a comprehensive solution for managing collateral, offering clients a complete view of exposures across the full spectrum of their asset classes and enabling collateral optimisation opportunities.

In addition to more traditional collateral management activities (typically repos, securities lending, derivatives and access to central bank liquidity), Euroclear's range of collateral management solutions includes dedicated services for corporate treasurers, and a specialised equities collateral management service.

By the end of 2021, the average daily collateralised outstanding on the Collateral Highway reached a record €1.9 trillion, up 25% compared to 2020. The Collateral Highway's growth benefited from our leading global role in providing triparty solutions as clients implement new uncleared margin rules for derivatives under Basel frameworks.

Such new global regulations, which require clients to post margin across transactions to reduce counterparty and systemic risk, are expected to drive ongoing demand for collateral management services across a broader spectrum of market participants.

In early 2021, the group took steps to extend the global Collateral Highway by signing a Memorandum of Understanding (MOU) with the TMX Group to build a new collateral management service for Canada's capital markets.

Euroclearability – expanding the global reach of the network

Across the globe, growth economies are seeking to attract foreign investors to help fund long-term development needs. At the same time, international investors want opportunities to diversify and increase their investments around the world, particularly during a period of historically low yields in Europe and North America. Euroclear's Global & Emerging Markets business grew assets under custody by 15% in 2021 to €1.5 trillion.

Euroclear works closely to support local economies that wish to connect their domestic capital markets to a broad global investor base, to maximise capital flows and guarantee stability to these financial markets. In the course of 2021, we signed an agreement to extend our global reach possibilities to Saudi Arabia in co-operation with the central depositary in the region.

Euroclear has continued to extend its network in Asia with the launch of new asset classes in China and Japan during 2020. These were supplemented by the launch of a new bond structure with Singapore, launched in the first quarter of 2021. The new innovative structure combines domestic issuance with global distribution channels and is beginning to gain traction amongst major issuers in the region.

Reshaping the network

Euroclear's third strategic theme is to explore opportunities through new technologies and business models to reshape its network in sustainable ways that support clients' evolving needs.

The areas of opportunity that Euroclear is exploring in support of this theme include:

- enhancing connections within the financial market ecosystem and strengthening shareholder governance
- harnessing insights through data
- exploring new technologies and opportunities to anticipate capital market needs
- expanding the role of infrastructure to foster growth and efficiency in the sustainable finance market

Insights that enhance governance-related issuer services

In recent years, there has also been an increasing demand for issuers to know and engage more closely with shareholders as part of their corporate governance practices. This trend is further strengthened by new regulatory imperatives around Know Your Customer (KYC) and the SRD II.

In 2021, Euroclear launched InvestorInsight, for issuers across the European Union. The service allows easy identification of their shareholders which creates opportunities for issuers to engage with their investor base, regardless of location and the intermediaries they use. InvestorInsight builds on more than 25 years of experience in offering shareholder identification services to the French market.

By understanding the composition of the shareholder base, firms can better target roadshow and analyst meetings as well and anticipate investor actions/needs at AGMs, etc.). Lastly, the service should enable issuing firms actionable insight into prospective investors. The depth and quality of the data provided by InvestorInsight has been praised by issuers and their agents, with a Beneficial Owner identification rate reaching more than 95%.

Another similar product, known as Vantage by Euroclear, has also been developed and launched specifically for Swedish issuers. Vantage is a state-of-the-art platform which supports issuers' investor relations professionals with data insights on their company's shareholder structure.

The product supplements the existing issuer service offering of Euroclear Sweden to more than 2,000 issuer clients. This offering includes a digital voting service for annual general meetings which has been highly appreciated since. Since the pandemic a large portion of such meetings were held virtually, or in hybrid format, a context in which Euroclear Sweden's digital voting service was particularly valued.

In Finland we have also extended the services provided to the issuer community with 84 companies choosing to use Euroclear Finland's advance voting service for their general meetings.

By continuing to extend the range of issuer services, the Euroclear CSDs become more attractive as a place to deposited securities in an increasingly competitive and harmonised pan-European issuance market. We are therefore equipping our EU-based domestic CSDs to fit the legal and tax requirements that allow Euroclear to welcome issuers from different regions.

Bringing data insights

With almost €38 trillion of assets under custody, Euroclear manages huge quantities of financial transactions data. Euroclear has extended its role in bringing greater transparency and liquidity in global capital markets by harnessing this untapped data. Launched in early 2021, LiquidityDrive captures this aggregated liquidity information to inform pre-trade decisions and enrich post-trade analysis.

For clients, this complements existing traditional sources of fixed income data, based on executed trades, empowering traders to use the centralised view on holding and concentration levels to make informed fixed income investment decisions. With historical data spanning back to 2018, the LiquidityDrive service spans over 450,000 Fixed Income ISINs including aggregated data on over 200,000 Eurobond issuances, as well as domestic European debt.

Piloting blockchain technology and digital currency settlement

In March 2020, Banque de France launched a wholesale Central Bank Digital Currency ("CBDC") experiment programme to test the integration of CBDC in innovative procedures for the exchange and settlement of tokenised financial assets between financial intermediaries. A consortium of banks led by Euroclear assessed the potential of post-trade capital market settlement operations in CBDC for French Sovereign Debt Securities (OAT).

Findings from the experiment confirmed that blockchain technology is suitable to manage post-trade market operations in CBDC, subject to additional testing with real-world volumes. It also highlighted that the full value of blockchain cannot be realised by simply replicating 'as is' the securities settlement operations processes. However, enabling direct access by end-investors on the blockchain platform via their custodians and/or removing the current post-trade processing breaks, would allow blockchain technology to improve post-trade operations. We are proud of our contribution to the overall CBDC experiment and the long-term blockchain journey of the capital markets.

Extending digital interfaces in the ecosystem

Euroclear continues to invest in connectivity and communications products that enhance our clients' experience and increase efficiency. EasyWay is Euroclear's web-based interface that offers clients a clear overview of settlement, collateral management and corporate actions activity. With accurate, real-time data at their fingertips, EasyWay helps users work efficiently and make fast, effective decisions to manage operational risks.

A further example is Taskize, the innovative messaging tool helps back-offices across the ecosystem to manage and resolve their post-trade activities more efficiently, particularly important considering CSDR settlement discipline. Client demand for the service has steadily increased, with 550 clients in more than 50 countries signing up to the service and reporting important levels of user satisfaction. The network continues to experience strong growth with over 100 clients signing up to Taskize in 2021.

Supporting growth of the sustainable finance market

Throughout 2021, Euroclear intensified investment to support the development of a sustainable finance market as one of the main pillars of our group ESG strategy.

To this end, a joint study with PwC explored the opportunity of using a financial market infrastructure approach to scale the sustainable finance market and we are now aiming, as a key part of our ESG strategy, to:

- support greater supply of ESG investment opportunities by reducing barriers to issuance;
- simplify and clarify the issuance process for a sustainable issues to trade in international capital markets successfully;
- foster trust through the processing of ESG information;
- improve flow of ESG information between market participants;
- mobilise greater ESG finance flows by expanding to more asset classes and participants;

In this context Euroclear was delighted to announce a strategic investment in Greenomy, a Belgium based sustainable fintech platform that aims to support issuers and investors for compliance with increasing ESG taxonomy standards.

Key business parameters

Net fee and commission income stem mainly from the provision of settlement, asset servicing and other services.

- Settlement related fee and commission income is a function of the number of international and domestic transactions settled in the Euroclear group and is impacted by trading activities and investor confidence in the financial markets.
- Asset servicing related fee and commission income is mainly a function of the value of securities held for Euroclear clients in its CSDs. The value of bonds is based on nominal value, whilst for equities, their market value is taken into consideration.
- Other services include global Collateral Highway services. Euroclear's Collateral Highway generates income in relation to the daily value of collateral provision outstanding, which is impacted by the activity in the repo market as well as by other factors such as the ECB's liquidity programmes, including long-term refinancing operations.

Interest income stems principally from Euroclear Bank's clients' cash balances invested partially in short-term deposits and in money market short-term securities and from the investment of Euroclear Bank's capital and its debt securities issued, together with retained earnings. Interest income is dependent on the evolution of short-term interest rates.

Administrative expenses include staff costs, depreciation and amortisation as well as other operating expenses. Administrative expenses are impacted to a certain level by business volume levels, regulatory, cyber security, business-driven investments and by inflation to a moderate extent.

Operating highlights

The Euroclear group delivered robust business performance in 2021 driven by increased activity levels despite higher regulatory, cyber security and COVID-19 crisis cost pressures.

The value of securities held for Euroclear clients at the end of 2021 reached €37.7 trillion, representing a 18.6% increase compared to €32.8 trillion in 2020, driven by customer expansion across almost all entities of the group.

Settlement turnover, or the value of securities transactions settled, increased by 10.6 % to €992 trillion in 2021. The number of netted transactions settled in the Euroclear group achieved 295 million in 2021, a 6.9% increase compared to 276 million in 2020 mainly due to settlement volatility following the COVID-19 crisis.

Euroclear’s global Collateral Highway secured a record yearly average of daily outstanding at the end of 2021 of €1.9 trillion, up by 25% compared to last year. The sustained volumes in the Euroclear's global collateral management infrastructure reflect strong and continuous needs from market participants driven by regulatory requirements.

Financial performance highlights

The consolidated results for the year are set out in the financial statements.

Business income increased by 16% year-on-year to €1,481 million as the group benefited from strong client traction and positive market conditions.

Net fee and commission income, which includes liquidity line fees, was €1,455.6 million in 2021, an increase of more than 16.3% compared to the previous year.

Net interest income reached €63 million, compared to €122 million last year. The decrease is almost fully explained by USD rate cuts decided by the Federal Reserve.

Meanwhile, other income reached €54 million in 2021, in line with 2020.

Operating income increased by 10% and reached €1,573 million in 2021.

Administrative expenses increased by 9% to €942 million in 2021, as continued investments in the business to modernise technology capabilities, along with product enhancements, regulatory-driven and cyber security initiatives slightly exceeded group control efforts on operating costs. Administrative expenses also include MFEX acquisitions costs for €17 million.

Operating profit before impairment and taxation reached €631 million in 2021, an increase of 11% compared to 2020.

Impairments were recorded in 2021 for €16 million, following the write down of a group participation (€13.7 million).

Effective tax rate amounted to 25%, compared to 24% in 2020.

Profit for the year ended 31 December 2021 was €463 million, 7% above 2020 profit of €432 million in 2020.

Balance sheet review

Total assets amounted to €29,400 million on 31 December 2021, up by €3,014 million compared to the previous year.

Loans and deposits totalled €17,700 million on 31 December 2021, compared to €17,116 million the year before.

Shareholders’ equity totalled €4,782 million in 2021, down €6 million from the prior year.

Net asset value per share (total shareholder’s equity dividend by the year-end number of shares) totalled €1,520 as of 31 December 2021, compared to €1,521 in 2020.

Key performance indicators

Business income margin (business income excluding administrative expenses compared to business income) increased from 33% in 2020 to 37% in 2020.

Operating margin (operating profit before impairment and taxation compared to operating income) remained stable at 40%.

Unit cost ratio (administrative expenses compared to the average value of securities held). The adjusted unit cost ratio reduced slightly from 0.26 basis points (bps) in 2020 to 0.25 bps in 2021, thanks to higher cost base being compensated by higher average value of securities held.

Return on equity (profit for the year compared to average shareholders’ equity) increased from 9.6% to 9.7% in 2021.

Net earnings per share (profit for the year divided by the weighted average number of shares) increased to €146.9 in 2021 compared to €137.2 in 2020, due to higher earnings.

Employee evolution

The average number of persons employed by the group during the year was 4,281 slightly higher compared to 4,066 in 2020.

Acquisition of own shares

During the financial year, neither the Company nor any directly controlled subsidiary or person acting in his/her own name but on behalf of the Company or a directly controlled subsidiary of the Company acquired any shares of the Company.

The number of shares is 3,147,463 at the end of the year 2021.

Post-balance sheet events

Euroclear is closely monitoring the invasion of Ukraine by Russia, and has taken the necessary measures to reflect the various sanctions that are issued by the different authorities. While not influencing the 2021 financial statements, we expect these sanctions to materially influence the size of our balance sheet going forward. We do not expect the sanctions to materially impact our financial performance. A consequence of the sanctions is that assets owned by sanctioned parties are blocked in the respective financial market infrastructures, including Euroclear. As the assets mature through their lifecycle, cashflows (e.g. coupons and redemptions) that are normally transferred to the underlying parties accumulate on our balance sheet for as long as the sanctions remain in place. As of end of March 2022, Euroclear Bank's balance sheet increased by €28 billion compared to last December, which creates associated capital requirements, costs and reinvestment challenges. In line with its role of financial market infrastructure (FMI), Euroclear is carefully managing the various aspects resulting from this situation in cooperation with the competent authorities.

The Board is not recommending to shareholders to approve the payment of an additional dividend for the year ending 31 December 2021 at the Annual General Meeting as part of the usual profit allocation process. Instead, the Board envisages approving the payment of such a dividend in the second half of 2022 under the form of an interim distribution, in accordance with the Belgian Companies Code and Euroclear Holding SA/NV's Articles of Association.

Information on likely future developments in the business of the Company or its subsidiaries

No circumstances occurred that might materially influence the development of the Company or its subsidiaries.

Research and development

Euroclear has continued investing in research and development. These investments are linked to the performance and resilience of its systems, as well as business developments, which are described in more detail in the 'Business review' section of this report. Euroclear also continued investing in market research in line with its mission to provide increasingly commoditised market infrastructure services.

Risk management in Euroclear

Enterprise Risk management framework and governance

Euroclear SA/NV ("Euroclear") operates within a highly regulated environment and is a systemically important financial market infrastructure. In this context, an integrated, compliant and effective Enterprise Risk Management framework ("ERM Framework") is in place, underpinned by a sound risk culture and a strong governance framework supporting decision making. This enables Euroclear to adequately identify, assess and manage its risks within the Board's risk appetite, whilst pursuing its strategy and corporate objectives and promoting resilience. The ERM Framework is subject to continuous improvement and its effectiveness is assessed periodically.

The ERM Framework also details the roles and responsibilities of the three lines of defence. The first line of defence is the risk owner and the primary source of (non-independent) assurance on the adequacy and effectiveness of the control environment. The second line of defence comprises Risk management and Compliance and Ethics (C&E) who provides independent oversight of risk-taking activities and compliance with applicable regulation respectively. Internal Audit sits in third line providing reasonable assurance and insight based on the highest level of independence on governance, risk management and internal controls.

Euroclear's risk appetite is set by the Board and represents the maximum amount of risk the Board is willing to accept to achieve its objectives, including preservation of the long term strength of the company and of the trust of all key stakeholders. The risk appetite is supported by metrics which are monitored on an ongoing basis.

Risks affecting the group

Euroclear group has a comprehensive Risk Library which includes all sources of risk which the group is exposed to. CSDs of the group are designated as critical national infrastructure in seven countries. Key risks to note are as follows:

- *Operational risk (the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events) in particular cyber, business disruption and execution, delivery and process management risks:*

The ERM Framework has a strong focus on managing operational risks, which are at the core of the Euroclear business. The limited amount of incidents and operational errors demonstrate the robustness of the control environment.

All locations have appropriate contingency arrangements for recovery from workplace disruptions; supplemented by three geographically separate data centres to sustain operations in the event of a local and regional-scale disaster. Euroclear continuously monitors and regularly tests its operational and management response and provides adequate training. To respond to evolving market and regulatory expectations a new Business Resilience division was created with the mandate to support the entities in conducting their resilience programs and crisis management activities.

Throughout 2021 and the continuing COVID-19 crisis, the group has displayed a resilient control environment. The group continues to monitor and reacts appropriately with a view of safeguarding employees, clients (and their assets) and maintaining service levels. As society embraces the 'new normal', a strategic vision based on a hybrid (work-home) activity-based working model is being worked out.

Euroclear has continued to invest significantly in its cyber security capabilities including improvements to the cyber security risk culture. Our investment also in the IT risk and control environment resulted in improved security arrangements in a constantly evolving cyber threat landscape. Further investment will continue in 2022 and beyond to further reduce the residual risks and ensure sustainability.

- *Financial risks*

CSDs of the group offer only securities settlement services in central bank money and do not provide credit to clients. They do not engage in operations with counterparties, except for the investment of their own funds. Financial Risks are borne by Euroclear Bank in its role as a settlement bank. Euroclear Bank operates a robust credit and liquidity risk framework which continuously seeks to reduce the intra-day uncommitted credit provided to its participants and to ensure smooth day-to-day operations and maintain a high level of preparedness to cope with unexpected and significant liquidity shocks. Euroclear Bank has further improved its resilience and reduced the credit and liquidity risks it faces over the last years, which is confirmed by its sustained CSDR licensing. Euroclear Bank has low residual market risk arising from the investment of Euroclear Bank's capital (interest rate risk) and future earnings (interest rate and foreign exchange rate risks). A hedging strategy is in place to mitigate Euroclear Bank's interest rate risk and foreign exchange risk.

- *Legal, Compliance, Conduct and Culture risks*

The group also faces conduct and culture and legal and compliance risks given its position as a leading financial market infrastructure operating in a highly regulated environment. These risks are managed through robust application of Euroclear's legal and compliance risk management framework.

- *Change and Project risks, Business and strategic risks*

The ability to anticipate and integrate change in an evolving market is essential for the longer-term strategy of the group. Therefore, Euroclear operates a project management framework and has a dedicated Group Project Management Office to increase the robustness of its project and programme management capabilities.

Compliance

The Compliance and Ethics function (C&E) is responsible for assisting the Boards and Senior Management of the Euroclear group in managing compliance risks effectively by monitoring compliance with applicable laws, regulations and regulatory standards, that fall within the scope of Euroclear companies' competent authorities, national data protection authorities, and other foreign authorities, including providing assurance on the first line's identification, assessment and management of compliance risks. C&E has developed the compliance risk management framework, which sets out clear roles and responsibilities across the three lines of defence for the effective management and independent oversight of compliance risks. It is designed to adequately identify, monitor, test and report to management of controls mitigating compliance risks. C&E also advises on remedial actions to identified compliance risk control gaps and monitors progress made in closing the gaps. This framework is supported by communication efforts (communication campaigns, e-learnings, and training sessions) that ensure sufficient awareness among staff members on compliance matters.

Supervision and regulation

Euroclear Holding SA/NV is a financial holding company established under the laws of Belgium and is the ultimate parent entity of the Euroclear group. The group is subject to consolidated supervision and oversight by the National Bank of Belgium. In addition, regulated entities of the group are supervised on a standalone basis by their national competent authorities.

Recovery plan

In line with the relevant regulatory rules and guidance, a Recovery, Restructuring and Wind-down (RRW) plan is in place for each of the Euroclear group CSDs and Euroclear Bank. Similarly, as the consolidated holding company and shared services entity of the CSDs and Euroclear Bank, Euroclear SA/NV also has in place a Recovery and Restructuring (RR) plan. This plan is reviewed and approved by the Board of Directors, upon recommendation of the Risk Committee on a yearly basis. The aim of the plan is to demonstrate Euroclear SA/NV's ability to recover from a series of extreme but plausible stresses that could threaten its financial viability, such that it can, to the extent possible, ensure the continuous provision of critical services to the CSDs. To this end, the Euroclear SA/NV RR plan identifies and analyses a number of recovery and restructuring options that could be employed in order to restore its capital base, liquidity position or profitability, over a short-to-medium timeframe.

Detailed information on the risks faced by Euroclear, as well as its risk management strategies, policies and processes can be found in Euroclear's yearly Pillar 3 report on www.euroclear.com as well as in Note IV to the consolidated financial statements.

Non-financial information

Euroclear Responsibility

At Euroclear, we have always taken our commitments to the environment and society seriously. We believe that a company is far more likely to succeed and deliver strong performance if it creates value for not just shareholders but for all stakeholders. We take the UN's Sustainable Development Goals as our guiding principles and report according to the Global Reporting Initiative (GRI) standards in our annual sustainability report.

The sustainability report will this year also include the new mandatory limited disclosures on Taxonomy (quantitative and qualitative) in compliance with Article 8 of the Taxonomy Regulation.

In 2021, we appointed our first Chief Sustainability Officer together with a dedicated team to coordinate and communicate our approach to ESG issues across the group. At the same time, and to deepen further our ESG maturity, we engaged PwC to carry out two studies – one analysed the role of an FMI in creating a more sustainable marketplace, and the other provided an in-depth gap analysis of our current ESG approach. As a result of this work we have identified five main ambitions for the coming years:

To facilitate and accelerate a sustainable financial system and become the issuer of a sustainability-linked bond in due course

In September 2021, together with PwC, we published a position paper on "A Cross Border FMI driven approach to Sustainable Finance". This report assessed how the trusted and central role of a global Financial Market Infrastructure (FMI) could address obstacles in the growth of the sustainable finance market globally, through greater transparency on securities and the ESG information, which now underpins the sustainable finance market. It sets out three areas where an FMI could help the delivery of this vision:

- Reducing barriers to Issuance; where FMIs can simplify and clarify the issuance process for successful sustainable issues to trade in international capital markets.

- Processing ESG information; where FMIs can improve the flow of ESG information between market participants, distribution and corporate actions processing.

- Expanding the sustainable Finance Market; where FMIs can mobilise greater sustainable finance flows by expanding the reach of the market to more asset classes and participants.

We are now working to accelerate greater sustainable finance flows through efficient (pre)issuance process, and are defining and delivering processes to allow investors and issuers to exchange ESG information efficiently and transparently across the group.

To build a climate resilient business and support climate resilient financial markets through the management of climate risk

We continuously strive to reduce our impact on the planet. We have been carbon neutral to PAS 2060 standards since 2012 and set our carbon emission reduction targets in accordance with Science-based Targets. In 2021, we adapted our Science-based Target to be in line with the new Paris Agreement of keeping global warming below 1.5 degrees. We have accordingly set ourselves the ambitious target of reducing our carbon emissions by 42% by 2024 based on our 2014 baseline and keep these targets under close review. In 2021, we reduced our carbon footprint by 47% based on a 2014 baseline. We will report on our 2021 carbon emissions in the 2021 sustainability report as this data is not currently available.

We continue to reduce our carbon emissions wherever possible and see a positive evolution since the introduction of our new car policy in Belgium, with the aim of creating a more sustainable fleet. Considering pending orders at the end of 2021, 78% are for electric or hybrid vehicles.

In 2022, we will finalise the path towards achieving net zero, while at the same time reviewing our Scope 3 emissions, especially focusing on our supply chain and reassessing how we manage climate risk more broadly.

To be an employer of choice by fostering a healthy, inclusive environment and attracting, developing and upskilling staff for the future needs of financial markets

With the COVID-19 pandemic still having a serious impact in all our locations, our main priority remains the well-being and safety of our staff, whilst ensuring business continuity. Throughout 2021 most of our people continued to work from home. We regularly took the temperature of staff engagement and motivation through 'How are you?' surveys and 'Your Voice'. The results of the last Your Voice survey is a score of 7.4 out of 10, which has remained stable across the last three surveys.

In 2021, we continued to build on our successful Diversity & Inclusion programme launching a dedicated training course with focus on inclusion for our leadership population. We focussed on Inclusion, with the main objective being to engage all colleagues in this journey through dialogue sessions, training and communication. In parallel, we continued to work on areas where we can make specific impact, for example gender balance, disability and people from diverse backgrounds.

Women represent 50% of the group, but they are not evenly represented in all levels and all divisions. The ultimate goal is to have a gender balanced population within all levels of our organisation. We aim, by the end of Q2 2022, to have at least 1/3 of both men and women at all levels and to have at least 25% of both men and women in executive committees.

We are now investigating ways in which we can gather data for diversity dimensions other than gender.

As we look towards returning to the office in 2022, we plan to encourage flexi work whenever possible, as part of our Flex-E programme. To support our employees during this prolonged period of homeworking, we have organised trainings on mental resilience, stress management and working from home. In addition, at the beginning of 2021, we launched our Employee Solidarity fund to financially support colleagues who find themselves in exceptional financial circumstances.

To demonstrate the impact of our support in local communities

Our Community stream focuses on four main pillars: alleviation of poverty, coaching and education, social and financial inclusion and the environment. With the launch of our new corporate volunteering programme in 2020, we had a record number of volunteers who have taken part in a range of activities over the year. In 2021, 850 volunteers took part in 30 activities which represents 3,600 hours dedicated to supporting our local communities. More details will be provided in our 2021 sustainability report.

We continue to support isolated rural communities in Uganda and in Asia together with our community partners, providing much needed Savings & Loans schemes and materials so that children can learn at home.

To ensure robust and transparent governance across the organisation and encourage good governance in our value chain

Euroclear SA/NV and its major subsidiaries are all subject to a variety of financial services regulations, most notable the CSDR and Banking Regulations which detail very specific governance requirements. We publish detailed governance charters which outline the main aspects of the Corporate Governance framework of the major entity in the group.

A major focus in 2021 centred on delivering continued business services to the highest levels of professionalism and ethics, thorough personal trust, accountability and empowerment. We launched the revised “Code of Ethics & Business Conduct: We live our values together” enshrining expected behaviours. This Code serves as a North Star for the organisation and is key in empowering staff to perform to their best ability, do the right thing at all times and speak up if they witness behaviour which goes against the Code’s principles.

In 2021, Euroclear’s staff awareness programme on compliance and ethics topics continued as usual. E-learning modules and certification exercises showcased a continued drive to create awareness around data usage under GDPR, market abuse, Speak up, anti-money laundering and how to manage Conflicts of Interest.

ESG in our supply chain

Euroclear manages the supply chain risks of its suppliers in order to contribute to financial market stability.

All critical suppliers are assessed annually, with respect to ESG and compliance (anti-money laundering, sanctions, conflicts of interest, bribery and corruption, human rights including modern slavery, personal data). Protocols are established and followed when issues are identified. In 2022, we will be investigating how we can further strengthen our supply chain assessment.
Please refer to our 2021 Sustainability report ‘Our Responsibility’, set out in accordance with the Global Reporting Initiative Standards, which will be published later in 2022 for more details on all these topics.

ESG Risk

For an overview of our approach to ESG risk, please refer to the Risk Management section (Note IV).

Corporate governance

Introduction

Euroclear believes that sound corporate governance is key for a trusted financial market infrastructure to protect the interests of its stakeholders. Euroclear has put in place governance procedures and practices throughout the group which promote accountability and transparency of decision-making and which seek to ensure that all stakeholder interests are duly considered and safeguarded. These procedures are underpinned by a strong focus on ethical behaviour and a positive working culture. Euroclear believes that these elements together enable the Company to make better business decisions that ensure continued success.

Governance structure of the Euroclear group

Euroclear Holding SA/NV is the ultimate holding company of the Euroclear group. Euroclear SA/NV remains the Belgian parent company of the central securities depositories of the Euroclear group. It also owns the group’s shared securities processing platforms and delivers support services to the other companies in the group. Euroclear SA/NV is a wholly-owned subsidiary of Euroclear Investments S.A., which itself is wholly owned by Euroclear Holding SA/NV through Euroclear AG. Euroclear Holding SA/NV is a financial holding company under the Belgian Banking Act.

Governance of the Euroclear group is divided between the Boards of Euroclear Holding SA/NV and Euroclear SA/NV. There is a clearly defined division of roles and responsibilities between the two Boards.

Euroclear Holding focuses on shareholders matters, determination of the group's main strategic objectives and monitoring of the performance of the group as a whole. The Board of Euroclear SA/NV is in charge of the oversight of the subsidiaries' performance, operational matters, systems and controls management, risk and compliance management, strategic plan determination and provision of services to the group companies.

Within this framework, each operating entity has created a Board which sets its own strategic and operational objectives, which must be consistent with those set by the parent company.

The Boards fulfil their leadership role by ensuring adequate meeting time is devoted to strategic, business, internal control and risk reviews. The Boards rely on the work and advice of their Committees to prepare discussions and decisions on several key topics. This structure allows detailed or complex matters to be afforded the adequate time and expert input.

Composition and activities of the Board and Board Committees of Euroclear Holding SA/NV in 2021

At the end of 2021, the Euroclear Holding Board was composed of 19 directors, nine of whom were senior executives proposed by firms that are shareholders. Mr. Harold Finders remained chairman ad interim and. Mr. Franco Passacantando remained deputy chairman ad interim. Both Mr Finders and Mr Passacantando are independent directors, as defined by Article 3, 83°, of the Belgian Banking Law. On 5 December 2021, the Board appointed Mr. Francesco Vanni d'Archirafi as Chairman of the Board. On the same date, Mr Harold Finders and Mr Franco Passacantando became deputy chairmen of the Board.

During 2021, in addition to dealing with financial and shareholder matters as detailed in its Terms of Reference, the Board of Euroclear Holding SA/NV finalised a thorough review of its governance and board composition. In July 2021, the Board completed this review and changed the composition of the Board to be identical to the composition of the Board of Euroclear SA/NV.

The directors of Euroclear Holding who have held office during 2021 to the date of this report are listed in the next section.

Board advisory committees

Audit & Compliance Committee (ACC)

The ACC comprises at least three non-executive directors of the Company and is an advisory committee of the Board established to assist the Board in fulfilling its financial reporting, audit, risk, and compliance and ethics oversight responsibilities.
In 2021, the ACC continued to monitor the financial, internal control, risk and compliance framework. In support of the Board, it recommended that the Board adopt several policies such as anti-money laundering and sanctions and a Compliance and Ethics Charter, and it also advised the Board on the internal audit plan and the compliance and ethics plan.

Nominations and Governance Committee (NGC)

The NGC comprises at least three non-executive directors of the Company. It advises the Board of Directors on all matters in relation to the nomination of Board members, Heads of Internal Control Functions, Board and Committee composition, as well as corporate governance matters. In 2021, the Committee continued to focus on the review of the corporate governance process, in collaboration with Euroclear SA/NV. In addition, it acted jointly with the Euroclear SA/NV Nominations and Governance Committee as Search Committee in charge of identifying and recommending a new Chairperson for both the Company and Euroclear SA/NV.

Remuneration Committee (RemCo)

The RemCo comprises at least three non-executive directors of the Company. It advises the Board of Directors on all matters in relation to the remuneration of Directors and Company managers. In 2021, the Committee reviewed and advised the Board on remuneration of Directors, Chairmen and Deputy Chairs to be approved in a next step by the Annual General Meeting of Shareholders.

Company Management

The Euroclear Holding SA/NV Board has delegated to a General Manager the responsibility for the management of the Company within the strategic framework defined by the Board. He is supported in this function by a second Effective Manager. Most support services have been outsourced to Euroclear SA/NV.

The Heads of Control functions (Internal Audit, Compliance, Risk Management) are, in line with regulatory requirements, senior managers with similar functions in Euroclear SA/NV and report on a regular basis to the AC.

Composition and activities of the Board and Board Committees of Euroclear SA/NV in 2021

At the end of 2021, the Euroclear SA/NV Board was composed of nineteen non-executive directors, nine of whom were independent within the meaning of Article 7:87, § 1 of the Belgian Code of Companies and Associations, as well as of three executive directors. Mr. Franco Passacantando remained Chair ad interim until the appointment of Mr. Francesco Vanni d'Archirafi as Chairman of the Board of Euroclear SA/NV.

The directors of Euroclear SA/NV who have held office during 2021 to the date of this report are listed in the next section.

During 2021, the Euroclear SA/NV Board finalised the governance reform initiated in 2020 together with the Euroclear Holding Board in order to simplify the decision-making process in light of future CRD V implementation in Belgium. Respective roles and responsibilities and composition of both Boards were being complete. The Board closely followed the evolution of the COVID-19 crisis, its impacts on Euroclear and its environment and considered carefully how to navigate this unprecedented event with the best interests of its staff and all other relevant stakeholders in mind. It also reviewed Management's update of the multi-year strategic plan and devoted time to discuss its various components taking into account Euroclear's role in the capital markets, and the proposed paths for further development in particular. Finally, it focused on the Management's plans to strengthen business resilience and cyber security.

Board advisory committees

Individual and collective Committee member skills

All members of the Euroclear SA/NV Audit and Compliance Committee, Risk Committee, Nominations and Governance Committee and Remuneration Committee are non-executive directors of Euroclear SA/NV, whereby the majority of the Audit and Compliance Committee and at least one member of the Risk Committee, Nominations and Governance Committee and Remuneration Committee are independent within the meaning of Article 7:87, § 1 of the Belgian Code of Companies and Associations. The chair of each Board Committee is an independent director. The committees have the correct knowledge base and skills among their members and each member has the adequate personal attributes in order for the committee to fulfil its role efficiently.

Audit and Compliance Committee (ACC)

The ACC is an advisory committee of the Board established to assist the Board in fulfilling its financial reporting, audit, and compliance and ethics oversight responsibilities. The ACC is comprised of at least three non-executive directors of Euroclear SA/NV. All members of the ACC collectively have in-depth knowledge of the financial markets and services and they have an understanding of Euroclear SA/NV's business, accounting and audit matters. At least one member is competent in accounting and/or audit matters.

The ACC continued to monitor the financial, internal control and compliance framework. In order to ensure a consolidated view of the adequacy of the internal control functions as well as a consistent implementation of the related frameworks across the group, the ACC discussed and recommended the adoption of new group Internal Audit and Compliance Charters. It also followed up on the completion of the Compliance and Ethics transformation program, with particular focus on the anti-money laundering and counter-terrorist financing, as well as sanctions frameworks.

Risk Committee (RC)

The RC comprises at least three non-executive directors of Euroclear SA/NV. The RC is composed in such a way to assist and advise the Board of Directors in its oversight of the group's risk management governance structure, risk tolerance, appetite and strategy and key risks as well as the processes for monitoring and mitigating such risks. The RC members individually have the skills and experience to be able to understand Euroclear SA/NV's business and oversee such risk strategy, risk tolerance, risk capacity and risk profile of Euroclear SA/NV. Following internal changes of mandates between the Board members, Mr. Andrew Butcher was appointed Chair of the RC.

With the COVID-19 crisis unfolding, the RC set up a regular follow-up of the impacts of, and the handling of the crisis. During its frequent ad hoc meetings, the Committee assessed at length the evolving situation with respect to staff, systems, credit and liquidity, and the internal measures deployed to ensure business continuity and smooth provision of services in line with Euroclear's Financial Market Infrastructure role. In this perspective the RC furthermore reviewed the Management's proposals on the design principles and the elaboration of a roadmap to reduce systemic risk, such as uncovered credit losses.

The ACC and the RC continued joint work on supervising the strengthening of both ESA and consolidated capital (ICAAP), liquidity (ILAAP) and recovery (RRWP) planning. The group-wide annual Internal Control Systems reporting was also reviewed. The Committees and subsets thereof dedicated various sessions to the cyber domain focusing on the further formulation of a holistic, comprehensive and company-wide cyber security plan, enabling them to better monitor going forward concrete action plans, milestones and accountabilities. The Committees also devoted special sessions to analysing the root causes of some settlement incidents in the market and supervising the remedial measures taken.

Nominations and Governance Committee (NGC)

The NGC comprises at least three non-executive directors of Euroclear SA/NV. The NGC is composed in such a way to be able to properly and independently assist and advise the Board of Directors on all matters in relation to the nomination of Board and Management Committee members, key function holders, Board and Committee composition and appointments, both emergency and longer-term succession planning as well as corporate governance matters, as they apply to both Euroclear SA/NV and the group. The NGC members possess individual and collective appropriate knowledge, skills, expertise and professional experience regarding governance and selection process, suitability and control practices.

During 2021, the NGC led the Board's continued work on the governance reform process, including the relationship with Euroclear Holding and the composition of the Board in anticipation of the new CRD V regulation coming into force. The Committee also spent time on enhancing board best practices by recommending further tailor-made induction and permanent training programs for the board members and an even more structured and comprehensive approach towards both collective and individual suitability assessment. The NGC was assisted in this exercise by reputed external advisers.

Remuneration Committee (RemCo)

The RemCo comprises at least three non-executive directors of Euroclear SA/NV. The RemCo is composed in such a way so as to properly and independently assist and advise the Board of Directors in defining a global compensation policy for the Group, ensuring that the members of the Management Committee, identified staff and the non-executive Board members are compensated as per the principles described in the Euroclear compensation policy and overseeing management's implementation of the compensation policy.

The RemCo members collectively have the knowledge, expertise and experience concerning remuneration policies and practices, risk management and control activities, namely with regard to the mechanism for aligning the remuneration structure to Euroclear SA/NV's risk and capital profiles. The RemCo members also collectively have an understanding of Euroclear SA/NV's business and have competence relevant to the sector in which Euroclear SA/NV operates. Following internal changes of mandates between the Board members, Mr. Emeric Laforet was appointed Chair of the RemCo.

The RemCo reflected on various components of Euroclear SA/NV's remuneration policy in regard of Management Committee and senior management with a view of simultaneously being aligned with market practices and adhering to the most recent international governance standards. It studied in particular how to better define and measure individual objectives and the ways to appropriately reward performance within the group's risk appetite.

Further information on the Euroclear governance bodies can be found on www.euroclear.com.

Group Management

The Management Committee is entrusted with the general management of Euroclear SA/NV within the strategic framework defined by the Board.

The Management Committee comprises five members (CEO, Chief Business Officer, Chief Administrative Officer, Chief Risk Officer, and Chief Information Technology Officer).

Publicity of external mandates

Details of the reportable directorship mandates and managerial functions exercised in companies outside the Euroclear group by the members of the Board and the management of Euroclear SA/NV are available on the website www.euroclear.com.

Non-audit services

The amount of fees charged to Euroclear Holding SA/NV and its subsidiaries for non-statutory audit services amounted to €1,052,000 the largest part of it relating to the ISAE 3402 report. Further details of fees for audit and non-audit services are provided in Note IX of the financial statements.

Group responsibility

Please refer to the current sustainability report for an overview of Euroclear's mission and values, its commitment to Euroclear's people and corporate responsibility. This report is reviewed on an annual basis and reports on four Corporate Responsibility streams in accordance with Core GRI standards. It is updated and made available on the website www.euroclear.com.

On behalf of the Board

Francesco Vanni d'Archirafi
Chair of the Board
31 March 2022

Board and Committees - composition

as at 31 December 2021

NAME	Board	Audit Committee	Nominations & Governance Committee	Remuneration Committee
Francesco Vanni d'Archirafi (Chair) Independent	•			
Franco Passacantando (Deputy Chair) Independent	•		•	
Harold Finders (Deputy Chair) Independent	•		•	•
Inge Boets Independent	•	• (chair)		
Andrew Butcher Independent	•			•
Eilis Ferran Independent	•	•	• (chair)	
Emeric Laforêt Independent	•	•		• (chair)
David Abitbol Non-Executive Director Société Générale	•			
Delphine de Sahuguet d'Amarzit Non-Executive Director Euronext	•			•
Bart De Smet Non-Executive Director Consortium lead by SFPI	•		•	
Yuxin Du Non-Executive Director Kuri Atyak Investment Ltd.	•			•
Christophe Hémon Non-Executive Director London Stock Exchange (C) Ltd.	•	•		
Sophie Javary Non-Executive Director BNP Paribas	•		•	
François Marion Non-Executive Director Sicovam Holding s.a.	•			
Paul Swann Non-Executive Director ICE	•	•		
Francis LaSalla Non-Executive Director Bank of New York Mellon	•			
Lieve Mostrey CEO of Euroclear SA/NV Non-Executive Director	•			
Bernard Frenay Non-Executive Director	•			
Valérie Urbain Non-Executive Director	•			

Consolidated income statement

For the year ended 31 December 2021

(€'000)	Notes	2021	2020
Interest income	VI	165,157	224,735
Interest expense	VI	(102,248)	(103,129)
Net interest income		**62,909**	**121,606**
Fee and commission income	VII	1,942,103	1,724,197
Fee and commission expense	VII	(486,485)	(472,919)
Net fee and commission income		**1,455,618**	**1,251,278**
Net interest and fee income		**1,518,527**	**1,372,884**
Dividend income		9,141	9,115
Net gains/(losses) on debt instruments at FVOCI		-	53
Net gains/(losses) on financial assets measured at amortised cost		34	(274)
Net gains/(losses) on non-trading financial assets mandatorily at FVPL		536	2,261
Net gains/(losses) on financial assets and liabilities held for trading	VIII	30,354	17,976
Net gains/(losses) on foreign exchange		6,439	(2,812)
Other operating income		7,476	30,474
Operating income		**1,572,507**	**1,429,677**
Administrative expenses	IX	(941,872)	(861,771)
Operating profit/(loss) before impairment and taxation		**630,635**	**567,906**
Impairment	X	(15,908)	(1,416)
Operating profit/(loss) before taxation		**614,727**	**566,490**
Taxation	XI, XII	(152,177)	(134,578)
Profit/(loss) for the year		**462,550**	**431,912**

For the list of companies in the group, see Note I.

The accompanying Notes form an integral part of these financial statements.

Consolidated statement of comprehensive income

For the year ended 31 December 2021

		2021			2020		
(€'000)	Notes	Gross	Tax	Net	Gross	Tax	Net
Changes in other comprehensive income							
Debt instruments measured at FVOCI	XIII, XXIV	(51,998)	12,916	(39,082)	35,345	(8,778)	26,567
Cash flow hedges	XV, XXIV	(14,358)	3,589	(10,769)	10,165	(2,541)	7,624
Foreign currency translation reserve	XXIV	7,392	-	7,392	2,982	-	2,982
Recyclable subsequently to profit/(loss)		(58,964)	16,505	(42,459)	48,492	(11,319)	37,173
Equity instruments designated at FVOCI	XIII, XXIV	(159,223)	1,440	(157,783)	109,141	(985)	108,156
Defined benefit plans	XXII	49,728	(12,177)	37,551	(17,586)	4,881	(12,705)
Not recyclable subsequently to profit/(loss)		(109,495)	(10,737)	(120,232)	91,555	3,896	95,451
Other comprehensive income for the year		**(168,459)**	**5,768**	**(162,691)**	**140,047**	**(7,423)**	**132,624**
Derecognised equity instruments designated at FVOCI		**213,449**	**-**	**213,449**	**(6,454)**	**-**	**(6,454)**
Profit/(loss) for the year		**614,727**	**(152,177)**	**462,550**	**566,490**	**(134,578)**	**431,912**
Total comprehensive income for the year		**659,717**	**(146,409)**	**513,308**	**700,083**	**(142,001)**	**558,082**

The accompanying Notes form an integral part of these financial statements.

Consolidated statement of changes in equity

For the year ended 31 December 2021

(€'000)	Notes	Called up share capital	Share premium account	Other reserves	Retained earnings	Total equity
At 1 January 2021		**3,147**	**943,441**	**559,417**	**3,281,688**	**4,787,693**
Changes in other comprehensive income						
- Debt instruments measured at FVOCI	XXIV	-	-	(39,082)	-	(39,082)
- Equity instruments designated at FVOCI	XXIV	-	-	(157,783)	213,449	55,666
- Cash flow hedges	XV, XXIV	-	-	(10,769)	-	(10,769)
- Foreign currency translation reserve	XXIV	-	-	7,392	-	7,392
- Defined benefit plans	XXII	-	-	-	37,551	37,551
Transfer to legal reserve	XXIV	-	-	58	(58)	-
Profit for the year		-	-	-	462,550	462,550
Dividends paid	XXV	-	-	-	(518,702)	(518,702)
At 31 December 2021		**3,147**	**943,441**	**359,233**	**3,476,478**	**4,782,299**

		Called up share capital	Share premium account	Other reserves	Retained earnings	Total equity
At 1 January 2020		**3,147**	**943,441**	**414,665**	**2,868,358**	**4,229,611**
Changes in other comprehensive income						
- Debt instruments measured at FVOCI	XXIV	-	-	26,567	-	26,567
- Equity instruments designated at FVOCI	XXIV	-	-	108,156	(6,454)	101,702
- Cash flow hedges	XV, XXIV	-	-	7,624	-	7,624
- Foreign currency translation reserve	XXIV	-	-	2,982	-	2,982
- Defined benefit plans	XXII	-	-	-	(12,705)	(12,705)
Transfer to legal reserve	XXIV	-	-	(577)	577	-
Profit for the year		-	-	-	431,912	431,912
At 31 December 2020		**3,147**	**943,441**	**559,417**	**3,281,688**	**4,787,693**

The accompanying Notes form an integral part of these financial statements.

Consolidated statement of financial position

As at 31 December 2021

(€'000)	Notes	2021	2020
Assets			
Cash and balances with central banks	IV	6,053,927	4,029,054
Loans and advances at amortised cost	IV	11,646,221	10,787,166
Financial assets at FVOCI	XIII	9,279,304	9,921,592
Non-trading financial assets mandatorily at FVPL		19,558	19,653
Financial assets held for trading	XIV	19,879	10,560
Derivatives used for hedging	XV	6,383	9,391
Current income tax assets	XI	10,849	9,070
Deferred income tax assets	XII	109,326	105,634
Other assets	XVI	345,825	99,242
Pre-payments and accrued income		226,613	189,377
Pension asset	XXII	617	587
Property, plant and equipment	XVII	165,773	169,978
Goodwill and intangible assets	XVIII	1,502,004	1,019,937
Investments in subsidiaries and joint ventures	I	6,975	14,894
Non-current assets and assets of disposal groups classified as held for sale	XXX	6,652	-
Total assets		**29,399,906**	**26,386,135**
Liabilities			
Deposits from central banks	IV	440,972	301,589
Deposits from banks and customers	IV	16,674,645	14,779,917
Debt securities issued and funds borrowed	XX	6,381,911	5,744,424
Financial liabilities held for trading	XIV	13,850	16,184
Derivatives used for hedging	XV	13,440	2,154
Lease liabilities		134,532	133,146
Other liabilities	XIX	494,217	148,072
Accruals and deferred income		251,667	220,920
Current income tax liabilities		23,968	12,260
Deferred income tax liabilities	XII	3,136	9,962
Provisions for liabilities and charges	XXI	12,224	13,920
Pension deficit	XXII	169,116	215,894
Non-current liabilities and liabilities of disposal groups classified as held for sale	XXX	3,929	-
Total liabilities		**24,617,607**	**21,598,442**
Shareholders' equity			
Called up share capital	XXIII	3,147	3,147
Share premium account	XXIII	943,441	943,441
Other reserves	XXIV	359,233	559,417
Retained earnings		3,476,478	3,281,688
Total shareholders' equity		**4,782,299**	**4,787,693**
Total liabilities and shareholders' equity		**29,399,906**	**26,386,135**

The accompanying Notes form an integral part of these financial statements.

These financial statements were authorised for issue by the Board of Directors on 31 March 2022 and signed on its behalf by

Francesco Vanni d'Archirafi, Chairman of the Board

Consolidated statement of cash flows

For the year ended 31 December 2021

(€'000)	Notes	2021	2020
Profit/(loss) before taxation		**614,727**	**566,490**
Adjustments for:			
- Depreciation and amortisation	XVII, XVIII	75,467	72,973
- Impairment	X	15,908	1,416
- Provisions for liabilities and charges	XXI	1,066	(1,643)
- Dividends received		(9,141)	(9,115)
- (Gains)/losses on disposal of property, plant and equipment		(11)	(2)
- (Gains)/losses on disposal of subsidiaries	I	-	(23,164)
- Interest on financing activities	VI	41,885	50,933
- Interest on leases	XXVII	463	792
- Realised gains on financial instruments measured at FVOCI	XIII	-	(53)
Other non-cash movements		69,395	(33,417)
of which effect of exchange rate changes		24,828	(44,392)
Cash flows from operating profit/loss before changes in operating assets/liabilities		**809,759**	**625,210**
Net increase/(decrease) in deposits and short term funds borrowed		1,347,446	(268,588)
Net (increase)/decrease in loans and advances (including central banks)	IV	(152,687)	107,391
Net (increase)/decrease in other assets		(69,047)	16,209
Net increase/(decrease) in other liabilities		98,787	(120,792)
Net cash inflow/(outflow) from operating activities		**2,034,258**	**359,430**
Tax paid		(137,918)	(113,010)
Net cash from operating activities		**1,896,340**	**246,420**
Cash flows from investing activities			
Investments in subsidiaries and joint ventures	I	(4,696)	(4,054)
Acquisition of new subsidiaries	XXIX	(395,398)	-
Change in consolidation methodology	I	-	7,868
Proceed of disposal of subsidiaries	I	-	70,058
Purchase of financial instruments at FVOCI	XIII	(13,974,262)	(13,591,052)
Redemption and disposals of financial instruments at FVOCI	XIII	14,592,468	14,045,859
Purchase of property, plant and equipment	XVII	(23,399)	(8,550)
Purchase of intangible assets	XVIII	(49,751)	(42,041)
Sale of property, plant and equipment		11	2
Dividends received		9,141	9,115
Loans/(reimbursement of loans) to related party	XXVIII	(2,115)	(5,097)
Net cash from/(used in) investing activities		**151,999**	**482,108**
Cash flows from financing activities			
Reimbursment of financing activities	XX	(5,591,038)	(9,011,525)
Proceeds from financing activities	XX	6,088,916	8,547,379
Interest paid on financing activities		(29,868)	(30,617)
Equity dividends paid	XXV	(518,702)	-
Payment of lease liabilities		(11,988)	(18,498)
Net cash from/(used in) financing activities		**(62,680)**	**(513,261)**
Net increase/(decrease) in cash and cash equivalents		**1,985,659**	**215,267**
Cash and cash equivalents at beginning of year		13,531,432	14,154,662
Effects of exchange rate changes on cash and cash equivalents		707,769	(838,497)
Cash and cash equivalents at end of year		**16,224,860**	**13,531,432**
Cash and balances with central banks	IV	6,053,927	4,029,054
Loans and advances	IV	11,646,221	10,787,166
Excluding loans and advances with intitial maturity above three months		(1,475,288)	(1,284,788)
Cash and cash equivalents at end of year		**16,224,860**	**13,531,432**

Reconciliation of liabilities arising from financing activities

(€'000)	Notes	2020	Cash flows	Non-cash changes	2021
Long term senior debts		**1,302,883**	324,912	25,697	**1,653,492**
Medium term notes		**2,383,664**	18,459	41,141	**2,443,264**
Certificates of deposits		**1,935,673**	124,639	1,139	**2,061,451**
Total debt securities issued and funds borrowed	XX	**5,622,220**	**468,010**	**67,977**	**6,158,207**
Lease liabilities		**133,146**	(12,087)	13,473	**134,532**
Total liabilities arising from financing activities		**5,755,366**	**455,923**	**81,450**	**6,292,739**

(€'000)	Notes	2019	Cash flows	Non-cash changes	2020
Long term senior debts		**1,301,718**	(21,750)	22,915	**1,302,883**
Medium term notes		**2,557,987**	(163,130)	(11,193)	**2,383,664**
Certificates of deposits		**2,224,348**	(309,883)	21,208	**1,935,673**
Total debt securities issued and funds borrowed	XX	**6,084,053**	**(494,763)**	**32,930**	**5,622,220**
Lease liabilities		**95,124**	(18,498)	56,520	**133,146**
Total liabilities arising from financing activities		**6,179,177**	**(513,261)**	**89,450**	**5,755,366**

Notes to the consolidated financial statements
I. Interests in other entities

I.1. General information

Euroclear Holding SA/NV (the 'Company') and its subsidiaries (together, the 'group') arrange for the provision of settlement and related services, including banking services in the case of Euroclear Bank, for domestic and international securities transactions, covering bonds, equities, investment funds and derivatives.

Euroclear Holding SA/NV is incorporated and domiciled in Belgium. The address of its registered office is:

Euroclear Holding SA/NV
1 Boulevard du Roi Albert II
1210 Brussels
Belgium

Copies of the Euroclear Holding SA/NV consolidated financial statements can be obtained at the same address or checked on www.euroclear.com

I.2. Subsidiaries

At 31 December 2021, the Company's subsidiaries are as follows:

	Country of incorporation	Nature of business	Proportions of voting rights and ordinary shares held
Consolidated subsidiaries			
Caisse interprofessionelle de dépôts et de virements de titres SA[1]	Belgium	Central Securities Depository for Belgium	100%
EMX Company Limited[1]	United Kingdom	Dormant	100%
Euroclear AG	Switzerland	Investment holding	100%
Euroclear Bank SA/NV[1]	Belgium	Banking, securities settlement and custody services	100%
Euroclear Finland Oy[1]	Finland	Central Securities Depository for Finland	100%
Euroclear France SA[1]	France	Central Securities Depository for France	100%
Euroclear Global Collateral Services Limited[1]	United Kingdom	Collateral Services	100%
Euroclear Investments SA[3]	Luxembourg	Investment holding	100%
Euroclear Properties France SAS[2]	France	Property Investment	100%
Euroclear Re SA[2]	Luxembourg	Reinsurance	100%
Euroclear SA/NV[2]	Belgium	(I)CSD holding company, ownership of share processing platforms and delivery of shared non-operational services	100%
Euroclear Sweden AB[1]	Sweden	Central Securities Depository for Sweden	100%
Euroclear UK & International Limited[1]	United Kingdom	Central Securities Depository for the United Kingdom and International, and Investment-fund order routing	100%
Fondab AB[1]	Sweden	Fund trading and distribution services	100%
Global Fund Watch GFW AB[1]	Sweden	Fund trading and distribution services	100%
MFEX France[1]	France	Fund trading and distribution services	100%
MFEX Holding AB[1]	Sweden	Holding company	100%
MFEX Hong Kong Limited[1]	Hong Kong	Fund trading and distribution services	100%
MFEX Luxembourg SA[1]	Luxembourg	Fund trading and distribution services	100%
MFEX Malaysia SDN. BHD.[1]	Malaysia	Fund trading and distribution services	100%
MFEX Mutual Funds Exchange AB[1]	Sweden	Fund trading and distribution services	100%
MFEX Singapore Pte Ltd[1]	Singapore	Fund trading and distribution services	100%
MFEX Suisse SA[1]	Switzerland	Fund trading and distribution services	100%
Nederlands Centraal Instituut voor Giraal Effectenverkeer BV (Necigef)[1]	The Netherlands	Central Securities Depository for the Netherlands	100%
Taskize Limited[1]	United Kingdom	Proprietary services	100%
Number of wholly owned subsidiaries			25
Number of non-wholly owned subsidiary			0
Total subsidiaries			25

[1] Held through Euroclear SA/NV
[2] Held through Euroclear Investments SA
[3] Held through Euroclear AG

	Country of incorporation	Nature of business	Proportions of voting rights and ordinary shares held
Non-consolidated subsidiaries			
Nominees			
CIN(Belgium) Limited[1]	United Kingdom	Nominee company	100%
CREST Client Tax Nominee(No.1) Limited[1]	United Kingdom	Nominee company	100%
CREST USD Nominee Limited[2]	United Kingdom	Nominee company	100%
CREST Depository Limited[2]	United Kingdom	Nominee company	100%
CREST EURO nominee Limited[2]	United Kingdom	Nominee company	100%
CREST International Nominees Limited[1]	United Kingdom	Nominee company	100%
CREST Stamp Nominee(No.1) Limited[2]	United Kingdom	Nominee company	100%
CREST Stamp Nominee(No.2) Limited[2]	United Kingdom	Nominee company	100%
CRESTCo Limited[2]	United Kingdom	Nominee company	100%
EC Nominees Limited[3]	United Kingdom	Nominee company	100%
ENL Nominee Limited[5]	United Kingdom	Nominee company	100%
EOC Equity Limited[3]	United Kingdom	Nominee company	100%
Euroclear Nominees Limited[3]	United Kingdom	Nominee company	100%
Euroclear Treasury Nominee Limited[3]	United Kingdom	Nominee company	100%
Fundsettle EOC Nominees Limited[3]	United Kingdom	Nominee company	100%
Trinity Nominees Limited[2]	United Kingdom	Nominee company	100%
Non material subsidiaries			
Quantessence Limited[4]	United Kingdom	Proprietary services	71%

[1] Held through CREST Depository Limited
[2] Held through Euroclear UK & International Limited
[3] Held through Euroclear Bank SA/NV
[4] Held through Euroclear SA/NV
[5] Held through Nederlands Centraal Instituut voor Giraal Effectenverkeer BV (Necigef)

Euroclear Investments has sold 100% of its participation in Calar Belgium on 18 December 2020. The main asset of Calar Belgium was its 51% ownership right on the Euroclear headquarters building located in Brussels. The sale has generated a total gain of €50,756,000, of which €23,164,000 have been recorded one-off under other operating income and €27,592,000 will be amortised over the lease period (12 years) in compliance with IFRS 16.

Euroclear SA/NV has acquired in September 2021 the MFEX group, a leading global digital fund distribution platform. The acquisition of MFEX provides an opportunity for Euroclear to become a world leading provider of funds services to distributors and asset managers. More information can be found in note XXIX on Business Combinations.

In January 2021, Euroclear SA/NV injected GBP 2,500,000 capital in Quantessence Limited increasing the Euroclear shareholding from 65% (€4,156,000) to 71% (€6,975,000). Quantessence Limited is a UK-based start-up company that is developing innovative fund services. The participation in Quantessence Limited is recognised at its acquisition value in the statement of financial position. The aggregate amount of Quantessence capital and reserves was GBP 333,000 as at the end of 2021 (2020: -GBP 289,000), made of capital and share premium of GBP 6,193,000 (2020: GBP 3,693,000) and accumulated losses of GBP 5,860,000 (2020: GBP 3,982,000). Quantessence Limited has not been consolidated since it represents less than 1% of the group consolidated equity, total assets and profit after tax, and are therefore not considered as being material.

In July 2021, Euroclear SA/NV acquired the minority interests in Taskize Limited (Taskize) for a total amount of GBP 1,932,000 increasing its shareholding from 78.05% (€9,937,000) to 100% (€12,202,000). The transaction was immediately followed-up by a capital injection of GBP 7,500,000 bringing the total shareholding to €21,052,000. Taskize has created an end-to-end workflow solution for the financial services industry focused on solving inter-bank customer service problems addressing both STP failures and high-touch interactions. The participation in Taskize was recognised, as of end of 2020, at a net book value of €9,937,000 in the statement of financial position. The aggregate amount of Taskize capital and reserves was GBP 927,000, made of capital and share premium of GBP 7,703,000 and accumulated losses of GBP 6,776,000. Taskize Limited is consolidated since July 2021 when the remaining minority interests were acquired. The losses accumulated by the entity over the previous years and first 6 months of 2021 (€13,746,000), have been recognized as a one-off in the profit and loss account (see note X).

II. Accounting policies

II.1. Basis of preparation

These financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) as adopted by the European Union (EU) and the IFRS Interpretations Committee (IFRIC) Interpretations applicable to companies reporting under IFRS.

The consolidated financial statements have been prepared under the historical cost convention, as modified by the revaluation of certain financial instruments and are prepared on a going concern basis.

The preparation of financial statements in conformity with IFRS requires the use of certain critical accounting estimates. It also requires management to exercise its judgement in the process of applying the company's accounting policies. The areas involving a higher degree of judgement or complexity, or areas where assumptions and estimates are significant to the financial statements are disclosed in Note III.

II.1.1. Adoption of interpretation, new standards and amendments to standards effective on 1 January 2021

- Amendments to IFRS 4 Insurance Contracts - deferral of IFRS 9
- Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16 Interest Rate Benchmark Reform – Phase 2
- Amendment to IFRS 16 : COVID-19-Related Rent Concessions beyond 30 June 2021

The application of above amendments to standards had no impact on the group’s financial statements.

II.1.2. Standards, amended standards and interpretations endorsed by the EU, but not yet effective in 2021

The following amendments to standards became effective on 1 January 2022.
- Amendments to IFRS 3 Business Combinations; IAS 16 Property, Plant and Equipment; IAS 37 Provisions, Contingent Liabilities and Contingent Assets; and Annual Improvements 2018-2020 (All issued 14 May 2020)

The following standard will become effective on 1 January 2023.
- IFRS 17 Insurance Contracts (issued on 18 May 2017); including Amendments to IFRS 17 (issued on 25 June 2020)

The application of these amendments and standard has no impact on the group’s financial statements.

II.2. Summary of significant accounting policies

The principal accounting policies applied in the preparation of these consolidated financial statements are set out below. These policies have been consistently applied to all the years presented.

II.2.1. Consolidation

Subsidiaries are all entities over which the group has control. The group controls an entity when the group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power to direct the activities of the entity. Subsidiaries are fully consolidated from the date on which control is transferred to the group. They are deconsolidated from the date that control ceases.

A group entity controls an investee if and only if the investor has all the following:
- power over the investee;
- exposure, or rights, to variable returns from its involvement with the investee; and
- the ability to use its power over the investee to affect the amount of the investor’s returns.

In accordance with IFRS 3, the cost of an acquisition is measured as the fair value of the assets given, equity instruments issued and liabilities incurred or assumed at the date of exchange. Costs directly attributable to the acquisition are expensed. Identifiable assets acquired and liabilities and contingent liabilities assumed in a business combination are measured initially at their fair values at the acquisition date, irrespective of the extent of any minority interest.

The excess of the cost of acquisition over the fair value of the group's share of the identifiable net assets is recognised as goodwill. If the cost of acquisition is less than the fair value of the group's share of the net assets of the subsidiary acquired, the difference is recognised directly in the income statement.

Inter-company transactions, balances and unrealised gains on transactions between group companies are eliminated. Unrealised losses are also eliminated unless the transaction provides evidence of impairment of the asset transferred. Where permitted under local legislation, the accounting policies of subsidiaries have been changed to ensure consistency with the policies of the group.

Business combinations involving entities under common control were specifically excluded from the scope of IFRS 3 Business combinations. The group therefore applies the guidance provided by IAS 8 Accounting policies, changes in accounting estimates and errors, which requires management to consider the requirements and guidance in other international standards and interpretations dealing with similar issues. Management therefore applies the UK GAAP requirements of Financial Reporting Standard (FRS) 102 *The Financial Reporting Standard applicable in the UK and Republic of Ireland.* The standard allows the assets and liabilities of the parties involved in business combinations of entities under common control to be retained at their book value.

A joint arrangement is an arrangement of which two or more parties have joint control. A joint arrangement has the following characteristics:

- the parties are bound by a contractual arrangement;
- the contractual arrangement gives two or more of those parties joint control of the arrangement.

A joint arrangement is either a joint operation or a joint venture.

A joint venture is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the arrangement. Joint ventures are accounted for using the equity method of accounting. Under the equity method, the investment is initially recognised at cost and the carrying amount is subsequently increased or decreased to recognise the group's share of the net result of the joint venture after the acquisition. The group's share of the joint venture's profit or loss is recognised in its income statement. The group's interest in a joint venture or associate is carried in the statement of financial position at its share in the net assets of the joint venture, less any impairment loss. The accounting policies of the joint venture are changed where necessary to ensure consistency with the policies adopted by the group.

II.2.2. Segment reporting

An operating segment is a component of an entity that engages in business activities from which it may earn revenues and incur expenses.

Operating segments are reported in a manner consistent with the internal reporting provided to the chief operating decision-maker. The chief operating decision maker, who is responsible for allocating resources and assessing performance of the operating segments, has been identified as the Euroclear SA/NV Management Committee.

II.2.3. Foreign currency translation

II.2.3.1. Functional and presentation currency

Items included in the financial statements of each of the group's entities are measured using the currency of the primary economic environment in which the entity operates (the functional currency). The consolidated financial statements are presented in euro, which is the company's functional and presentation currency.

II.2.3.2. Transactions and balances

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the income statement, except when deferred in equity as qualifying cash flow hedges and qualifying net investment hedges. Translation differences on non-monetary items measured at fair value through profit or loss are reported as part of the fair value gain or loss. Non-monetary items that are measured in terms of historical cost in a foreign currency are not translated. Translation differences on other non-monetary items are included in the profit or loss account.

II.2.3.3. Group companies

The results and financial position of all the group's entities that have a functional currency different from the presentation currency are translated into the presentation currency as follows:

- assets and liabilities for each balance sheet presented are translated at the closing exchange rate at the balance sheet date;
- income and expenses for each income statement are translated at average exchange rates for the year; and
- the resulting exchange differences are recognised in the foreign currency translation reserve.

On consolidation, exchange differences arising from the translation of the net investment in foreign entities, and of borrowings and other currency instruments designated as hedges of such investments, are taken to other comprehensive income, in the foreign currency translation reserve and the hedge of net investments in foreign operations reserve. When a foreign operation is sold, such exchange differences are recognised in the income statement as part of the gain or loss on the sale.

None of the group companies have used the currency of a hyperinflationary economy as its functional currency.

Goodwill and fair value adjustments arising on the acquisition of a foreign entity are treated as assets and liabilities of the foreign entity and translated at the closing exchange rate.

II.2.4. Revenue recognition

II.2.4.1 Interest income and expense

Interest income and expense are recognised in the income statement using the effective interest rate method. This is a method of calculating the amortised cost of a financial asset or liability and of allocating the interest income or interest expense over the relevant accounting years.

The effective interest rate is the rate that exactly discounts the estimated cash payments or receipts over the expected life of the instrument to the net carrying amount of the financial asset or liability.

When calculating the effective interest rate for financial assets other than purchased or originated credit impaired assets, the group estimates future cash flows considering all contractual terms of the financial instrument, but not expected credit losses. For purchased or originated credit impaired financial assets, a credit-adjusted effective interest rate is calculated using estimated future cash flows including expected credit losses.

The calculation of the effective interest rate includes transaction costs and fees and points paid or received that are an integral part of the effective interest rate. Transaction costs include incremental costs that are directly attributable to the acquisition or issue of a financial asset or financial liability.

The amortised cost of a financial asset or liability is the amount at which the financial asset or liability is measured on initial recognition minus the principal repayments, plus or minus the cumulative amortisation using the effective interest method of any difference between that initial amount and the maturity amount and, for financial assets, adjusted for any expected credit losses allowance.

The gross carrying amount of a financial asset is the amortised cost of a financial asset before adjusting for any expected credit loss allowance.

Interest income and expense presented in the income statement include:
- interest of financial assets and liabilities presented at amortised cost;
- interest on debt instruments measured at FVOCI;
- interest on non SPPI-compliant loans classified as non-trading financial assets mandatorily at FVPL.

Group loans to, and deposits from, banks and customers are principally related to Euroclear Bank clients' cash accounts operated in connection with their securities settlement activity, with balances generally changing on a daily basis. Time deposits and the re-deposits of surplus funds rarely have maturities of more than three months.

II.2.4.2. Fee and commission income and expense

Fee and commission income and expense which respectively represent a return and cost for services rendered (such as safekeeping, settlement and custody) are recognised in the income statement point in time when the related service is performed and resulting the performance obligation is met.

Settlement and Clearing includes the settlement service, but also the securities and borrowing service and other collateral management services directly linked to settlement business. Settlement fees are charged at an average fee rate multiplied by the number of settled transactions during the month. Fees are aggregated by market and instrument type. Fees are calculated applying a sliding scale tariff to the number of instructions. Fee and commission income and expense, which represent a return for credit risk borne or which are in the nature of interest (securities borrowing), are recognised in the income statement over the period of the loan, or on a systematic basis over the expected life of the transaction to which they relate, net of rebates granted.

The safekeeping service ensures that a record of title to the customer’s securities is maintained on the books of a higher-tier entity, and that the number of securities owned by the customer as recorded in the custodian books can always be delivered to the customer’s order. Safekeeping fees are computed on the monthly average depot value of securities held in custody.

Other fee and commission income mainly relates to communication fees, custody operations, the recovery of out-of-pocket expenses incurred on behalf of clients, issuer services fees earned by Euroclear Finland and Euroclear Sweden, and revenue earned by Euroclear UK & International for collecting Stamp Duty Reserve Tax on behalf of Her Majesty’s Revenue & Customs in the United Kingdom and Stamp Duty on behalf of the Irish Revenue Commissioners. The fees are monthly charged, at an average fee rate multiplied by the number of transactions.

II.2.4.3. Dividends

Dividends on equity instruments are recognised in the income statement when the group's right to receive payment is established.

II.2.4.4. Gains and losses on disposals

Gains and losses on disposals of property, plant and equipment, determined by comparing proceeds with the carrying amount, are included in the income statement in other operating income and administrative expenses respectively.

II.2.5. Financial assets

II.2.5.1. Classification and measurement

On initial recognition, a financial asset is classified as measured at amortised cost, Fair Value through Other Comprehensive Income (‘FVOCI’) or Fair value through profit and loss (‘FVPL’). The classification results from a two-step approach: The “cash flow characteristics” test will check whether the cash flows can be considered as Solely Payments of Principal and Interest (‘SPPI’), and the business model for managing the asset.

Regular way purchases and sales of financial assets are accounted for at settlement date.

A financial asset is classified and measured at amortised cost if it is not designated as FVPL, and if it meets both of the following conditions: it is held for collection of contractual cash flows (Held to Collect) and its contractual terms give rise to cash flows that represent solely payments of principal and interest (‘SPPI’). A financial asset classified and measured at amortised cost is recognised in the balance sheet on settlement date at fair value plus any directly related transaction costs. It is subsequently measured at amortised cost using the effective interest method less any loss allowances.

A financial asset is classified and measured at FVOCI if it is not designated as FVPL, and if it meets both of the following conditions: it is held for collection of contractual cash flows and for selling the assets, and its cash flows represent solely payments of principal and interest. A financial asset classified and measured at FVOCI is recognised in the balance sheet on settlement date at fair value less any directly related transaction costs. Gains or losses arising from changes in the fair value are recognised directly in equity, until the asset is either sold or matures, at which time the cumulative gain or loss previously recognised in equity is released to the income statement. Interest revenues are recognised using the effective interest method.

The group may irrevocably elect to designate an equity instrument at FVOCI, if it not held for trading. This election is made on an investment by investment basis. In this case, dividends that qualify as a return on investment are recognised in profit and loss, but gains and losses are not recycled to profit and loss on derecognition and no impairment is recognised. The revaluation gains/losses accumulated in other comprehensive income are transferred to distributable reserves in case of sale of the investment.

All other financial assets are measured at FVPL. These assets are initially recognised and subsequently measured at fair value. The movements in fair value are recognised in the income statement.

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When available, the group measures the fair value of an instrument as the published price at the balance sheet date. In the case of investments with no listed market price, a valuation technique that maximise the relevant use of observable inputs (e.g. discounted cash flows and market multiples) is applied.

II.2.5.2. Business model assessment

A business model refers to how the group manages its financial assets in order to generate cash flows. It is determined on a level that reflects how financial assets are managed to achieve a particular business objective.
The group's objective can be:
- solely to collect the contractual cash flows from the assets ('Held to Collect');
- to collect both the contractual cash flows and cash flows arising from the sale of assets ('Held to Collect and Sell');
- neither of above (e.g. financial assets are held for trading purposes), and then the financial assets are classified as part of 'other' business model.

Factors considered by the group in determining the business model for a group of assets include objectives for the portfolios, how the asset's performance and risks are evaluated, managed and reported to management, and past experience.

II.2.5.3. Assessment whether contractual cash flows are solely payment of principal and interest ('SPPI')

The group assesses whether the contractual cash flows are consistent with a basic lending arrangement i.e. interest includes only consideration for the time value of money, credit risk, other basic lending risks and a profit margin that is consistent with a basic lending arrangement. This assessment is done on an instrument-by-instrument basis. Where the contractual terms introduce exposure to risk or volatility that are inconsistent with a basic lending arrangement (e.g. write off feature), the related financial asset is classified and measured at fair value through profit or loss.

Financial assets with embedded derivatives are considered in their entirety when determining whether their cash flows are solely payment of principal and interest.

II.2.5.4. Reclassifications

Financial assets are not reclassified subsequent to their initial recognition, except in the period after the group changes its business model for managing financial assets.

II.2.6. Financial liabilities

Financial liabilities are classified and subsequently measured at amortised cost except for derivatives (see section 2.7.).

Borrowings and debt securities issued are recognised initially at fair value, being the issue proceeds (fair value of consideration received) net of transaction costs incurred. They are subsequently stated at amortised cost; any difference between proceeds net of transaction costs and the redemption value is recognised in the income statement over the period of the borrowings or issues using the effective interest rate method.

Financial liabilities are derecognised when they are extinguished (when the obligation specified in the contract is discharged, cancelled or expires).

II.2.7. Derivative financial instruments and hedge accounting

The group applies the IFRS 9 hedge accounting requirements in full as issued by the IASB.

All derivative financial instruments are recognised, and subsequently re-measured at fair value. Derivative fair values are determined from quoted prices in active markets where available. Where there is no active market for an instrument, fair value is derived from prices for the derivative's components using appropriate pricing or valuation models.

Gains and losses arising from changes in fair value of a derivative are recognised as they arise in profit and loss, unless the derivative is part of a qualifying cash flow hedge.

At the inception of the hedge relationship, the group documents the relationship between the hedging instrument and the hedged item, along with its risk management objectives and its strategy for undertaking various hedge transactions. Furthermore, at the inception of the hedge and on an ongoing basis, the group documents whether the hedging instrument is effective in offsetting changes in fair values or cash flows of the hedged item attributable to the hedged risk, which is when the hedging relationships meet all of the following hedge effectiveness requirements:
- there is an economic relationship between the hedged item and the hedging instrument;
- the effect of credit risk does not dominate the value changes that result from that economic relationship; and
- the hedge ratio of the hedging relationship is the same as that resulting from the quantity of the hedged item that the group actually hedges and the quantity of the hedging instrument that the entity actually uses to hedge that quantity of hedged item.

Under IFRS 9, if a hedging relationship ceases to meet the hedge effectiveness requirement relating to the hedge ratio but the risk management objective for that designated hedging relationship remains the same, the group adjusts the hedge ratio of the hedging relationship (i.e. rebalances the hedge) so that it meets the qualifying criteria again. The ineffective portion of the gain or loss on the hedging instrument is recognised immediately in the profit and loss account.

The group designates the full change in the fair value of a forward contract (i.e. including the forward elements).

The group may enter into three types of hedges: hedges of changes in the fair value of a recognised asset or liability or firm commitment (fair value hedges), hedges of the variability in cash flows from a recognised asset or liability or a forecast transaction (cash flow hedges), and hedges of the net investment in a foreign entity (net investment hedges). The group currently designates certain derivatives as hedging instruments in respect of foreign currency risk in cash flow hedges.

II.2.7.a. Fair value hedges

Changes in the fair value of derivatives that are designated and which qualify as fair value hedges are recorded in the profit and loss account, together with any changes in the fair value of the hedged asset or liability attributable to the hedged risk.

II.2.7.b. Cash flow hedges

In the case of a cash flow hedge, the portion of the gain or loss on the hedging instrument that is determined to be an effective hedge should be recognised directly in other comprehensive income and released to profit and loss when the hedged item (for instance the forecasted transaction) affects profit and loss.

II.2.7.c. Net investment hedges

A hedge of a net investment in a foreign operation is accounted for similarly to cash flow hedges. The portion of the gain or loss on the hedging instrument that is determined to be an effective hedge is recognised directly in other comprehensive income and released to profit and loss when the foreign operation is partially disposed or sold.

II.2.8. Impairment of financial assets

The group recognises loss allowances on financial assets measured at amortised cost, on debt instruments at fair value through other comprehensive income, lease receivables, loan commitments and financial guarantees. No impairment loss is recognised on equity instruments.

The expected credit loss (ECL) is estimated as the difference between all contractual cash flows that are due to the group in accordance with the contract and all the cash flows that the group expects to receive, discounted at the original effective interest rate.

IFRS 9 requires the recognition of 12-month expected credit losses if credit risk has not significantly increased since initial recognition (stage 1), and lifetime expected credit losses for financial instruments for which the credit risk has increased significantly since initial recognition (stage 2) or which are credit impaired (stage 3). Lifetime ECL represents the expected credit losses that will result from all possible default events over the expected life of a financial instrument. In contrast, 12-month ECL represents the portion of lifetime ECL that is expected to result from default events on a financial instrument that are possible within 12 months after the reporting date.

The measurement of expected credit losses is a function of the probability of default, loss given default (i.e. the magnitude of the loss if there is a default) and the exposure at default. Expected credit losses on financial assets are individually assessed (except for trade receivables with no significant financing component).

The impairment requirements are complex and require management judgements, estimates and assumptions that are detailed in section III Critical accounting estimates and judgements.

A financial asset is credit impaired when one or more events that have a detrimental impact on the estimated future cash flows of that financial asset have occurred. Evidence that a financial asset is credit-impaired includes observable data about the following events:
- significant financial difficulty of the issuer or the borrower;
- a breach of contract, such as a default or past due event;
- it is becoming probable that the borrower will enter bankruptcy or other financial reorganisation; or
- the disappearance of an active market for that financial asset because of financial difficulties.

For trade receivables with no significant financing component, a simplified approach requiring the recognition of lifetime ECLs at all times applies. The expected credit losses on these assets are collectively assessed and estimated using a provision matrix based on the group’s historical credit loss experience and macro-economic factors. If no significant statistical relationship is observed between impairment losses and macro-economic factors, macro-economic factors are not considered. Expected credit losses are based on the age of the receivables. If all or part of a client’s receivable is confirmed as being irrecoverable, the value of that receivable will be reduced accordingly.

The group writes off financial assets including trade receivables, in whole or in part, when it has exhausted all practical recovery efforts and has concluded there is no reasonable expectation of recovery, e.g. when the counterparty has been placed under liquidation or has entered into bankruptcy proceedings.

The aggregate of provisions made (less amounts released and recoveries of bad debts previously written off) is charged against operating profit in the profit and loss account.

II.2.9. Purchase and resale agreements

Securities purchased under agreements to resell ('reverse repos') are recorded as loans and advances to other banks or customers, as appropriate. The difference between the sale and repurchase price is treated as interest and accrued over the life of the agreements using the effective interest method.

II.2.10. Goodwill and intangible assets

II.2.10.a. Goodwill

Goodwill represents the excess of the cost of an acquisition over the fair value of the group's share of the identifiable net tangible and intangible assets of an acquired entity at the date of acquisition. Goodwill is carried at cost less accumulated impairment losses and tested for impairment annually or more frequently where events or changes in circumstances indicate that it might be impaired. For the purpose of impairment testing, goodwill is allocated to cash-generating units, the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. If impairment is identified, the carrying value of goodwill is written down to its net recoverable amount. Impairment losses are immediately recognised in profit and loss and are not subsequently reversed.

II.2.10.b. Computer software

Computer software licences are capitalised on the basis of the costs incurred to acquire and bring to use the specific software.

Costs associated with the development phase of computer software being developed by, and for use of, the group are capitalised only when the following can be demonstrated:
- technical feasibility;
- intention to complete;
- ability to use or sell the asset;
- generation of probable future economic benefits;
- availability of technical, financial and other resources; and
- reliable measurement of attributable expenditure.

Borrowing costs that are directly attributable to the acquisition or development of software are considered as part of the cost of the software.

The cost of computer software is amortised using the straight-line method over its estimated useful life, normally estimated to be between three and five years.

Impairment tests are performed annually or more frequently if events or circumstances indicate that the asset might be impaired.

Costs associated with maintaining or upgrading computer software programmes are recognised as an expense as incurred.

II.2.10.c. Other intangible assets

At the time of a business combination, part of the cost might be attributed to one or more intangible assets when these are separable or arise from contractual or other legal rights (such as contractual customer relationships), provided a fair value can be measured reliably.

For each asset, the expected useful life is also assessed. Where this is a finite period, the cost of the asset will be amortised using the straight-line method over that period. The estimated useful life is assessed to be indefinite when, following an analysis of all the relevant factors, there is no foreseeable limit to the period over which the asset is expected to generate net cash inflows. In such circumstances, the cost will not be amortised.

After initial recognition, the amortisation period and amortisation method for assets with a finite life are reviewed at least at each financial year-end, and changed when necessary.

For assets with an indefinite life, impairment tests are performed annually or more frequently if events or circumstances indicate that the asset might be impaired.

II.2.11. Property, plant and equipment

Property, plant and equipment are stated at cost less accumulated depreciation. Where an item of property, plant and equipment comprises major components having different useful lives, these components are accounted for separately.

Borrowing costs that are directly attributable to the acquisition of an asset are considered as part of the cost of the asset.

Subsequent costs are included in the asset's carrying amount or are recognised as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the group and the cost can be measured reliably. All other costs are charged to the income statement during the financial year in which they are incurred.

Depreciation on property, plant and equipment is determined using the straight-line method to allocate the depreciable amount (difference between the cost and the residual value) over its estimated useful life.

The estimated useful life of property, plant and equipment is as follows:
- buildings (including enhancements): 20 to 40 years;
- leasehold improvements: shorter of economic life and period of lease;
- furniture and fixtures: seven years; and
- IT equipment (data processing and communications): between two and five years.

Land is not depreciated.

II.2.12. Leases

Leases where the group is a lessee are recognised as a right-of-use asset and a corresponding liability at the date at which the leased asset is available for use by the group. Assets and liabilities arising from a lease are initially measured on a present value basis.

Lease liabilities include the net present value of the following lease payments:
- fixed payments, less any lease incentives receivable;
- variable lease payments that depend on an index or a rate;
- amounts expected to be payable by the lessee under residual value guarantees;

- the exercise price of a purchase option if the group is reasonably certain to exercise that option; and
- payments of penalties for terminating the lease if the lease term reflects the lessee exercising the option.

Lease payments to be made under reasonably certain extension options are also included in the measurement of the liability.

The lease payments are discounted using the interest rate implicit in the lease. If that rate cannot be readily determined, which is generally the case for leases in the group, the lessee's incremental borrowing rate is used, being the rate that the individual lessee would have to pay to borrow the funds necessary to obtain an asset of similar value to the right-of-use asset in a similar economic environment with similar terms, security and conditions.

Lease payments are allocated between principal and finance cost.

Right-of-use assets are measured at cost comprising the following:
- the amount of the initial measurement of lease liability;
- any lease payments made at or before the commencement date less any lease incentives received;
- any initial direct costs; and
- end of lease obligations.

Right-of-use assets are depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis. If the group is reasonably certain to exercise a purchase option, the right-of-use asset is depreciated over the underlying asset's useful life.

Payments associated with short-term leases of property, plant and equipment and leases of low-value assets are recognised on a straight-line basis as an expense in profit or loss. Short-term leases are leases with a lease term of 12 months or less. Low-value assets comprise IT equipment and small items of office furniture.

Leases of vehicles are recognised as a right-of-use asset and a corresponding liability, and associated payments are recognised on a straight-line basis as an expense in profit or loss.

Lease income from operating leases where the group is a lessor is recognised in income on a straight-line basis over the lease term. The respective leased assets are included in the balance sheet based on their nature.

II.2.13. Cash and cash equivalents

For the purposes of the statement of cash flows, cash and cash equivalents comprise balances with an original maturity of not more than three months, including cash and non-restricted balances with central banks, and loans and advances to banks and other customers.

II.2.14. Provisions

Provisions are recognised where:
- there is a present obligation arising from a past event;
- there is a probable outflow of resources; and
- the outflow can be estimated reliably.

Provisions are recognised in respect of onerous contracts where the unavoidable costs of the future obligations under the contract exceed the economic benefits expected to be received.

Contingent liabilities are possible obligations whose existence depends on the outcome of one or more uncertain future events not wholly under the control of the group. For those present obligations where the outflows of resources are uncertain, or in the rare cases where these outflows cannot be measured reliably, this will give rise to a contingent liability. Contingent liabilities are not recognised in the financial statements but are disclosed, unless they are remote.

II.2.15. Employee benefits

II.2.15.a. Pension obligations

The group operates a number of post-retirement benefit schemes for its employees, including both defined contribution and defined benefit pension plans.

A defined contribution plan is a pension plan under which the group pays fixed contributions into a separate entity and has no legal or constructive obligation to pay further contributions.

A defined benefit plan is a post-employment benefit plan other than a defined contribution plan.

The liability recognised in the balance sheet in respect of defined benefit plans is the present value of the defined benefit obligation at the balance sheet date less the fair value of plan assets. The defined benefit obligation is calculated annually by independent actuaries using the projected unit credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of high-quality corporate bonds that are denominated in the currency in which the benefits will be paid, and that have terms to maturity approximating to the terms of the related pension liability.

Actuarial gains and losses arising from experience adjustments and changes in actuarial assumptions are recognised in equity in the period in which they occur.

Past service costs are recognised immediately in the profit and loss account.

The costs of defined contribution plans are charged to the income statement in the year in which they fall due.

II.2.15.b. Other post-retirement benefits

Some group companies provide post-retirement healthcare benefits to their retirees. The expected costs of these benefits are accrued over the period of employment using an accounting methodology similar to that for defined benefit pension plans. Actuarial gains and losses arising from experience adjustments and changes in actuarial assumptions are charged or credited to equity. These obligations are valued annually by independent qualified actuaries.

II.2.16. Current and deferred income taxes

Current tax payable on profits, based on the applicable tax law in each jurisdiction, is recognised as an expense in the year in which profits arise.

Deferred income tax is provided in full, using the liability method, on temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the consolidated financial statements. Deferred income tax is determined using tax rates (and laws) that have been enacted or substantially enacted in each relevant country by the balance sheet date and are expected to apply when the related deferred income tax asset is realised or the deferred income tax liability is settled.

The principal temporary differences arise from:
- depreciation of tangible fixed assets and amortisation of intangible assets;
- revaluation of certain financial assets and liabilities, including derivative contracts;
- provisions for pensions and other post-retirement benefits;
- tax losses carried forward; and
- in relation to acquisitions, the difference between the fair values of the net assets acquired and their tax base.

Temporary differences on the initial recognition of assets and liabilities other than those acquired in a business combination are not recognised unless the transaction affects accounting or taxable profit.

Deferred tax assets, including those related to income tax losses available for carry forward, are recognised when it is probable that future taxable profit will be available against which the temporary differences can be used.

Deferred income tax is provided on temporary differences arising from investments in subsidiaries and associates, except where:
- the timing of the reversal of the temporary difference is controlled by the group; and
- it is probable that the difference will not reverse in the foreseeable future.

Current tax assets and liabilities are offset when they arise in the same entity and where there is both a legal right of offset and the intention to settle on a net basis or to realise the asset and settle the liability simultaneously.

Deferred tax related to a transaction or event which is charged or credited directly to equity (e.g. fair value re-measurement of available-for-sale investments and cash flow hedges) is also credited or charged directly to equity and is subsequently recognised in the income statement together with the deferred gain or loss.

Deferred tax assets and liabilities are not discounted.

II.2.17. Dividends

Dividends on ordinary shares are recognised in equity and as a liability in the year in which they are approved by the Company's shareholders.

Dividends for the year that are declared after the balance sheet date are not recognised as a liability and are instead disclosed as subsequent events.

III. Critical accounting estimates and judgements

The Euroclear group makes estimates and assumptions that affect the reported amounts of assets and liabilities. These estimates are considered to be important to understand the group's financial condition, since they require management to make complex and subjective judgements, some of which may relate to matters that are inherently uncertain. Estimates and judgements are continually evaluated and based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

As a financial market infrastructure, Euroclear is closely monitoring the potential effects of the COVID-19 pandemic on the estimates it is using and the new sources of uncertainty it creates.

III.1. Impairment of goodwill and contractual customers' relationships with an indefinite useful life

The group tests goodwill and contractual customers' relationships for impairment annually (during the fourth quarter), irrespective of whether there is an indication of impairment. Furthermore, the group remains alert for indicators of impairment throughout the year and conducts a high-level impairment review at each quarter end.

Such impairment reviews are deemed to detect:
- overpayment;
- under-performance compared with expectations; and

- significant changes with an adverse effect on the acquired business. Such changes can stem from, for example, new business parameters (e.g. volatility of stock markets, changes in the volume of securities safekept on behalf of customers, ...) or from changes in market data used to determine the cost of capital of the acquired businesses.

An impairment loss is recognised whenever the recoverable amount of the goodwill is less than its carrying amount (book value). The recoverable amount of an asset is the higher of its net selling price and its value in use, both based on present value calculations.
- Net selling price is the amount obtainable from the sale of an asset in an arm's length transaction between knowledgeable willing parties, less the cost of disposal.
- Value in use is the amount obtainable from the use of an asset until the end of its useful life and from its subsequent disposal. Value in use is calculated as the present value of estimated future cash flows. The value in use calculation may take into account not only the post-acquisition performance of the acquired entity itself, but also the changes in cash flows in other entities in the group that are positively or negatively affected by the acquisition.

Euroclear has not identified new indicators of impairment at December 31, 2021 that would result from the forecasted impact of the COVID-19 pandemic.

No impairment charge was deemed necessary at the end of 2020 and 2021. See Note XVIII.

Contractual customers' relationships with an indefinite useful life relate to the acquisition of Euroclear Belgium.

III.2. Impairment of other intangible assets

The group tests internally developed software for impairment annually (during the fourth quarter), irrespective of whether there is an indication of impairment. Furthermore, the group remains alert for indicators of impairment throughout the year and conducts a high-level impairment review at mid-year.

In assessing whether there is any indication that an asset is impaired, the group considers significant adverse changes that have taken place or are expected in the near future in the extent to which, or in the way that, an asset is used or expected to be used. This includes the asset becoming idle, plans to discontinue or restructure the operation to which the asset belongs, or the asset's disposal.

Indications of impairment exist if:
- there are plans to discontinue the development;
- Inefficiencies are noted (i.e. costs higher than expected);
- there is material delay in the delivery of the project;
- there is an adverse event in the market;
- technology becomes obsolete;
- resources needed are not available anymore;
- under-performance is noted compared with expectations;
- economic performance is lower than expected.

There was no new uncertainty observed as to the value or life of the intangible assets launched or currently being developed resulting from the COVID-19 pandemic and new way of working it implies.

III.3. Provisions

A provision is a liability of uncertain timing or amount. At each reporting year, the necessity to record or adjust provisions is considered based on the latest information available.

Onerous lease provisions can result from a decision to vacate premises leased by the group and when the space is expected to remain empty or to be sub-let at terms and/or conditions below those in the Euroclear lease. The provision represents the lower of the cost to breach the contract and the cost of fulfilling it, taking into account the expected benefits that might be received under a sub-lease, providing the entity is actively seeking to sub-let the property.

The onerous contract provision represents the best estimate of the unavoidable costs of the obligations under the contract over the economic benefits expected to be received under it.

Human resources-related provisions are recognised when a decision has been made, a formal plan exists and the main features are known by those affected. The provision represents the best estimate of the full cost of implementing the plan.

Provisions for dilapidation, or end-of-lease obligations, are recorded when the group is contractually bound to incur such costs and a reliable estimate can be made.

Provisions for litigation are recorded if and when there are strong indications that costs will be incurred to settle any possible legal cases concerned and a reliable estimate can be made.

III.4. Defined benefit plans

The present value of the defined benefit plan obligations depends on a number of factors that are determined on an actuarial basis using a number of assumptions. Any changes in these assumptions will impact the carrying amount of the obligations.

The assumptions used in determining the net cost/(income) for the plans include the discount rate at the end of each year. This is the interest rate that should be used to determine the present value of estimated future cash outflows expected to be required to settle the plan obligations. In determining the appropriate discount rate, the group considers the interest rates of high-quality corporate bonds (or mortgage backed bonds in Sweden) that are denominated in the currency in which the benefits will be paid and that have terms to maturity approximating the terms of the related plan liability.

Other key assumptions for plan obligations are based in part on current market conditions.

The major assumptions used are shown in Note XXII.

III.5. Deferred tax assets

Deferred tax assets are recognised to reflect the future tax benefit from unused tax losses or tax credits and other temporary differences. If there is a concern about the relevant entities' capacity to utilise the tax assets within a reasonable (10-year) period, the assets are impaired, even when there remains a possibility to benefit longer term if sufficient taxable profits arise. The 10-year period is considered reasonable in view of the activities of the Euroclear group entities and the sector in which they operate.

III.6. Fair valuation of FVOCI equity investments

The group has recourse to adequate valuation techniques (e.g. discounted cash flows, market multiples) to estimate the value of non-quoted equity investments at FVOCI, as explained in note IV.

III.7. Impairment of financial assets

The impairment requirements require management judgements, estimates and assumptions, including:

- Determining a significant increase in credit risk since initial recognition

In assessing whether the credit risk on a financial instrument has increased significantly since initial recognition, the group compares the risk of a default occurring on the financial instrument as at the reporting date with the risk of a default occurring on the financial instrument as at the date of initial recognition. In making this assessment, the group considers both quantitative and qualitative information that is reasonable and supportable, including historical experience and forward-looking information that is available without undue cost or effort.

IFRS 9 requires the recognition of 12 month expected credit losses (the portion of lifetime expected credit losses from default events that are expected within 12 months of the reporting date) if credit risk has not significantly increased since initial recognition (stage 1), and lifetime expected credit losses for financial instruments for which the credit risk has increased significantly since initial recognition (stage 2) or which are credit impaired (stage 3).

The following information is taken into account when assessing whether credit risk has increased significantly since initial recognition:

- a significant deterioration in the financial instrument's external or internal credit rating;
- a significant deterioration in external market indicators of credit risk for a particular financial instrument, e.g. a significant increase in the credit default swap prices for the debtor, existing or forecast adverse changes in business, financial or economic conditions.

Irrespective of the outcome of the above assessment, the group presumes that the credit risk on a financial asset has increased significantly since initial recognition when contractual payments are more than 30 days past due, unless the group has reasonable and supportable information that demonstrates otherwise.

Despite the afore going, the group assumes that the credit risk on a financial instrument has not increased significantly since initial recognition if the financial instrument is determined to have low credit risk at the reporting date. The group considers a financial asset to have low credit risk when it has an internal or external credit rating of 'investment grade' as per globally understood definition. For all exposures considered as low risk and classified in Stage 1, Credit Management will verify that the exemption is relevant through management judgment. In case it considers that the exposure should still be classified in Stage 2, even if it is eligible to the low risk exemption, credit will override the stage.

No increase in credit risk was observed that would have required lifetime ECLs to be recognised. Credit Management remains comfortable with the creditworthiness of the group's exposures (i.e. all exposures remain in stage 1).

- Forward-looking information

Euroclear is mainly exposed to highly-rated financial institutions. Credit losses are not sensitive to small variations of macro-economic conditions. The ECL model has been calibrated to reflect the low likelihood but potentially high severity of its credit losses. A close monitoring of key market indicators is done to evaluate the possibility of facing stress situations similar to the one experienced during the 2008 financial crisis. Expected credit losses are the unbiased probability-weighted credit losses determined by evaluating a range of possible outcomes and considering future economic conditions. Three scenarios (base, upturn and downturn) are modelled to ensure an unbiased representative sample of the complete distribution when determining the expected loss.

Following the uncertain global economic conditions since 2020, equal weighting given to the base and downturn scenarios reflect the negative impact of the coronavirus outbreak on the global economy. The economic environment and potential impact on scenarios continue to be closely monitored as new information becomes available.

- Definition of default

IFRS 9 does not give explicit definition of default, but clearly states that it must be consistent with the one used for internal credit risk management purposes, with the rebuttable presumption that 90 days past due is a default criterion. This definition must be used when assessing whether the credit risk on a financial instrument has increased significantly. Euroclear uses the default definition as stated in the Financial Risk Policy Handbook and used for regulatory capital purposes, to ensure consistency with Basel Committee guidelines.

- Expected life
In order to assess the lifetime of the instrument and on which time horizon probability of default (PD) must be calculated, a maturity assessment is required. The maturity is the maximum contractual period over the entity is exposed to risk, that should take into account the ability to demand repayment and the possible extensions. When determining the period over which an entity is expected to be exposed to credit risk, Euroclear uses historical information and experience, and notably the period over which the entity was exposed on similar financial instruments. Euroclear mainly holds non committed open-ended lines, for which no maximum contractual period has been defined. For those, an expected lifetime has been defined based on historical data. For others, the period of exposure has been set to the contractual maturity.

- Discounting
Expected credit losses are discounted at the effective interest rate determined at initial recognition or an approximation thereof.

- Calculation methodology
The measurement of expected credit losses is a function of the probability of default, loss given default (i.e. the magnitude of the loss if there is a default) and the exposure at default. The assessment of the probability of default and loss given default is based on historical data adjusted by forward-looking information. As for the exposure at default, for financial assets, this is represented by the assets' gross carrying amount at the reporting date. For loan commitments and financial guarantee contracts, the exposure includes the amount drawn down as at the reporting date, together with any additional amounts expected to be drawn down in the future by default date determined based on historical averages, and other relevant forward-looking information.

The regulatory Basel Committee of Banking Supervisors (BCBS) ECL calculations are leveraged and adjusted for IFRS 9. While BCBS requires 12 month through the economic cycle losses, IFRS 9 requires 12 months or lifetime point-in-time losses based on conditions at the reporting date and multiple forecasts of the future economic conditions over the expected lives. IFRS 9 also requires discounting to the reporting date at the original effective interest rate rather than using the cost of capital to the date of default.

- Simplified approach for trade receivables
For trade receivables, the expected credit losses are assessed per entity on a collective basis and estimates of loss rates are based on the loss experience observed by each of the (I)CSDs (historical rates adjusted for forward-looking information) depending on the ageing analysis of receivables. The current year trend shows that recoverability of the receivables has not been impacted by the COVID-19 pandemic.

IV. Risk management and the financial risk management environment

IV.1. Managing business in a risk-controlled environment

IV.1.1. The Enterprise Risk Management framework

Euroclear operates within a highly regulated environment and has been designated as a systemically important financial market infrastructure. Therefore, it aims to maintain its strong reputation in the financial industry for its safety and resilience, and for the quality of its products and post-trade services.

In this context, a comprehensive and effective risk governance and control framework, fostering a sound risk culture, is critical to the overall effectiveness of Euroclear's risk management arrangements. Euroclear operates an Enterprise Risk Management (ERM) framework that has been designed to meet Board, market and regulatory expectations. The ERM framework structures the way Euroclear identifies, assesses and manages and reports its risks, within the Board's risk appetite, whilst pursuing its strategy and corporate objectives. It also details the roles and responsibilities of the three lines of defence, in line with the Board's expectations and the governance arrangements.

The ERM framework is supported by Board approved policies and policy handbooks, which take into account applicable regulatory and market standards. Policies are reviewed and updated on a regular basis.

IV.1.2. The three lines of defence

Euroclear operates a three lines of defence model that facilitates the effective functioning of our ERM framework. Each line plays a distinct role providing Senior Management and the Board with confidence that the group is able to achieve its key goals including the effective management of risks.

The first line of defence is the primary source of (non-independent) assurance on the adequacy and effectiveness of the control environment to Senior Management and the Board. The first line of defence provides this assurance through - amongst others - risk and control self-assessments, operational and financial risk dashboards, positive assurance reports, and an annual internal control system report. First line management owns the risks linked to all the activities it undertakes and ensures that the desired risk culture, expressed by the Board, is embedded in the different business units.

The second line of defence includes Compliance and Ethics (C&E) and Risk Management. Other functions such as Legal and Finance that are primarily first line functions can also fulfil specific second line roles in line with their remit.

Compliance and Ethics provides independent oversight and reporting to Senior Management and to the Board on the first line of defence's identification, assessment and management of compliance risks by monitoring compliance with applicable laws, regulations and regulatory standards that fall within the scope of Euroclear companies' competent authorities, national data protection authorities and other foreign authorities. Compliance and Ethics supports, advises, challenges and oversees the first line of defence in its management of ethical conduct, compliance and fraud risks and supports awareness campaigns on compliance and ethical issues.

Risk Management provides robust, independent oversight of the risk-taking activities to ensure Euroclear achieves its goals and delivers its strategy within the Board-approved risk appetite. The Risk Management function undertakes this task by delivering and maintaining an Enterprise Risk Management (ERM) framework; providing the Board and Senior Management with high quality, independent risk challenge, advice and guidance; and helping foster a healthy risk culture throughout the organisation.

Internal Audit provides the Board reasonable assurance and insight based on the highest level of independence on governance, risk management and internal controls to add value and to support Euroclear in achieving its objectives. In performing its work, Internal Audit assesses whether the ERM framework is adequately designed and operating effectively and assesses whether risks are appropriately identified and fairly stated. Internal Audit's scope is unrestricted.

IV.1.3. Risk appetite framework and control environment

Euroclear's risk appetite is set by the Board and represents the maximum amount of risk the Board is willing to accept to achieve its objectives, including the preservation of the long term strength of the Company and of the trust of all key stakeholders. Euroclear articulates and monitors its risk appetite by way of metrics based on the criticality of strategic objectives and the associated key risk sources, thereby providing Senior Management and the Board with a view on Euroclear's risk profile versus risk appetite.

Euroclear's risk appetite aims at:

- developing and maintaining safe and efficient post-trade services which are resilient, reliable and secure
- supporting the development of sound and stable capital markets
- serving the public good by supporting the efficiency of markets and actively enabling the reduction of systemic risk wherever possible

Euroclear's key sources of risk are elaborated in a Risk Library:

Strategic and Business Risk (including Pension Risk)	**Strategic Risk** to the company's existence and ability to deliver its strategy arising from, for instance: - drastic changes in Euroclear's competitive environment, impacting its strategy and business model, or lack of appropriate adaptation of its business model; - inappropriate strategic decisions or lack of decisions taken; - inappropriate implementation of strategy; - lack of a fit for purpose technology, IT infrastructure and software; - inappropriate talent management. **Business Risk** is the risk that the company is not achieving its aimed, predicted financial results or the risk to its solvency or ability to meet capital requirements, for instance due to unexpected decrease in profitability; improper business decisions; lack of responsiveness towards changes impacting our business objectives. Pension Risk is the risk that the company has an underfunded defined benefits pension scheme exposure
Change and Project risk	**Change Risk** is the risk of failure with respect to the change management process including the tools and techniques to manage the people side of change to achieve the required business outcome. **Project Risk** is defined as an uncertain event or condition that, if it occurs, has a negative effect on a project's objectives (including scope, budget and time to market).
Operational Risk	Risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events.
Legal and Compliance Risk	Risk of financial loss or reputational damage arising from failure to comply with legal and regulatory requirements and material contractual obligations necessary to maintain Euroclear's license to operate or protect the group's rights and interests. This includes, among others, financial crime, market abuse, conflict of interest and laws, legislative risk and competition law risk.
Conduct and Culture Risk	Risk arising from the company's corporate and risk culture, governance arrangements, conduct and dealings with stakeholders and shareholders, and Euroclear's corporate responsibility as an international financial market infrastructure. Stakeholders include clients, participants, suppliers, regulators, competitors and other counterparts.

Credit Risk	Risk to Euroclear's earnings or capital arising from Euroclear's obligors failure to perform, due to inability or unwillingness, on its financial obligations to Euroclear on time and in full.
Liquidity Risk	Risk that Euroclear is unable to meet its contractual or contingent obligations or that it does not have the appropriate amount, tenor and composition of funding and liquidity to support its assets at an acceptable price**.**
Market Risk	Risk in the value of assets and liabilities (on- or off-balance sheet) and on the future earnings arising from changes in market rates or prices (e.g. foreign exchange or interest rate).
Systemic Risk	Risk of disruption to financial services organisations that has the potential to have serious consequences for the financial system and/or the real economy. Systemic risk events can originate in, propagate through, or remain outside of Euroclear.

Integrating Environmental, Social and Governance (ESG) risks into the Risk Management Framework

ESG risks are already integrated in the Euroclear Risk Library, across existing risk types, as part of the overall Enterprise Risk Management Framework. Considering the fast evolving nature of these risks and forthcoming regulatory expectations, Euroclear has set up a dedicated project to improve the assessment of the direct and indirect impact of ESG risks and to increase its maturity on climate and other environmental risks. Our focus for the coming years is to strengthen the identification, management, monitoring and disclosure of ESG risks, as drivers of other risk categories (credit and counterparty risks, suppliers risk, etc..), in line with company ambitions and evolving regulatory expectations. We equally put emphasis on integrating ESG considerations into our business strategy and corporate culture.

Risk monitoring

Euroclear monitors the ongoing effectiveness of the risk and control framework to ensure that risk taking is appropriate and remains within the defined risk appetite. Risks are identified and managed as part of the day-to-day business activities and controls are designed in line with the risks they aim to mitigate. All these controls are the foundation of the Euroclear's Internal Control System (ICS).

An annual, externally audited ISAE3402 report is produced for each Euroclear's CSD- with the exception of Euroclear Sweden and Euroclear Finland - providing assurance on the effectiveness of the relevant internal control environments.

Risk reporting

First line assurance to management and the Board is also provided by operational and financial risk dashboards that report on key risk indicators linked to the risk appetite.

Business management reports the outcome of its risk and control self-assessment via Positive Assurance Reports (PAR) maintained at the level of group entities and divisions.

The PAR process supports a yearly review of the inherent and residual risk level by category of risk and of the residual risk level, based on the assessment of the controls' design and operational effectiveness. The conclusions from the PARs are used to feed the Internal Control System (ICS) report with a link to the risk appetite, reflecting material risks and control issues along with remedial actions for the management and the Board.

The Internal Control System reports are complemented by independent Compliance and Ethics, Risk Management (second line of defence) and Internal Audit (third line of defence) opinions. This reporting by the three lines of defence provides effective and comprehensive monitoring of the risk and control environment.

Risk Management reports the conclusions of its continuous risk monitoring activities via a quarterly Corporate Risk Reports (CRR) submitted to the Euroclear SA/NV Board and to the Boards of each CSD respectively. The CRR reports outline the group and the entities' key risks and their current risk profiles. In addition, Risk Management continuously monitors ICS risks and control issues and the overall effectiveness of the ERM framework.

Risk Management is equally responsible for the maintenance of the Internal Capital and Liquidity Adequacy Assessment Process (ICLAAP) and Recovery and Resolution Plan (RRP). The ICLAAP assessment draws on the ICS and other risk monitoring processes, as well as scenario and stress testing to assess the adequacy of the group's financial resources (capital and liquidity) and provide feedback on whether the Risk Appetite can be maintained or needs to be adjusted given the level of financial resources available**.** The ICLAAP and RRP are designed to ensure that Euroclear maintains at all times the financial resources necessary to carry out its business strategy and fulfil its role as an FMI even under severe periods of stress. The ICLAAP and RRP are ongoing processes supported by a series of monitoring metrics and limits which are periodically reported to management and the Board, and are subject to a thorough review and validation on a yearly basis. The outcome of the yearly ICLAAP exercise, along the updated recovery plans, are submitted to the relevant authorities as part of the Supervisory Review and Evaluation Process (SREP).

Finally, the third line, Internal Audit assesses the ERM framework and reports to the Board of directors on the design and operating effectiveness of the framework and the ICS. These reports are shared with Senior Management and the Boards.

IV.2. Operational risk management

All Euroclear entities are inherently exposed to operational risk in their daily activities. Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems, or stemming from external events, leading to the actual outcome of a process to differ from the intended outcome. Moreover, it can affect the smooth provisioning of services.

Euroclear has identified the following operational risk categories:

- Execution, delivery and process management
- Internal fraud
- External fraud and cyber
- Business disruption
- Custody risk
- Clients, products and business practices
- Supplier and outsourcing risk
- Employment practices and workplace safety
- Damage to or loss of physical assets
- Model risk

Euroclear uses key risk indicators, key performance indicators and regular risk and control self-assessments to monitor operational risk effectively. Risk Management has also established an incident management framework to ensure that all incidents are consistently and timely tracked, escalated and followed up, regardless from their type (operational, compliance, IT).

Euroclear (anonymously) shares its internal loss data with the Operational Risk data Exchange Association (ORX) in order to access their database of high quality operational risk loss data. Euroclear uses such data for its capital modelling, and to understand and manage operational risk appropriately.

Information Security and Business Resilience

The CSDs of the Euroclear group are designated as critical national infrastructure in seven countries. Therefore, security and resilience are key components of the group approach to operational risk and are fully integrated in the group's ERM framework and aligned with recognised international standards.

Euroclear maintains and tests comprehensively processes in all entities to ensure the security and continuous availability of business-critical services, including effective management response to incidents and crises. All locations have appropriate security and contingency arrangements for recovery from workplace disruptions; supplemented by three geographically separate data centres to sustain operations in the event of a local and regional-scale disaster. Euroclear also regularly runs exercises and tests of its operational and management response and provides adequate training at all levels of the organisation.

Euroclear has continued to invest significantly in its cyber security capabilities including improvements to the cyber security risk culture. This investment in the IT risk and control environment resulted in improved security arrangements in a constantly evolving cyber threat landscape. Further investment will continue in 2022 and beyond to further reduce the residual risks and ensure sustainability.

IV.3. Euroclear group financial risk management

Financial risks are borne mainly by Euroclear Bank in its role as single-purpose settlement bank. The CSDs of the group have an overall low risk appetite. They offer only securities settlement services in central bank money and do not provide credit to clients. They do not engage in operations with counterparties, except for the investment of their own funds.

IV.3.1. Credit risk

Under the Euroclear Enterprise Risk Management Framework, credit risk is defined as the risk to Euroclear's earnings or capital arising from Euroclear's obligors' failure to perform, due to inability or unwillingness, on its financial obligations to Euroclear on time and in full. In the scope of its activities, Euroclear's obligors are defined as (borrowing) participants, cash correspondents and settlement banks, treasury counterparties and issuers of securities in the investment, treasury and liquidity securities portfolios.

Euroclear Bank's credit risk framework sets limits based on its credit risk appetite, and addresses among others the size and conditions of credit facilities for borrowing participants and market facilities to support treasury activity, including concentrations and collateral quality. Furthermore, operational processes are designed and reassessed on a regular basis to actively monitor and minimise credit risks.

Credit risk is mainly taken on borrowing participants to support their settlement activity and on other counterparties when performing the day-to-day balance sheet management, in particular re-depositing or investing participant's end-of-day long cash balances and the proceeds of own debt issuances and capital. To date Euroclear Bank (where the majority of credit risk in the group is concentrated) has not experienced any credit losses, not even during periods of market turmoil. This is largely due to the very short duration (mostly intra-day) uncommitted and predominantly secured nature of its credit exposures.

All credit granted to borrowing participants is uncommitted and must be secured by proprietary collateral, for which strict collateralisation rules apply. Unsecured exposure on borrowing participants is only permitted when allowed under CSDR[1] (e.g. exempted entities as per Article 23(2) of Regulation (EU) 390/2017).

[1] Regulation EU 909/2014 on settlement and central securities depositories.

Euroclear Bank has also treasury exposures resulting from depositing and investing clients' end-of-day cash positions and its own capital and liquidity. Treasury exposures are usually placed in the market with high-quality counterparties for a short duration, preferably by using reverse repurchase agreements (reverse repos) or invested in very high-quality securities with relatively short-term maturities. Unsecured treasury credit exposure is allowed but kept limited.

Euroclear CSDs settle in central bank money, and they cannot extend loans or credit facilities to their clients. Euroclear CSDs can potentially face a certain level of credit risk arising from the non-payment of fees by their clients, albeit for limited amounts considering both the frequency of the billing and their relatively broad customer base. Therefore, each CSD of the group is required by its home regulator to hold enough liquidity to cover such risks which is placed with highly rated counterparts in the local market.

The Euroclear CSDs and Euroclear SA/NV are also exposed to credit risk related to the reinvestment of their cash surplus with their bank counterparties. Since 2018, some Euroclear CSDs, as well as Euroclear SA/NV, also reinvest in a dedicated common investment fund and a longer term investment portfolio. Credit risk is, however, mitigated through a strict investment policy limiting, among others, the allowed counterparties, type of instruments, currencies and maturity.

Euroclear Investments SA, as intermediary group holding entity, mainly provides financial assistance to Euroclear group entities. The company has no direct business relationships with third party clients, and very limited funding relationships with third parties. In this context, Euroclear Investments SA faces credit risk which arises mainly from the non-payment of interests and principal on the various funding arrangements with its subsidiaries The company is also exposed to credit risk related to the reinvestment of its cash with its bank counterparties. In addition, the company also reinvested a part of its available cash in dedicated common investment funds. Credit risk arising from such investments is however mitigated through a strict and conservative investment policy in line with the group risk and credit rating profiles.

IV.3.1.a. Credit exposure

Intra-day credit exposure arises due to Euroclear Bank's extension of intra-day credit to its clients to facilitate the settlement of securities transactions on a Delivery-Versus-Payment (DVP) basis. Only in unforeseen circumstances (primarily as the result of settlement failures or delayed credits), part of the operating exposure can become an end-of-day overdraft retained in the books of Euroclear Bank until the next day. Sanctioning rates act as an effective deterrent to discourage participant's intra-day credit exposures to translate into overnight credit exposures. Other credit exposures that can go beyond the short-term (intra-day and overnight) are related to Euroclear Bank's treasury activity and client Securities Lending and Borrowing (SLB) and General Collateral Access (GCA) activity. The duration of the exposure varies with the source of exposure and funding.

The table below represents the maximum exposure to credit risk, which is the carrying amount as reported in the financial statements (therefore measured on an end-of-day basis), without taking into account any collateral held or other credit enhancement attached.

(€'000)	Notes	2021 Total exposure	2021 Of which secured:	2020 Total exposure	2020 Of which secured:
At 31 December					
Financial assets					
- Cash and balances with central banks		6,053,927	2,078,458	4,029,054	2,256,994
- Loans and advances at amortised cost		11,646,221	8,702,674	10,787,166	8,307,904
- Financial assets at FVOCI	XIII	9,279,304	-	9,921,592	-
- Non-trading financial assets mandatorily at FVPL		19,558	-	19,653	-
- Financial assets held for trading	XIV	19,879	-	10,560	-
- Derivatives used for hedging	XV	6,383	-	9,391	-
Total financial assets		**27,025,272**	**10,781,132**	**24,777,416**	**10,564,898**
Loan commitments	XXVI	2,526	-	3,905	-
Financial guarantees	XXVI	11,060,407	7,419,987	7,403,055	4,823,360
Total		**38,088,205**	**18,201,119**	**32,184,376**	**15,388,258**

Financial guarantees relate to guarantees issued to securities lenders in the context of the SLB and GCA programmes (see note XXVI).

The credit quality of Euroclear's credit exposures can be assessed by reference to the internal rating system adopted by the group[2] or ratings assigned by the three major rating agencies (Standard & Poor's, Moody's and Fitch ratings). In the tables below, the internal rating 'Eaa' sums up the ratings 'Eaa-', 'Eaa' and 'Eaa+' of Euroclear Bank's internal ratings scale. The internal rating 'Ea' sums up the ratings 'Ea-', 'Ea' and 'Ea+' of the internal ratings scale.

[2] Euroclear Bank's internal rating scale and definitions are in accordance with the Long-term Issuer Default Rating (LT IDR) scale of the three major rating agencies. For further details, please refer to Euroclear's Pillar 3 disclosure section 'Internal rating Model'.

The table below presents an analysis of the loans and advances at amortised cost (incl. cash and balances with central banks) using the group's internal ratings. The internal ratings are those of Euroclear's borrowers at legal entity level.

(€'000)	2021	2020
At 31 December		
Loans and advances at amortised cost (incl. cash and balances with central banks)		
Eaaa	5,234,680	4,022,701
Eaa	7,943,114	5,736,147
Ea	3,976,218	4,463,362
Ebbb+ and Ebbb	353,998	442,183
Ebbb- and below	193,078	152,417
Total gross carrying amount	**17,701,088**	**14,816,810**
Expected credit loss allowance	(940)	(590)
Carrying amount	**17,700,148**	**14,816,220**

Euroclear's borrowing participants and other counterparties are mainly of high credit quality and largely collateralised, for which limited credit loss allowances are recorded under IFRS 9. Credit exposure on lower credit quality entities is essentially due to cash balances left with our network of cash correspondents established in low rated countries.

The table below presents an analysis of the FVOCI debt instruments, using the second best approach on Long-term Issuer Default Rating (LT IDR) assigned by the three major rating agencies.

(€'000)	Notes	2021	2020
At 31 December			
Debt instruments at FVOCI			
AAA		5,671,655	2,087,749
AA+		586,115	3,366,010
AA		1,127,955	2,118,240
AA-		557,766	920,417
A+ to A-		16,768	41,462
BBB+		19,094	-
Carrying amount	XIII	**7,979,353**	**8,533,878**
Including expected credit loss allowance		(789)	(543)

Euroclear Bank's FVOCI debt instruments mainly consist of high credit quality short-term investments, which are considered as Stage 1 assets under IFRS 9. The Euroclear CSD's FVOCI debt instruments consist of above investment grade credit quality longer term investments, which are considered as Stage 1 assets under IFRS9.

The table below presents an analysis of the loan commitments and financial guarantees, using the group's internal ratings. The internal ratings are those of the Euroclear's clients or counterparties for which loan commitments and financial guarantees are given.

(€'000)	Notes	2021	2020
At 31 December			
Loan commitments and financial guarantees			
Eaaa		503,964	480,540
Eaa		2,703,405	1,389,270
Ea		5,976,582	4,235,075
Ebbb+ and Ebbb		1,719,042	1,162,570
Ebbb- and below		130,853	139,505
Carrying amount	XXVI	**11,033,846**	**7,406,960**
Including expected credit loss allowance		(29)	(10)

IV.3.1.b. Credit risk mitigation

Different recourses (e.g. collateral, guarantees or letter of credit) are used to cover any credit exposure that Euroclear Bank may incur due to a credit event, of participants, treasury counterparties or Clearstream Banking Luxembourg (CBL).

As clients have both an aggregated credit facility and credit facilities by currency, clients can use the collateral pledged and held in Euroclear Bank to guarantee all the obligations they have with Euroclear Bank, irrespective of the nature of the exposure and the original currency. For (reverse) repo activity with treasury counterparties, Euroclear Bank signs Global Master Repurchase Agreements (GMRAs), which allow for close-out netting of positions in case of a counterparty default. If the post-liquidation value of collateral does not cover the defaulted credit exposure, Euroclear Bank may end up with a residual credit exposure. The potential residual credit exposure that Euroclear Bank faces after consideration of all credit mitigations, and protective measures in place is however monitored on a daily basis.

In accordance with Articles 9-10-11 of Regulation (EU) 390/2017, strict collateralisation rules apply concerning the quality and quantity of securities used as collateral. Euroclear Bank uses a four-category collateral classification system. The internal rating as well as credit, market and liquidity indicators are used to allocate the securities in the different collateral categories. Any collateral that cannot be categorised in one of the four categories is not accepted as collateral to secure credit exposure. Frequent monitoring shows that more than 99% of the collateral securing the exposure has investment grade quality.

In order to accurately determine the value of the collateral it takes, Euroclear Bank has developed a dynamic internal collateral valuation model taking into account market, credit, country and liquidity risks. Haircuts are computed at least once a day for each security, reflecting the latest market risk factors and conditions. The collateral valuation model is back-tested (daily) and stress tested (yearly). The results show that the collateral valuation model has provided continually adequate valuations for securities securing the credit exposure, even during periods of high volatility in the markets.

The credit exposure of the interoperable link (i.e. the Bridge) with CBL is secured by means of a letter of credit issued by a consortium of credit worthy financial institutions in Euroclear Bank's favour. In accordance with Article 16(k) of Regulation (EU) 390/2017, no credit institution at group level has committed to a share of the total outstanding letter of credit above 10%. The guarantee amounted to $ 3 billion at the end of 2021 and is reviewed on a regular basis. Additionally, Euroclear Bank has a right to set-off which extinguishes the mutual debts owed between the parties in exchange for a new net amount. In line with CSDR requirements, the CBL Bridge risk management principles and processes do not allow for unsecured credit exposure over the Bridge.

IV.3.1.c. Concentration risk

Euroclear's role as a provider of post-trade services to global capital markets results in its exposures being highly concentrated on the financial sector. Concentration limits, are however, set to ensure that the group does not take excessive exposures on a limited number of clients or counterparties. Furthermore, concentration limits and thresholds are set per collateral asset type, individual issuers, country (including geographic region), economic sector, type/activity of the issuer, rating, settlement currency, etc.

Exposure concentration: European regulation (Article 395 of Regulation (EU) 575/2013 amended by Regulation (EU) 2019/876) imposes risk concentration limits that have to be respected for each applicable exposure. This Large Exposure Limit is the maximum amount that Euroclear Bank can lend to a single participant's family or group of connected entities. Euroclear Bank should never have an end of day exposure on one single participant's family larger than 25% of its Tier 1 capital, after taking into account the effect of the credit risk mitigation in accordance with Articles 399 to 403 of Regulation (EU) 575/2013 as amended by Regulation (EU) 2019/876. Additionally, as required by Article 395 of Regulation (EU) 575/2013 as amended by Regulation (EU) 2019/876 and using EBA/GL/2015/20, limits to manage concentration risk arising from exposures to shadow banking entities are in place at an aggregated level. To anticipate exposure concentration and to allow actions to be taken, exposure monitoring against determined thresholds and limits is performed. Depending on the exposure this is done at legal entity, family and/or individual currency level, at Euroclear Bank aggregated level.

Collateral concentration: Collateral concentration thresholds and limits, which apply to the aggregate exposure on entity and/or family level, are set in line with Euroclear Bank's risk appetite to ensure Euroclear Bank's ability to liquidate securities pledged as collateral is not impaired. A minimum amount of collateral must fulfil the requirements set out in Article 10 or of Regulation (EU) 390/2017, to ensure it can be monetised same-day in case of default. To anticipate collateral concentration and to allow actions to be taken, collateral monitoring against determined thresholds and limits is performed ex-ante, intra-day and post-fact.

The table below shows the geographical concentration of financial assets and liabilities.

(€'000)	European Union	Europe - Other	Americas	Asia	Rest of the world	Total
At 31 December 2021						
Total financial assets	**17,117,642**	**6,422,768**	**2,673,893**	**731,453**	**79,516**	**27,025,272**
Total financial liabilities	**9,315,173**	**4,860,357**	**1,895,353**	**7,350,344**	**238,123**	**23,659,350**
At 31 December 2020						
Total financial assets	**15,538,392**	**6,827,401**	**1,649,320**	**718,109**	**44,194**	**24,777,416**
Total financial liabilities	**8,601,497**	**4,622,937**	**1,326,047**	**6,065,793**	**361,140**	**20,977,414**

The geographical regions are those in which Euroclear's clients or counterparties are located. Cash is classified under the country of the issuing central bank.

IV.3.2. Liquidity risk

Liquidity risk is the risk that Euroclear, although solvent, is unable to meet its contractual or contingent obligations or that it does not have the appropriate amount, tenor and composition of funding and liquidity to support its assets at an acceptable price.

On an annual basis, the group conducts an Internal Liquidity Adequacy Assessment Process to thoroughly review its liquidity risks, mitigates and risk appetite. This review is performed at the Euroclear SA/NV consolidated and Euroclear Bank SA/NV levels, with final approval by their respective Boards.

IV.3.2.a. Liquidity risk at Euroclear Bank

Euroclear Bank provides clients with liquidity through intraday credit facilities to support its efficient settlement and custody services. It ensures timely cross-border settlement with domestic markets, supports new issues and custody activities, and enables clients to transfer sales and income proceeds in a timely manner. Euroclear Bank's liquidity risk is largely intra-day and transactional.

Euroclear Bank’s clients may end up with residual long and short cash positions at the end of the day. On a daily basis, Euroclear Bank is normally net long cash, which it invests mostly on a very short-term basis to match the volatility of clients' settlement and money transfer activities.

IV.3.2.a.1. Liquidity risk appetite

Euroclear Bank's liquidity risk appetite is very low, given the criticality of intra-day liquidity for the efficient delivery of its settlement and custody services in keeping with it systemic importance as an FMI. Euroclear Bank has therefore adopted a strong risk management framework to anticipate, monitor and manage the intra-day liquidity flows to ensure the quality of its services. Liquidity risk is further mitigated by Euroclear Bank's strict credit criteria and the continuous monitoring of its clients, and by the fact that credit is secured and short-term.

IV.3.2.a.2. Funding

Euroclear Bank’s settlement system allows for an efficient recycling of liquidity. Although Euroclear Bank settles transactions amounting to over €2,525 billion each day (2021 average), it only extends approximatively 1% of the settled transactions in secured intra-day cash credit to its clients (thanks to netted back-to-back transactions and to an efficient securities lending and borrowing programme). Since Euroclear Bank’s daily payment receipts typically match its payment obligations, additional liquidity is only needed to smoothen or accelerate the payment process and to ensure the timely execution of time critical payments throughout the day.

To support its daily payment activity, Euroclear Bank relies on the deposits from its clients on a large network of highly rated cash correspondents, on the reserve accounts with National Bank of Belgium and the Bank of England, and has direct access to the TARGET2 system for euro payments.

In order to raise liquidity, Euroclear Bank can also use its investment book, funded by equity and retained earnings. The investment book must be invested with the objective of capital and liquidity preservation, meaning in euro-denominated sovereign, supranational or agency debt instruments rated AA- or above and ECB-eligible. Euroclear Bank can also raise liquidity from securities funded by the debt issued as part of the funding strategy[3]. Furthermore, Euroclear Bank has a broad access to the inter-bank market and has contingency liquidity sources in place for the major currencies, which are tested regularly.

Euroclear Bank may also enter into repo transactions, whose purpose is to maintain an active relationship with cash givers in case Euroclear Bank would need to generate liquidity in contingency situations.

Euroclear Bank has issued various recovery capital instruments under a Belgian law registered note format for a total of €800 million, aiming at structuring a relevant loss absorption mechanism to restore the capital position of the Bank in recovery and resolution scenarios in accordance with the Banking Recovery and Resolution Directive applicable to the Company:
- a senior non-preferred loan issued in 2018 for €200 million (maturing in 2026);
- a convertible subordinated loan issued in 2018 for €200 million (maturing in 2033), recognised as Tier 2 regulatory capital;
- a senior non-preferred loan issued issued in 2018 for €300 million (maturing in 2030);
- a convertible subordinated loan issued in 2019 for €100 million (maturing in 2033), recognised as Tier 2 regulatory capital.

Convertible subordinated liabilities were also issued by Euroclear SA/NV in 2018 for an amount of €100 million (maturing in 2033) under a Belgian law registered note format. This note aims at structuring a relevant loss absorption mechanism to restore capital position of Euroclear SA/NV in recovery and resolution scenarios in accordance with the Banking Recovery and Resolution Directive applicable to the Company. This instrument was recognised in December 2019 as Tier 2 regulatory capital.

The above notes were all subscribed by Euroclear Investments SA and funded with the proceeds of three issuances for a total amount of €1.3 billion (a €300 million unsecured and unsubordinated 12-year fixed rate senior note, a €400 million subordinated resettable 30-years fixed rate hybrid note callable at the option of the issuer after 10 years, and a €600 million note due in 2026).

On 16 June 2021, Euroclear Investments SA issued a 30-year non-callable - 10-year hybrid - subordinated Eurobond on the Irish stock exchange for an amount of €350 million. The proceeds of this long-term debt were downstreamed by the Company to Euroclear SA/NV under the form of a capital increase (€225 million) and the subscription to an Additional Tier 1 instrument of €125 million (maturing in 2031). The purpose was to fund the acquisition of the MFEX group and mitigate the impact of the acquisition on Euroclear SA/NV’s regulatory capital adequacy.

[3] Details on the debt securities issued and funds borrowed can be found in note XX.

Besides the above Long Term notes issuances, Euroclear Bank launched in 2018 a €5 billion Euro Medium Term Note (EMTN) and a €20 billion Certificate of Deposits multi-currency programs to increase its Qualifying Liquidity Sources under the European Central Securities Depository Regulation. Out of its EMTN program, Euroclear Bank issued a total outstanding amount equivalent to €2.4 billion in EUR, USD and GBP at the end of 2021. Out of its Certificate of Deposits program, Euroclear Bank has a total outstanding amount of €2.1 billion in EUR, USD and GBP.

IV.3.2.a.3. Liquidity stress testing
Euroclear Bank regularly performs idiosyncratic and market-wide liquidity stress tests to assess potential liquidity strains and to ensure efficient access to sufficient liquidity sources to fund any shortfalls.

Examples of liquidity stress tests are:
- default of the top two clients (at family level) and the knock on effects;
- operational issue affecting a cash correspondent;
- unusual behaviour of participants' deposits.

In addition, Euroclear SA/NV has to comply with regulatory liquidity stress tests such as:
- The Liquidity Coverage Ratio (LCR), aiming to monitor that credit institutions hold sufficient liquid assets to withstand the excess of liquidity outflows over inflows that are expected to accumulate over a 30-day stressed period.
- The Net Stable Funding Ratio (NSFR), which is defined as the amount of available stable funding (Liabilities) relative to the amount of required stable funding (Assets).

For LCR and NSFR, Euroclear SA/NV complies with regulatory requirements and has set higher targets than the regulatory limits as part of its risk appetite framework.

Finally, on a daily basis, Euroclear Bank runs two intra-day liquidity stress tests, the 'Cover 1' and 'Cover 2', to assess if it has sufficient qualifying liquidity resources to withstand the default, at group level, of one participant (Cover 1 as per CPMI-IOSCO) and of two participants (Cover 2 as per CSDR) to which Euroclear bank has the largest liquidity exposure. These stress test results are reported daily and approved monthly by the Credit and Assets and Liabilities Committee (CALCO) and reported semi-annually to the Euroclear Bank Management Committee.

IV.3.2.a.4. Liquidity contingency plan
Euroclear Bank maintains an appropriate liquidity contingency plan to ensure the business continuity of its core settlement and custody services. The plan documents the relevant operational procedures and foresees liquidity preservation and generation measures ensuring access to (contingency) liquidity in the event of an operational or financial crisis. On top of its own capital and access to regular market funding, Euroclear Bank has negotiated committed liquidity lines and can call upon a total of €0.75 billion syndicated backstop facility, a total of €1.3 billion bilateral standby facility, approximatively €11.2 billion committed forex swap facilities and a total of €0.6 billion committed repo facilities. The contingency plan and the availability of contingency liquidity are regularly tested. Finally, to cover its short-term liquidity needs resulting from the default of a client, Euroclear Bank has agreements in place allowing Euroclear Bank to appropriate the client pledged collateral (immediate transfer of ownership). In order to generate liquidity, this appropriated collateral is then re-used with liquidity providers or pledged with the National Bank of Belgium or the Bank of England, pending full liquidation. The Euroclear Bank Terms and Conditions (T&C's) also foresee exceptional measures should Euroclear Bank experience an unexpected liquidity shortfall.

IV.3.2.b. Liquidity risks in Euroclear SA/NV, the CSDs and Euroclear Investments SA
Investments of cash belonging to Euroclear SA/NV, the CSDs and Euroclear Investments SA aim at minimising liquidity risk for these entities:
- stable cash positions linked to regulatory liquidity requirements, for entities where such requirements apply, should be invested on a rollover basis; and
- surplus cash investments, which includes the working cash needs of these entities, should always be cash flow driven, which means that the amount and period of the investments takes into account the evolution of working cash needs and capital expenditure.

For the CSDs and Euroclear SA/NV's regulatory liquidity obligations, the types of investments to be used are limited to cash, overnight or term deposits, or High-Quality Liquid Assets (HQLA) - level 1 plain vanilla debt securities issued or guaranteed by (i) a government; (ii) a central bank; (iii) a multilateral development bank as listed under Article 117 of Regulation (EU) No 575/2013 of the European Parliament and of the Council; (iv) the European Financial Stability Facility or the European Stability Mechanism in accordance with the provisions of the applicable regulatory framework of each entity.

Maturity limits for securities are set at three years when representing investments of the regulatory own funds of Euroclear SA/NV and group CSDs, where applicable, up to eight years when representing investment of their respective additional recovery capital so to mitigate properly market risks. For Euroclear Investments SA and Euroclear SA/NV, available surplus cash (i.e. cash in excess of regulatory liquidity obligations) can also be invested in plain vanilla corporate fixed income securities with maturities up to five years and not exceeding three years on average following strict and conservative investment policy principles in line with the group risk and credit rating profiles.

For the group CSDs and Euroclear SA/NV, liquidity stress testing is performed to ensure, where applicable, compliance with local regulatory liquidity obligations as well as adequate funding.

IV.3.2.c. Overview of financial liabilities by remaining maturity

The table below shows the consolidated financial liabilities analysed by remaining contractual maturity at the balance sheet date. The amounts disclosed in the table are the contractual undiscounted cash flows at spot rate and the book value of the derivatives.

(€'000)	Notes	Repayable on demand or within one week	Other amounts maturing within 3 months	Maturity between 3 and 6 months	Maturity between 6 months and 1 year	Maturity within 1 to 5 years	Maturity after 5 years	Undiscounted contractual cash flows - Total	Book value
At 31 December 2021									
Financial liabilities									
- Deposits from central banks		440,972	-	-	-	-	-	**440,972**	**440,972**
- Deposits from banks and customers		16,535,843	131,149	7,634	-	-	-	**16,674,626**	**16,674,645**
- Debt securities issued and funds borrowed	XX	779,366	1,214,340	314,324	519,706	2,694,080	1,113,063	**6,634,879**	**6,381,911**
- Financial liabilities held for trading	XIV	13,247	603	-	-	-	-	**13,850**	**13,850**
- Derivatives used for hedging	XV	-	2,347	2,347	4,693	2,814	1,239	**13,440**	**13,440**
- Lease liabilities		-	3,135	5,625	10,614	67,613	47,545	**134,532**	**134,532**
Total financial liabilities		**17,769,428**	**1,351,574**	**329,930**	**535,013**	**2,764,507**	**1,161,847**	**23,912,299**	**23,659,350**

(€'000)	Notes	Repayable on demand or within one week	Other amounts maturing within 3 months	Maturity between 3 and 6 months	Maturity between 6 months and 1 year	Maturity between 1 and 5 years	Maturity after 5 years	Undiscounted contractual cash flows - Total	Book value
At 31 December 2020									
Financial liabilities									
- Deposits from central banks		301,589	-	-	-	-	-	**301,589**	**301,589**
- Deposits from banks and customers		14,649,121	123,344	7,430	-	-	-	**14,779,895**	**14,779,917**
- Debt securities issued and funds borrowed	XX	122,071	1,588,941	416,746	381,310	1,999,730	1,570,750	**6,079,548**	**5,744,424**
- Financial liabilities held for trading	XIV	15,799	385	-	-	-	-	**16,184**	**16,184**
- Derivatives used for hedging	XV	-	538	538	1,078	-	-	**2,154**	**2,154**
- Lease liabilities		-	2,623	2,615	5,377	65,428	57,103	**133,146**	**133,146**
Total financial liabilities		**15,088,580**	**1,715,831**	**427,329**	**387,765**	**2,065,158**	**1,627,853**	**21,312,516**	**20,977,414**

The deposits from banks and clients include an amount of €6,682,667,000-equivalent at 31 December 2021 (2020: €5,917,175,000-equivalent) of deposits blocked following applicable international sanctions measures. Furthermore, as of 31 December 2021, assets in safe custody also include securities for a market value of €11,415,844,000-equivalent blocked pursuant to these same sanctions (2020: €9,622,660,000-equivalent).

IV.3.2.d. Fair value of financial instruments

The group measures fair values using the following fair value hierarchy, which reflects the significance of the inputs used in making the measurements:

- **Level 1**: Inputs that are quoted market prices in active markets for the same instruments. A market is regarded as active if quoted prices are readily and regularly available (exchange, dealer, broker, pricing service or regulatory agency) and if these prices represent actual and regularly occurring market transactions on an arm's length basis.

- **Level 2**: The fair value of these instruments is determined by using quoted prices included within level 1 that are observable either directly (i.e. as prices) or indirectly (i.e. derived from prices). This category includes instruments valued using: quoted prices in active markets for similar instruments, quoted prices for similar instruments in markets that are less active, or other valuation techniques. The valuation techniques maximise the use of observable market data where it is available. If all significant inputs that are required to fair value an instrument are observable, the instrument is included in level 2.

- **Level 3**: If one or more of the significant inputs is not based on observable market data, the instrument is included in level 3. Specific valuation techniques used to value financial instruments include:
    - quoted market prices or dealer quotes for similar instruments;
    - the present value of the estimated future cash flows based on observable yield curves, for the fair value of interest rate swaps;
    - the forward exchange rates at the balance sheet date, with the resulting value discounted back to present value, for the fair value of forward foreign exchange contracts;
    - other techniques, such as discounted cash flow analysis, used to determine the fair value of remaining financial instruments.

IV.3.2.d.1 Financial instruments measured at fair value

The table below shows the three-level hierarchy of the financial instruments measured at fair value.

(€'000)	Notes	Level 1	Level 2	Level 3	Total
At 31 December 2021					
Financial assets					
Financial assets at FVOCI	XIII				
- Equity instruments		425,037	858,199	16,714	**1,299,950**
- Debt instruments		7,979,354	-	-	**7,979,354**
Non-trading financial assets mandatorily at FVPL					
- Debt instruments		-	-	14,711	**14,711**
- Loans		-	-	4,847	**4,847**
Financial assets held for trading	XIV				
- Forward foreign exchange		-	19,879	-	**19,879**
Derivatives used for hedging	XV				
- Forward foreign exchange		-	1,066	-	**1,066**
- Interest rate swaps		-	5,317	-	**5,317**
Total financial assets		**8,404,391**	**884,461**	**36,272**	**9,325,124**
Financial liabilities					
Financial liabilities held for trading	XIV				
- Forward foreign exchange		-	13,850	-	**13,850**
Derivatives used for hedging	XV				
- Forward foreign exchange		-	9,387	-	**9,387**
- Interest rate swaps		-	4,053	-	**4,053**
Total financial liabilities		**-**	**27,290**	**-**	**27,290**

Financial instruments classified in level 3 principally relate to minority long-term participating interests of Euroclear Bank (SWIFT and Monte Titoli) and Euroclear SA/NV (Acadiasoft, Liquidshare, B-Hive and DSB Limited).

(€'000)	Notes	Level 1	Level 2	Level 3	Total
At 31 December 2020					
Financial assets					
Financial assets at FVOCI	XIII				
- Equity instruments		504,840	869,652	13,222	**1,387,714**
- Debt instruments		8,533,878	-	-	**8,533,878**
Non-trading financial assets mandatorily at FVPL					
- Debt instruments		-	-	12,403	**12,403**
- Loans		-	-	7,250	**7,250**
Financial assets held for trading	XIV				
- Forward foreign exchange		-	10,560	-	**10,560**
Derivatives used for hedging	XV				
- Forward foreign exchange		-	9,391	-	**9,391**
- Interest rate swaps		-	-	-	**-**
Total financial assets		**9,038,718**	**889,603**	**32,875**	**9,961,196**
Financial liabilities					
Financial liabilities held for trading	XIV				
- Forward foreign exchange		-	16,184	-	**16,184**
Derivatives used for hedging	XV				
- Forward foreign exchange		-	2,154	-	**2,154**
- Interest rate swaps		-	-	-	**-**
Total financial liabilities		**-**	**18,338**	**-**	**18,338**

The table below shows the reconciliation of the level 3 fair value measurements.

(€'000)	Notes	At 31 December 2020	(Disposals)/ acquisitions	Fair value adjustment released in profit or loss	Fair value adjustment recognised in equity	Accrued Interest	At 31 December 2021
Financial assets							
Financial assets at FVOCI	XIII						
- Equity shares		13,222	2,744	-	748	-	**16,714**
Non-trading financial assets mandatorily at FVPL							
- Debt instruments		12,403	1,851	457	-	-	**14,711**
- Loans		7,250	(2,112)	-	-	(291)	**4,847**
Total financial assets		**32,875**	**2,483**	**457**	**748**	**(291)**	**36,272**

(€'000)	Notes	At 31 December 2019	(Disposals)/ acquisitions	Fair value adjustment released in profit or loss	Fair value adjustment recognised in equity	Accrued Interest	At 31 December 2020
Financial assets							
Financial assets at FVOCI	XIII						
- Equity shares		13,976	55	-	(809)	-	**13,222**
Non-trading financial assets mandatorily at FVPL							
- Debt instruments		10,142	-	2,261	-	-	**12,403**
- Loans		5,694	1,372	-	-	184	**7,250**
Total financial assets		**29,812**	**1,427**	**2,261**	**(809)**	**184**	**32,875**

IV.3.2.d.2 Financial instruments not measured at fair value

The table below shows the three-level hierarchy of the financial instruments not measured at fair value.

(€'000)	Notes	Level 1	Level 2	Level 3	Total	Carrying amount
At 31 December 2021						
Financial assets						
- Cash and balances with central banks		3,975,647	2,078,280	-	6,053,927	6,053,927
- Loans and advances at amortised cost		2,893,418	8,752,803	-	11,646,221	11,646,221
Total financial assets		**6,869,065**	**10,831,083**	**-**	**17,700,148**	**17,700,148**
Financial liabilities						
- Deposits from central banks		440,972	-	-	440,972	440,972
- Deposits from banks and customers		16,535,843	138,802	-	16,674,645	16,674,645
- Debt securities issued and funds borrowed	XX	6,233,647	223,704	-	6,457,351	6,381,911
- Lease liabilities		-	134,532	-	134,532	134,532
Total financial liabilities		**23,210,462**	**497,038**	**-**	**23,707,500**	**23,632,060**

(€'000)	Notes	Level 1	Level 2	Level 3	Total	Carrying amount
At 31 December 2020						
Financial assets						
- Cash and balances with central banks		1,772,139	2,256,915	-	4,029,054	4,029,054
- Loans and advancesat amortised cost		2,433,016	8,354,150	-	10,787,166	10,787,166
Total financial assets		**4,205,155**	**10,611,065**	**-**	**14,816,220**	**14,816,220**
Financial liabilities						
- Deposits from central banks		301,589	-	-	301,589	301,589
- Deposits from banks and customers		14,649,121	130,796	-	14,779,917	14,779,917
- Debt securities issued and funds borrowed	XX	5,792,399	122,203	-	5,914,602	5,744,424
- Lease liabilities		-	133,146	-	133,146	133,146
Total financial liabilities		**20,743,109**	**386,145**	**-**	**21,129,254**	**20,959,076**

Loans and advances include reverse repos and long balances deposited with financial institutions other than central banks, and to a lesser extent overdrafts and fixed term advances to clients. Loans and advances at amortised cost and deposits are short-term (less than 12 months), hence their carrying amount is a reasonable approximation of their fair value.

IV.3.3. Market risk

Market risk is the risk of losses in (on- or off-balance sheet) positions arising from adverse movements in market prices. Market risk arises from possible changes in foreign exchange rates, interest rates, equity or commodity prices.

IV.3.3.a. Market risk at Euroclear Bank

The majority of market risk in the group is concentrated at Euroclear Bank. As part of the Financial Risk Policy Handbook, an adequate risk framework has been put in place to measure, monitor and control the interest rate and foreign exchange risk managed by Euroclear Bank.

Market risk appetite: Euroclear Bank has a low risk appetite for market risk. By policy, Euroclear Bank's core equity (shareholders' equity plus retained earnings) is invested in highly rated and liquid debt instruments rated AA- or higher. The maturity of these assets is limited to five years and the average duration is currently below one year.

Euroclear Bank does not engage in any activity that is not considered as part of its role of Financial Market Infrastructure or a consequence of its clients' activity, and as such will not engage in trading (even if, under IFRS, certain transactions in derivatives do not qualify as hedges and are therefore recognised under trading activities). The activities and instruments in which Euroclear Bank can engage must be in line with its low-risk profile. Euroclear Bank is not significantly exposed to equity risk. A prudent investment strategy is applied in order to preserve the core equity of Euroclear Bank. An appropriate hedging strategy may be applied so as to protect future earnings against adverse market conditions.

Market risk measurement: The market risk relative to the management of the FVOCI portfolio is measured using a Value-at-Risk (VaR) methodology. The VaR for a portfolio is the maximum loss over a determined time horizon at a given confidence level (99%). The VaR model assumes a holding period, until positions can be closed, of one day. The market parameters are derived from the volatility and correlation observed from historical daily changes. The VaR models are back tested on an annual basis or in case of material changes.

Euroclear Bank has developed two VaR models for the foreign exchange (FX) and interest rate (IR).

- The FX-VaR model measures the 1-day maximum loss with a confidence of 99% arising from the end of day exposures of different currencies. The FX-VaR is shown on an aggregated basis.
- The IR-VaR model calibrates the daily VaR figures for the aggregate portfolio as well as for different portfolios. The IR-VaR figures are segregated in the following books: Tier1 capital book (all securities purchased by Euroclear Bank with its capital); long term borrowings and investments (Euroclear Bank's senior non-preferred loans, including the contingent convertibles, and the subordinated liabilities as well as the proceeds of their investments); short and medium term issuances book (assets, liabilities and commitments resulting from the investments of the certificates of deposits and medium term notes). The aggregate VaR figures are:

(€'000)	2021 average	2021 min	2021 max	2020 average	2020 min	2020 max
Aggregate - IR	2,038	954	3,582	2,581	1,167	5,259
Aggregate - FX	32	7	84	74	32	155

Market risk mitigation (hedging): Euroclear Bank has engaged in a series of market derivatives in order to hedge the forex risk exposure resulting from future income streams, with the aim of ensuring that the financial results are not adversely affected by market evolutions ('predictability of future revenues'). Such transactions are classified as cash flow hedges.

The Foreign Exchange Manageable Amount owned by Finance Division forecasts the future income by currency, based on the plan figures. The outcome of this exercise is used by the Treasury Department to carry out the Foreign Exchange hedging activity.

IV.3.3.b. Market risk at Euroclear SA/NV, the CSDs and Euroclear Investments SA

Interest rate risk exists only to a limited extent in Euroclear SA/NV, the CSDs and Euroclear Investments SA. Indeed, the CSDs do not operate commercial cash accounts but invest their cash positions in accordance with regulatory liquidity requirements. The cash positions are reinvested in four ways:

- straight overnight or term deposits with a maturity of maximum three years
- regulatory cash is invested in a Common Investment Fund (CIF) with mandates with a maturity of maximum three years, or is left on cash accounts where appropriate
- excess of cash is invested in a CIF with a maturity of maximum five years
- a loan for recovery purposes (in line with the Minimum Requirement Eligible liabilities - MREL) from Euroclear Investments SA is invested in a CIF with a maturity of maximum eight years

Foreign exchange risk is not significant in Euroclear SA/NV, the CSDs and Euroclear Investments SA. To avoid the potential foreign exchange risk that could arise from the investment of their surplus cash, these investments can only be made in their local currency, meaning in EUR for entities whose functional currency is EUR, in GBP for the entities located in the United Kingdom, and in SEK for the Swedish entity. From a consolidated group perspective, the only source of foreign exchange risk stems from the potential change in net asset values of Euroclear SA/NV's non-euro shareholdings (for example, Euroclear UK & International and Euroclear Sweden).

Starting in April 2018, Euroclear launched its Euroclear Treasury Funds and Treasury Investment mandates in France and the UK (Common Investment Funds) to manage regulatory and excess treasury positions of the group (excluding Euroclear Bank). It aimed at better mitigating risks (credit, market and liquidity) arising from treasury investments in EUR and GBP for Euroclear SA/NV, the CSDs and Euroclear Investments SA, including capital erosion risks generated currently by the current EUR short term interest rate environment.

The Euroclear Treasury Fund and Treasury Investment Mandate structures (recorded as financial assets designated at FVOCI) rely on two common investment funds and two investment mandates, which are all managed by two custodians domiciled in Belgium and Luxembourg. The assets under management are totalling approximatively €1.07 billion as of end 2021 for Euroclear SA/NV, the CSDs and Euroclear Investments SA.

Such structures enable eligible Euroclear entities to invest their regulatory cash and to some extent their surplus cash positions under strict rules such as to invest into EUR and GBP government or supra-national ECB eligible securities with rating, maturities, duration, relevant VaR and concentration limitations. They also enable group subsidiaries to invest their respective excess cash positions to allow for optimised treasury returns and risk mitigation on cash in excess of regulatory obligations. Applicable investment rules also include rating, maturity, average duration,VaR (and concentration limitations). For Euroclear Investments SA and Euroclear SA/NV in particular, market risks on treasury investments into the CIFs are further mitigated by allowing the usage of listed EUR Fixed income futures to limit the duration of the related treasury portfolios.

The group's equity risk principally relates to its long term participating interest in Euronext held by Euroclear SA/NV (classified as level 1).

IV.3.3.c. Interest rate risk

As a result of its support for client activities and the mitigating actions it takes in terms of maintaining capital and liquidity, Euroclear Bank's balance sheet structure is sensitive to changes in interest rates. Interest Rate Risk in the Banking Book (IRRBB) is measured by considering its impacts on both the equity value (EVE[4]) and future profitability (NIE[5]) for Euroclear Bank stand-alone and Euroclear SA/NV consolidated. In addition to the base case, six stressed scenarios are run under the EVE perspective and two stressed scenarios under the NIE perspective. The assessment considers the interest rate sensitive elements on- and off- balance sheet and also interest rate sensitive income/expense, which influences the profit and loss statement.

The table below shows the IRRBB at the level of Euroclear Holding SA/NV. Assets and liabilities held in the Banking book[6] are predominantly denominated in euro, and they are expressed at market value for the purpose of this disclosure. The economic value of the Banking book is computed by discounting the future cash flows for assets and liabilities present in this book.

The sensitivity of the economic value of the Banking Book to interest rate shocks is presented in the first column of the table below.

(€'000)	Economic value of banking book	Income sensitivity Interest result Effective 2021	Interest result Expected 2022
Interest scenario's			
Parallel increase in interest rates with 200 basis points	2,869,944	-	311,284
No movement	2,793,334	62,909	63,738
Parallel decrease in interest rates with 200 basis points	2,694,397	-	63,547

4 Economic Value of Equity
5 Net interest earnings
6 Banking book contains assets and liabilities which are not held for trading intentions or for hedging of the instrument within the trading book. This book includes the Bank's on-balance sheet interest bearing assets and liabilities, including off-balance sheet positions with a fixed interest.

(€'000)	Economic value of banking book	Income sensitivity: Interest result Effective 2020	Income sensitivity: Interest result Expected 2021
Interest scenario's			
Parallel increase in interest rates with 200 basis points	2,888,644	-	279,711
No movement	2,771,779	121,606	68,896
Parallel decrease in interest rates with 200 basis points	2,616,672	-	68,896

The tables below reflect the interest rate risk profile of assets and liabilities at 31 December for Euroclear Holding SA/NV, based on the earlier of maturity date and interest rate resetting date. Amounts are net of any impairment loss.

(€'000)	Repayable on demand or within one week	Other amounts maturing within 3 months	Maturity between 3 and 6 months	Maturity between 6 months and 1 year	Maturity between 1 and 5 years	Maturity after 5 years	Non-interest bearing	Total
At 31 December 2021								
Assets								
- Cash and balances with central banks	6,053,516	-	-	-	-	-	411	6,053,927
- Loans and advances at amortised cost	9,264,184	2,333,719	2,125	4,705	21,869	-	19,619	11,646,221
- Financial assets at FVOCI	130,883	2,533,411	1,502,463	795,476	2,658,401	340,930	1,317,740	9,279,304
- Non-trading financial assets mandatorily at FVPL	-	-	-	-	4,784	-	14,774	19,558
- Financial assets held for trading	-	-	-	-	-	-	19,879	19,879
- Derivatives used for hedging	-	267	267	533	3,768	1,478	70	6,383
- Other assets	-	-	-	-	-	-	2,374,634	2,374,634
Total assets	**15,448,583**	**4,867,397**	**1,504,855**	**800,714**	**2,688,822**	**342,408**	**3,747,127**	**29,399,906**
Liabilities								
- Deposits from central banks	440,972	-	-	-	-	-	-	440,972
- Deposits from banks and customers	16,535,726	131,161	7,649	-	-	-	109	16,674,645
- Debt securities issued and funds borrowed	779,165	1,210,896	294,666	499,325	2,534,792	1,042,672	20,395	6,381,911
- Financial liabilities held for trading	-	-	-	-	-	-	13,850	13,850
- Derivatives used for hedging	-	2,347	2,347	4,693	2,808	1,239	6	13,440
- Lease liabilities	-	3,135	5,625	10,614	67,613	47,545	-	134,532
- Other liabilities	-	-	-	-	-	-	958,257	958,257
Shareholders' equity	-	-	-	-	-	-	4,782,299	4,782,299
Total liabilities and shareholders' equity	**17,755,863**	**1,347,539**	**310,287**	**514,632**	**2,605,213**	**1,091,456**	**5,774,916**	**29,399,906**
Total interest sensitivity gap	(2,307,280)	3,519,858	1,194,568	286,082	83,609	(749,048)	(2,027,789)	-
Cumulative gap	**(2,307,280)**	**1,212,578**	**2,407,146**	**2,693,228**	**2,776,837**	**2,027,789**	**-**	**-**

(€'000)	Repayable on demand or within one week	Other amounts maturing within 3 months	Maturity between 3 and 6 months	Maturity between 6 months and 1 year	Maturity between 1 and 5 years	Maturity after 5 years	Non-interest bearing	Total
At 31 December 2020								
Assets								
- Cash and balances with central banks	4,028,846	-	-	-	-	-	208	4,029,054
- Loans and advances	7,781,630	2,958,255	2,725	11,334	20,919	-	12,303	10,787,166
- Financial assets at FVOCI	82,312	3,423,570	797,095	1,459,747	2,208,599	542,823	1,407,446	9,921,592
- Non-trading financial assets mandatorily at FVPL	-	556	-	-	6,340	-	12,757	19,653
- Financial assets held for trading	-	-	-	-	-	-	10,560	10,560
- Derivatives used for hedging	-	2,348	2,348	4,695	-	-	-	9,391
- Other assets	-	-	-	-	-	-	1,608,719	1,608,719
Total assets	**11,892,788**	**6,384,729**	**802,168**	**1,475,776**	**2,235,858**	**542,823**	**3,051,993**	**26,386,135**
Liabilities								
- Deposits from central banks	301,589	-	-	-	-	-	-	301,589
- Deposits from banks and customers	14,649,056	123,360	7,445	-	-	-	56	14,779,917
- Debt securities issued and funds borrowed	238,403	1,512,481	442,133	364,339	1,880,399	1,291,531	15,138	5,744,424
- Financial liabilities held for trading	-	-	-	-	-	-	16,184	16,184
- Derivatives used for hedging	-	538	538	1,078	-	-	-	2,154
- Lease liabilities	-	2,623	2,615	5,377	65,428	57,103	-	133,146
- Other liabilities	-	-	-	-	-	-	621,028	621,028
Shareholders' equity	-	-	-	-	-	-	4,787,693	4,787,693
Total liabilities and shareholders' equity	**15,189,048**	**1,639,002**	**452,731**	**370,794**	**1,945,827**	**1,348,634**	**5,440,099**	**26,386,135**
Total interest sensitivity gap	(3,296,260)	4,745,727	349,437	1,104,982	290,031	(805,811)	(2,388,106)	-
Cumulative gap	**(3,296,260)**	**1,449,467**	**1,798,904**	**2,903,886**	**3,193,917**	**2,388,106**	**-**	**-**

IV.3.3.d. Foreign exchange risk

The group's entities have the euro as their functional currency, with the exception of some subsidiaries, principally located in the United Kingdom and Sweden.

Given Euroclear's low market risk appetite as an FMI and the focus on the preservation of its capital, it does not engage in trading activities. As a consequence, tight market risk limits are set and controlled via strict hedging and investment policies and daily monitoring. Sensitivity to foreign exchange risk is monitored through a VaR model.

The group's principal structural currency exposures (foreign exchange translation risk) were as follows:

(€'000)	Net investments in non-euro operations	Currency hedges other than borrowings	Remaining structural currency exposures
Functional currency of the operation involved			
At 31 December 2021			
- US dollar	3,206	-	3,206
- Pound sterling	214,763	-	214,763
- Swedish krona	91,437	-	91,437
- Polish zloti	17,816	-	17,816
- Hong Kong dollar	7,467	-	7,467
At 31 December 2020			
- US dollar	3,395	-	3,395
- Pound sterling	195,606	-	195,606
- Swedish krona	70,953	-	70,953
- Polish zloti	22,174	-	22,174
- Hong Kong dollar	7,487	-	7,487

The table below summarises the group's exposure to foreign currency exchange rate risk. Included in the table are the group's assets and liabilities at carrying amounts, categorised by currency.

Concentration of assets and liabilities per currency (€'000)	Euro	US Dollar	Japanese Yen	Pound Sterling	Other	Total
At 31 December 2021						
Total assets	**14,680,873**	**9,627,032**	**75,038**	**2,734,035**	**2,282,928**	**29,399,906**
Total liabilities and shareholders' equity	**13,369,272**	**10,662,567**	**502,657**	**2,630,162**	**2,235,248**	**29,399,906**
Net balance sheet position	**1,311,601**	**(1,035,535)**	**(427,619)**	**103,873**	**47,680**	**-**

The net non-euro balance sheet positions mainly reflect the net assets of subsidiaries and branches located in the United Kingdom and Sweden, and other transactional positions, being almost fully offset by currency swaps.

Concentration of assets and liabilities per currency (€'000)	Euro	US Dollar	Japanese Yen	Pound Sterling	Other	Total
At 31 December 2020						
Total assets	**13,425,751**	**8,433,915**	**187,136**	**2,589,946**	**1,749,387**	**26,386,135**
Total liabilities and shareholders' equity	**12,525,097**	**9,009,963**	**599,657**	**2,340,288**	**1,911,130**	**26,386,135**
Net balance sheet position	**900,654**	**(576,048)**	**(412,521)**	**249,658**	**(161,743)**	**-**

IV.4. Capital management

IV.4.a. Capital measurement and allocation

Euroclear has in place sound, effective and comprehensive capital measurement methodologies which are integrated within the overall internal capital adequacy assessment process (ICAAP). The ICAAP relies on two complimentary views on capital adequacy; an economic and a normative view:

- Economic view: Corresponds to the internal assessment of the level of capital necessary to sustain our business and risk profile given our strategy and risk appetite.
- Normative view: Euroclear must comply under baseline and stressed conditions, for a planned period of at least three years, with all applicable regulatory capital requirements. These requirements stem from two major regulations that Euroclear is subject to: Capital Requirement Regulation (CRR and CRD IV as transposed into Belgian Banking law) and CSD Regulation.

The internal view on Euroclear's capital needs is based on economic capital models, which estimate the amount of capital that Euroclear needs to have in order to protect itself from unexpected losses resulting from the risks it faces in its various activities. This view is complemented by stress scenarios. The capital models run at a 99.98% confidence level, cover operational, credit and market risks, with additional methodologies to measure business and pension risks. This conservative approach to capital, combined with Euroclear's strong risk management and effective controls, has helped Euroclear Bank retain high credit ratings in times of market stress. Euroclear Bank is assigned an AA credit rating by Fitch Ratings and Standard & Poor's (S&P) with stable outlooks.

Under the normative perspective, the Capital Requirement Regulation (CRR) requires Euroclear Bank, Euroclear SA/NV consolidated and Euroclear Holding SA/NV consolidated entities, to maintain at all times:

- a ratio of total capital to risk-weighted assets that cannot fall under a threshold of 8%
- a ratio of Tier 1 capital to risk-weighted assets that must exceed a threshold of 6%
- a ratio of common equity Tier1 capital (CET1) exceeding 4.5%
- Pillar 2 requirement (P2R) defined through the yearly supervisory review and evaluation process (SREP)
- a capital conservation buffer of 2.5% total risk weighted assets in common equity (does not apply to Euroclear Holding SA/NV)

Euroclear uses the Foundation Internal Ratings Based Approach (FIRBA) for the computation of credit risk weighted assets. Credit risk-weighted assets take into consideration balance- sheet assets and off-balance sheet exposures that may give rise to credit risk, as calculated for both Euroclear Bank and the group on a consolidated basis. Collateral and other eligible guarantees are taken into account appropriately.

For the calculation of operational risk weighted assets, Euroclear Bank and Euroclear SA/NV rely on an Advanced Measurement Approach (AMA) developed internally and subject to supervisory approval. Euroclear uses a hybrid approach at all consolidated levels above Euroclear Bank, by combining the AMA for Euroclear Bank and Euroclear SA/NV with a Basic Indicator Approach for the other group's entities.

For market risk, Euroclear uses the Standardised Approach to cover the foreign exchange risk. As Euroclear Bank is a limited purpose bank and does not have a trading book, the market risk that Euroclear Bank incurs is very limited.

Euroclear Bank and Euroclear SA/NV, together with seven other banks or banking groups in Belgium, were identified in 2015 by the National Bank of Belgium as domestic systemically important banks (referred to in EU legislation as 'other systemically important institutions', or O-SIIs) under Belgian banking law and CRD IV. Subsequently, the National Bank of Belgium applies a common equity Tier 1 capital ratio surcharge of 0.75% to Euroclear Bank standalone and Euroclear SA/NV consolidated.

In addition to the capital ratios, Euroclear complies with the leverage ratio. The current requirement is 3%. Euroclear's current levels of the leverage ratio are already well above this regulatory requirement and are disclosed in the Pillar 3 report.

The table below sets out the Euroclear Holding SA/NV group's CET1, Tier 1 and total capital, which comfortably exceed the regulatory requirements.

IV.4.b. Regulatory capital position

(€'000)	2021	2020
Risk-weighted assets[1]	**7,962,791**	**8,346,186**
Capital requirement	**637,023**	**667,696**
- Credit risk	239,149	232,724
- Market risk	19,733	15,100
- Operational risk	378,141	419,872
Capital base[2]	**3,090,408**	**3,579,697**
- CET1	3,087,731	3,575,583
- Tier 2	2,677	4,114
Solvency ratio		
- CET1	38.8%	42.8%
- Tier 1	38.8%	42.8%
- Total	38.8%	42.9%

[1] Risk-weighted assets represent the total capital requirement multiplied by a factor of 12.5. This means that the risk-weighted assets do not only relate to credit and market risk, but also comprise the gross-up of the capital requirements related to operational risks. For Euroclear, the latter are the main source of capital consumption.
[2] Capital base is highly comparable to the shareholders' equity presented in the Statement of financial positions. Differences are due to deductions required by CRR regulation, mainly goodwill and intangible assets, current year proposed dividend, limits on investments in financial sector entities and deferred tax assets, cash-flow hedging reserve, prudent valuation and provision shortfall for expected losses.

IV.5. Acquisition of MFEX

On 15 September 2021, Euroclear SA/NV acquired MFEX. The companies' complementary businesses are expected to produce significant value through revenue and cost synergies, expanding the client service offering by creating a new funds market utility and a leading global provider of fund services. From an integration program perspective, the project is supported by a strong governance. Key risks are well managed with a special attention to people related risks and the system integration between Euroclear Bank Fundsettle and MFEX.

From a going-concern perspective, the MFEX business does not significantly influence the Group's risk profile and exposures. The MFEX entities will be gradually incorporated into the group's risk framework and reporting in the course of 2022.

IV.6. COVID-19 impact

In 2021, the risk management impacts of the COVID-19 pandemic were the following:

IV.6.1. Credit Risk Management

In 2021, credit RWAs have stabilised to pre-COVID-19 levels, indicating that the pandemic did not have a structural effect on our credit risk. We continue to monitor the situation to adjust to any potential credit deterioration due to the ongoing pandemic.

IV.6.2. Liquidity and funding Risk Management

The day-to-day liquidity sources were not jeopardised at any point, and even strengthened due to the positive contribution of a higher level of client long balances. The contingency funding plan was not activated at any point.

The execution of the funding program has not been impacted by the pandemic in 2021. Euroclear Bank has continued to renew expiring EMTNs and Certificates of Deposits (CDs) issued for compliance with liquidity requirements under CSDR (Cover 2 test).

IV.6.3. Operational risk and business continuity

Two key market changes resulting from COVID-19 impacted Euroclear's operational risk profile: (i) increased operational volumes, testing the overall robustness of the system and (ii) increase of manual work in corporate actions (higher issuances of convertible bonds/more debt restructurings).

Despite the COVID-19 context, Euroclear did not experience any major issue of services provided by Critical Service Providers (CSP). As part of the COVID-19 actions, shortly after the outbreak of the virus, daily monitoring of group entities and Euroclear SA/NV's key critical service providers have been installed focusing on the effectiveness and health situation of those providers.

Lastly, all group entities continued to deliver their critical services while moving to prolonged homeworking. No increase of operational incidents were observed due to homeworking. Close monitoring on the people impacted by COVID-19 in the different Euroclear entities is performed, as potential fatigue remains a risk.

IV.6.4. Market Risk Management

In 2020 a number of central banks (including the Federal Reserve) cut their benchmark rates in response to the COVID-19 pandemic. This measure drastically reduced the income earned by Euroclear Bank in 2021, as it mostly invests long balances overnight or with very short duration. As a response, and to ensure an adequate pricing of risk, Euroclear Bank adjusted its pricing scheme, including the possibility of charging an additional negative spread to deposits in a number of currencies. This measure was put in place to incentivise a more efficient cash management from its clients (thus reducing long balances) and to cover the additional reinvestment cost.

V. Segment analysis

The Euroclear SA/NV Management Committee receives internal reports for Euroclear Bank, Euroclear SA/NV, Euroclear UK & International, the ESES CSDs as well as Euroclear Sweden and Euroclear Finland.

The reportable business segments are as follows:
- Euroclear Bank (including its Hong Kong, Polish and Japanese branches) is a Central Securities Depository with a Banking License
- Euroclear SA/NV (including its branches in Amsterdam, London and Paris) is the provider of software development and non-operational support services to the CSDs
- Euroclear UK & International is the Central Securities Depository (CSD) subsidiary located in the United Kingdom. This entity also runs an investment fund order routing business
- the ESES segment includes the group's CSDs located in Belgium, France and the Netherlands
- Euroclear Sweden (CSD in Sweden)
- Euroclear Finland (CSD in Finland)
- MFEX (Funds platform)

Information reported within 'Other' relates to the parent companies, Euroclear AG, Euroclear Re SA, Euroclear Global Collateral Services Ltd, Taskize Ltd (consolidated since July 2021), Euroclear Properties France SA and Calar Belgium SA/NV (sold in December 2020). None of these qualified as a reportable segment in 2021 or 2020.

The risks and returns associated with Euroclear Bank's ICSD services do not vary geographically and, accordingly, is considered as one geographical segment. The activities of all other segments are within Europe.

No single client generated 10% or more of the group's revenues.

Transactions between the companies are on normal commercial terms and conditions. Recharges of software development costs and support services are based on formal agreements between the entities concerned.

Segment assets and liabilities comprise all third-party assets and liabilities.

		2021									
(€'000)	**Notes**	**Euroclear Bank**	**Euroclear SA/NV**	**Euroclear UK & International**	**ESES CSDs**	**Euroclear Sweden**	**Euroclear Finland**	**MFEX**	**Other**	**Eliminations**	**Group**
Interest income	VI	163,279	986	593	373	-	15	(48)	28,054	(28,095)	165,157
Interest expense	VI	(94,587)	(6,658)	(123)	(1,152)	(263)	(209)	(318)	(27,080)	28,142	(102,248)
Net fee and commission income	VII	926,694	29	147,249	217,718	90,876	58,873	13,295	921	(37)	1,455,618
Intra-group recharges		2,054	664,607	24	120	53	318	-	78	(667,254)	-
Other income		36,752	346,244	(293)	390	(72)	25	2,242	546,811	(878,119)	53,980
Operating income		1,034,192	1,005,208	147,450	217,449	90,594	59,022	15,171	548,784	(1,545,363)	1,572,507
Staff costs	IX	(125,188)	(300,777)	(18,268)	(21,442)	(15,583)	(10,267)	(13,248)	(3,722)	-	(508,495)
Other direct costs	IX	(15,699)	(277,753)	(15,697)	(6,175)	(16,852)	(11,569)	(7,196)	(7,156)	188	(357,909)
Depreciation and amortisation	XVII, XVIII	(7,417)	(58,635)	(86)	(6)	(2,788)	(7,425)	(2,083)	(2,518)	5,490	(75,468)
Royalty fees		(4,412)	-	(576)	(753)	(274)	(182)	-	-	6,197	-
Group non-operational and		(463,067)	(1,100)	(77,207)	(103,609)	(13,460)	(7,581)	(18)	(1,212)	667,254	-
Operating profit/(loss) before impairment and taxation		418,409	366,943	35,616	85,464	41,637	21,998	(7,374)	534,176	(866,234)	630,635
Impairment	X	(305)	(14,635)	(169)	(130)	(326)	(32)	(168)	(143)	-	(15,908)
Operating profit/(loss) before taxation		418,104	352,308	35,447	85,334	41,311	21,966	(7,542)	534,033	(866,234)	614,727
Taxation	XI	(103,913)	(8,196)	(6,729)	(23,026)	(8,522)	(4,401)	3,115	(505)	-	(152,177)
Profit/(loss) for the year		**314,191**	**344,112**	**28,718**	**62,308**	**32,789**	**17,565**	**(4,427)**	**533,528**	**(866,234)**	**462,550**
External revenues		1,570,220	14,514	164,528	222,698	92,881	52,744	16,122	2,823	-	2,136,530
Revenues from other segments		24,828	997,356	1,592	33,816	532	6,555	-	-	(1,064,679)	-
Total revenues		**1,595,048**	**1,011,870**	**166,120**	**256,514**	**93,413**	**59,299**	**16,122**	**2,823**	**(1,064,679)**	**2,136,530**
Segment assets		25,024,288	2,106,417	212,660	315,268	349,857	141,320	813,221	436,875	-	29,399,906
of which non-current assets		2,917,765	1,365,226	63,208	138,715	173,003	74,741	478,003	317,395	-	5,528,056
Segment liabilities and shareholders' equity		23,733,277	2,578,050	175,772	297,448	143,421	(136,753)	277,029	2,331,662	-	29,399,906

		2020									
(€'000)	**Notes**	**Euroclear Bank**	**Euroclear SA/NV**	**Euroclear UK & International**	**ESES CSDs**	**Euroclear Sweden**	**Euroclear Finland**	**MFEX**	**Other**	**Eliminations**	**Group**
Interest income	VI	223,217	481	923	263	2	4	-	26,691	(26,846)	224,735
Interest expense	VI	(99,603)	(5,587)	(354)	(977)	(243)	(207)	-	(23,065)	26,907	(103,129)
Net fee and commission income	VII	800,007	(4)	132,968	194,286	70,290	53,756	-	-	(25)	1,251,278
Intra-group recharges		1,066	603,887	13	81	171	342	-	73	(605,633)	-
Other income		21,920	297,898	36	238	112	(47)	-	37,154	(300,518)	56,793
Operating income		946,607	896,675	133,586	193,891	70,332	53,848	-	40,853	(906,115)	1,429,677
Staff costs	IX	(124,756)	(284,778)	(15,733)	(20,163)	(13,404)	(9,556)	-	(1,811)	-	(470,201)
Other direct costs	IX	(26,763)	(233,943)	(14,838)	(6,418)	(13,818)	(14,757)	-	(11,992)	3,932	(318,597)
Depreciation and amortisation	XVII, XVIII	(7,775)	(60,934)	(75)	(11)	(2,437)	(7,506)	-	(3,464)	9,229	(72,973)
Royalty fees		(5,021)	-	(483)	(699)	(226)	(154)	-	-	6,583	-
Group non-operational and		(411,913)	(697)	(71,252)	(100,908)	(12,535)	(7,250)	-	(1,063)	605,618	-
Operating profit/(loss) before impairment and taxation		370,379	316,323	31,205	65,692	27,912	14,625	-	22,523	(280,753)	567,906
Impairment	X	143	(349)	(589)	(234)	(318)	(33)	-	(36)	-	(1,416)
Operating profit/(loss) before taxation		370,522	315,974	30,616	65,458	27,594	14,592	-	22,487	(280,753)	566,490
Taxation	XI	(93,062)	(7,002)	(5,534)	(18,628)	(6,114)	(2,971)	-	(1,267)	-	(134,578)
Profit/(loss) for the year		**277,460**	**308,972**	**25,082**	**46,830**	**21,480**	**11,621**	**-**	**21,220**	**(280,753)**	**431,912**
External revenues		1,478,879	10,185	148,304	202,150	71,971	48,668	-	25,583	-	1,985,740
Revenues from other segments		17,651	892,088	1,350	31,181	570	5,440	-	38,341	(986,621)	-
Total revenues		**1,496,530**	**902,273**	**149,654**	**233,331**	**72,541**	**54,108**	**-**	**63,924**	**(986,621)**	**1,985,740**
Segment assets		22,799,940	2,255,637	174,696	297,273	296,965	141,503	-	420,121	-	26,386,135
of which non-current assets		2,658,280	1,286,904	62,817	112,146	179,132	76,129	-	218,535	-	4,593,943
Segment liabilities and shareholders' equity		19,785,065	376,628	8,548	40,573	65,818	9,480	-	1,312,330	-	21,598,442

The €866,234,000 remaining in the Eliminations column relates to dividends received from companies within the group (2020: €280,753,000).

VI. Net interest income

(€'000)	Notes	2021	2020
Interest income on financial instruments			
- Cash and balances with central banks		1,249	2,476
- Loans and advances at amortised cost		69,572	124,770
- Debt instruments measured at FVOCI		10,232	19,872
- Non-trading financial assets mandatorily at FVPL		131	203
- Derivatives used for hedging (only interest flows)		89	-
- Negative interest on financial liabilities		81,853	74,310
- Other		2,027	3,042
Interest income on defined benefit plans	XXII	4	62
Total interest income		**165,157**	**224,735**
Interest expense on financial instruments			
- Deposits from central banks		-	(11)
- Deposits from banks and customers		(2,326)	(2,974)
- Debt securities issued and funds borrowed		(44,397)	(54,191)
- Derivatives used for hedging (only interest flows)		(25)	-
- Negative interest on financial assets at amortised cost		(26,727)	(20,561)
- Negative interest on financial assets at FVOCI		(25,187)	(20,344)
- Other		(1,611)	(2,450)
Interest expense on lease liabilities		(463)	(792)
Interest expense on defined benefit plans	XXII	(1,512)	(1,806)
Total interest expense		**(102,248)**	**(103,129)**
Net interest income		**62,909**	**121,606**

VII. Net fee and commission income

(€'000)	2021	2020
Fee and commission income		
Clearing and settlement	602,010	524,742
Safekeeping	896,311	795,737
Other	443,782	403,718
Total fee and commission income	**1,942,103**	**1,724,197**
Fee and commission expense		
Clearing and settlement	(114,988)	(103,955)
Safekeeping	(226,649)	(217,149)
Other	(144,848)	(151,815)
Total fee and commission expense	**(486,485)**	**(472,919)**
Net fee and commission income	**1,455,618**	**1,251,278**

Other fee and commission income principally include communication fees amounting to €189,000,000 (2020: €172,000,000), custody servicing fees amounting to €49,000,000 (2020: €45,000,000), issuer and securities services amounting to €42,000,000 (2020: €38,000,000), distribution fees (MFEX) amounting to €8,000,000 (2020: €0) and the recovery of out-of-pocket expenses.

VIII. Net gains/(losses) on financial assets and liabilities held for trading

(€'000)	2021	2020
Foreign exchange derivatives	30,354	17,976
Total	**30,354**	**17,976**

Treasury swaps are derivatives that are not designated as hedging instruments. The net gains on foreign exchange trading mainly relate to treasury swaps initiated by Euroclear Bank in order to convert balances in non-core currencies into euro or US dollars for re-investment purposes. Under IFRS, these results may not be included within net interest income.

IX. Administrative expenses

(€'000)	Notes	2021	2020
Staff costs			
- Wages and salaries		356,965	333,851
- Social security costs		80,811	73,541
- Defined benefit plans	XXII	31,919	30,337
- Defined contribution plans		10,682	6,592
- Other staff costs		28,118	25,880
Auditors' remuneration		3,023	2,524
Consultants fees		240,536	208,220
Occupancy		20,143	20,447
Maintenance and repairs		44,684	44,858
Travel and training		4,530	4,757
Communications		8,043	8,581
Other rent and non capitalised expenses		21,323	14,451
Other taxes		19,533	21,155
Depreciation and amortisation	XVII, XVIII	75,467	72,973
Other administrative expenses		34,211	33,684
Provisions for liabilities and charges	XXI	2,195	(1,651)
Capitalised expenses		(40,311)	(38,429)
Total		**941,872**	**861,771**

The average number of persons employed by the group during the year was 4,281 (2020: 4,066).

The auditors' remuneration for Euroclear Holding SA/NV and its subsidiary undertakings was as follows:

(€'000)	2021	2020
Fees payable to the Company's auditor for the audit of the Company's financial statements	164	145
Fees payable to the Company's auditor and its associates for other services:		
- The audit of the Company's subsidiaries, pursuant to legislation	2,277	1,600
- Other attest and assurance services	1,052	768
- Other services	40	11
Fees included in the consolidated financial statements	3,127	2,524
Fees in respect of the audit of newly acquired subsidiaries not included in the consolidated financial statements	407	-
Total	**3,533**	**2,524**

The table shows the audit fees paid by the MFEX group to Deloitte for the full financial year 2021, while the audit fees recorded under Administrative expenses only relate to the audit costs charged to Comprehensive Income during the fourth quarter of the year (i.e. after acquisition date).

Euroclear ensures that the independence of the external auditor is preserved through a specific policy adopted by the Board and agreed by the auditor. This policy adheres to the highest standards of independence. The engagement of the external auditor for non-core services is subject to specific controls, monitored by the Board's Audit Committee.

X. Impairment

(€'000)	Notes	2021	2020
Impairment charges			
Goodwill and intangible assets	XVIII	-	308
Financial assets		596	178
Other assets		766	930
Group participations, investments in associates		14,546	-
Total		**15,908**	**1,416**

(€'000)	Notes	2021	2020
Other assets impaired			
At 1 January		3,056	2,310
Charge to the income statement		766	930
Amounts used		(1,283)	(171)
Exchange differences		43	(13)
At 31 December		**2,582**	**3,056**

For other assets, impairment mainly relates to the lifetime expected credit loss computed on fees receivable from clients in several group's (I)CSD subsidiaries.

Taskize Limited is consolidated since July 2021 (see note I). The losses accumulated by the entity over the prior years and first 6 months of the year (€13,746,000), have been recognised one off in the profit and loss account.

The movements of expected credit losses on financial assets during the year are as follows:

(€'000)	Cash and balances with central banks	Loans and advances at amortised cost	Debt instruments at FVOCI	Loan commitments & financial guarantees	Total
At 1 January 2021	66	524	543	10	1,143
Financial instruments originated/acquired during the period	146	611	351	29	1,137
Financial instruments derecognised during the period	(66)	(429)	(187)	(10)	(692)
Change due to change in credit risk	-	88	82	-	170
At 31 December 2021	**146**	**794**	**789**	**29**	**1,758**

For details on the expected credit loss (ECL) per internal rating, please refer to note IV.

The rates used by the group entities to determine the expected credit losses for trade receivables (simplified method) are as follows:

Expected loss rate	2021	2020
Current	0.41%	0.01%
Less than 30 days	0.81%	0.50%
30 to 60 days	3.48%	1.00%
60 to 90 days	4.44%	5.00%
90 to 360 days	15%-90%	15%-30%
Over 360 days	20%-100%	20%-90%

XI.Taxation

(€'000)	2021	2020
Current income tax expense	152,482	132,192
Adjustments to tax charge in respect of previous years	(995)	(1,304)
	151,487	**130,888**
Deferred tax charge/(income) relating to the origination and reversal of temporary differences	710	3,560
Deferred tax charge/(income) resulting from change in tax rate	(20)	130
Tax expense for the year	**152,177**	**134,578**

Further information on deferred tax is presented in Note XII.

The tax on the group's profit before tax differs from the theoretical amount that would arise from using the standard rate as follows:

(€'000)	2021	2020
Operating profit/(loss) before tax	**614,727**	**566,488**
At standard rate of tax[1]	153,682	141,622
Effects of:		
- Expenses not deductible for tax purposes	4,843	5,964
- Net tax effect of intercompany dividend elimination and dividend received	(1,977)	(2,466)
- Net tax effect of change in consolidation perimeter	(1,017)	-
- Disposal of subsidiaries	-	(5,768)
- Impairment of subsidiaries	3,438	(707)
- Income not subject to tax	(628)	-
- Different rates in the companies in the group	(5,149)	(2,893)
- Change of tax rate on deferred taxation	(20)	130
- Adjustments to tax charge in respect of previous period	(995)	(1,304)
Tax expense for the year	**152,177**	**134,578**

(1) A rate of 25.00% (2020: 25.00%) has been used as the standard rate.

The current income tax asset of €10,849,000 at 31 December 2021 (2020: €9,070,000) represents the total of amounts recoverable from the tax authorities relating to over-payments of income tax pre-payments, prior year adjustments and research and development (R&D) tax credit.

The net tax effect linked to the intercompany dividends eliminated for consolidation purposes have been considered separately in order to adequately reflect the impact of this item of reconciliation on the tax expense.

The expenses not deductible for tax purposes include the other tax effects of consolidation adjustments not subject to deferred tax. The net movement comprises also the effect of changes in facts and circumstances that affect the judgement and estimates of the acceptability of certain tax treatments.

The net movement in the share of net tax (profit)/loss of investments accounted for using equity method is mainly driven by the recognition of consortium tax relief between group entities fully consolidated and entity consolidated by using equity method.

The year-to-year variation of the effect of the different rates applicable to the companies within the group is explained by a combination of factors: decrease of the above group’s effective tax rate and changes in the taxable basis of certain sizeable entities.

XII. Deferred taxation

The details of deferred taxation are as follows:

(€'000)	Total	Maturity on or before 31 December 2022	Maturity after 31 December 2022
At 31 December 2021			
Assets			
Defined benefit plans	39,734	-	39,734
Financial assets at FVOCI	(4,483)	(3,464)	(1,019)
Financial assets (ECL)	188	188	-
Cash flow hedging reserve	1,780	1,780	-
Software development	(1,253)	(1,253)	-
Property, plant and equipment	1,348	(128)	1,476
Tax loss carried forward	60,826	10,917	49,909
Other temporary differences	11,186	11,076	110
Total	**109,326**	**19,116**	**90,210**
Liabilities			
Defined benefit plans	(2,713)	-	(2,713)
Financial assets at FVOCI	(37)	-	(37)
Financial assets (ECL)	(52)	(52)	-
Other temporary differences	2,822	229	2,593
Insurance reserve of Euroclear Re SA	3,116	-	3,116
Total	**3,136**	**177**	**2,959**

(€'000)	Total	Maturity on or before 31 December 2021	Maturity after 31 December 2021
At 31 December 2020			
Assets			
Defined benefit plans	43,365	-	43,365
Financial assets at FVOCI	(1,964)	-	(1,964)
Financial assets (ECL)	14	14	-
Property, plant and equipment	1,611	(57)	1,668
Tax loss carried forward	57,776	8,089	49,687
Other temporary differences	4,832	1,738	3,094
Total	**105,634**	**9,784**	**95,850**
Liabilities			
Defined benefit plans	(10,527)	-	(10,527)
Financial assets at FVOCI	16,896	16,280	616
Cash flow hedging reserve	(133)	(133)	-
Financial assets (ECL)	1,809	1,809	-
Property, plant and equipment	20	20	-
Other temporary differences	(1,005)	(1,005)	-
Insurance reserve of Euroclear Re SA	2,902	-	2,902
Total	**9,962**	**16,971**	**(7,009)**

Deferred taxes are classified as assets or liabilities depending on the total net deferred tax asset or liability across all types of deferred tax at year-end for each entity. At 31 December 2020, Euroclear Bank had a net deferred tax liability.

Deferred taxation for tax losses carried forward mainly relates to Euroclear SA/NV.

Analysis of the movements of the net deferred tax asset and liability balances is as follows:

(€'000)	Notes	2021	2020
At 1 January		**95,672**	**107,148**
Acquisition of subsidiaries	XXIX	1,850	-
Impact of first time consolidation		3,542	-
Disposal of subsidiary		-	(284)
Income statement	XI	(690)	(3,690)
Deferred tax relating to items (charged) or credited to equity			
- Defined benefit plans	XXII	(12,177)	4,881
- Financial assets at FVOCI		14,356	(9,763)
- Cash flow hedging reserve	XXIV	3,589	(2,541)
Exchange differences		48	(79)
At 31 December		**106,190**	**95,672**

The deferred tax income/(charge) in the income statement comprises the following temporary differences:

(€'000)	Notes	2021	2020
Defined benefit plans	XXII	773	4,656
Impairment of financial assets		151	42
Software development		217	(31)
Property, plant and equipment		81	(36)
Tax losses carried forward		(4,704)	(9,035)
Insurance reserve		(214)	10
Other temporary differences		3,006	704
Total		**(690)**	**(3,690)**

There were no unrecognised deferred taxes as of year-end.

XIII. Financial assets at FVOCI

(€'000)	2021	2020
At 31 December		
Financial assets at FVOCI		
Equity shares		
- Listed	425,037	504,840
- Unlisted but fair value determinable	16,715	13,223
Equity funds	858,198	869,651
Listed debt instruments	7,979,354	8,533,878
Total	**9,279,304**	**9,921,592**

All debt securities have fixed coupons.

For unlisted securities, the valuation is based on the prices at which the securities could probably be sold to willing and knowledgeable parties. These prices are determined using generally accepted valuation techniques, including discounted cash flow models and relevant market multiples.

The maturity profile of the financial assets at FVOCI can be found in Note IV.

The movement in financial assets at FVOCI can be summarised as follows:

(€'000)	Notes	Equity shares	Fund units	Debt instruments	Total
At 1 January 2021		**518,063**	**869,651**	**8,533,878**	**9,921,592**
Additions		136,391	134,676	13,703,195	13,974,262
Redemptions and disposals		(61,130)	(138,477)	(14,179,411)	(14,379,018)
FVOCI revaluation reserve					
- (Gains)/losses on redeemed or sold financial assets		(213,413)	(37)	-	(213,450)
- Gains/(losses) on held financial assets		61,841	(7,615)	(51,998)	2,228
Amortisation of discounts and (premiums)		-	-	(55,000)	(55,000)
Net change in accrued interest		-	-	(1,942)	(1,942)
Expected credit loss allowance		-	-	(247)	(247)
Exchange difference		-	-	30,879	30,879
At 31 December 2021		**441,752**	**858,198**	**7,979,354**	**9,279,304**

(€'000)	Equity shares	Fund units	Debt instruments	Total
A 1 January 2020	**420,817**	**736,887**	**9,153,355**	**10,311,059**
Additions	55	141,382	13,449,678	13,591,115
Redemptions and disposals	(8,505)	(12,063)	(14,038,549)	(14,059,117)
FVOCI revaluation reserve				
- (Gains)/losses on redeemed or sold financial assets	8,505	63	(53)	8,515
- Gains/(losses) on held financial assets	97,191	3,382	35,398	135,971
Amortisation of discounts and (premiums)	-	-	(39,896)	(39,896)
Net change in accrued interest	-	-	(1,528)	(1,528)
Expected credit loss allowance	-	-	(259)	(259)
Exchange difference	-	-	(24,268)	(24,268)
At 31 December 2020	**518,063**	**869,651**	**8,533,878**	**9,921,592**

XIV. Financial instruments held for trading

XIV.1. Fair value and notional amounts

The fair value and notional amounts of the group's trading derivatives were as follows:

	Notional amount	Fair value	
(€'000)		Assets	Liabilities
At 31 December 2021			
Foreign exchange derivatives			
- Forward foreign exchange	3,385,293	19,879	13,850
Total	**3,385,293**	**19,879**	**13,850**
At 31 December 2020			
Foreign exchange derivatives			
- Forward foreign exchange	2,377,724	10,560	16,184
Total	**2,377,724**	**10,560**	**16,184**

The notional amount related to forward foreign exchange contracts at 31 December 2021 and 31 December 2020 principally reflects to outstanding currency swaps.

In certain circumstances, currency forward exchange contracts are used by certain companies of the Euroclear group to hedge the fair value of some specific liabilities expressed in foreign currencies. These transactions do however not qualify for hedge accounting.

XV. Derivatives used for hedging

XV.1. Cash flow hedges

Foreign exchange hedges

Euroclear Bank uses the euro as functional currency and is exposed to foreign exchange exposure (changes in the relevant spot exchange rate) that could adversely influence fee and interest income streams.

The group applies hedge accounting for these highly probable forecasted revenue streams influenced by changes in foreign exchange rates for certain currencies. The policy foresees to hedge a minimum 75% threshold of the total operating profit exposures in foreign currencies.

Euroclear Bank enters into currency forward foreign exchange contracts whereby it sells the relevant currencies on a future date at a predetermined price. One contract is done per month, per currency and per nature of exposures (fees and interests) to offset the net currency stream (usually an income) of the same month. These contracts are done on a rolling 12-month basis (or 3-month basis for less liquid currencies). Such transactions are classified as cash flow hedges.

Hedge effectiveness is assessed based on the critical terms of the contracts. The economic relationship is verified at inception of the deal confirming that the characteristics of the hedging instrument are aligned to those of the hedged item (forward contract with the same maturity and currency as expected revenues, notional of the derivatives matching the hedged positions). The hedged items create an exposure to buy euros and sell foreign currencies at the payment date. The forward contract to sell euros for forex currencies on the payment date creates an offset for these two transactions. Values will thus generally move in the opposite direction.

The hedge ratio is determined by comparing the notional of the derivative with the quantity of hedged items. The following sources of ineffectiveness are identified and monitored:

- change in timing and / or level of the incoming flows of any of the two items constituting the hedged item. To mitigate this risk, Euroclear Bank ensures that no material changes are observed in the timing and/or level of the incoming flows of the hedged item
- change in the credit risk of Euroclear Bank or the counterparty of the forward contract. The credit risk of both the counterparties and Euroclear Bank is monitored for adverse changes by Treasury. As all contracts must be entered with counterparties with a credit rating of A or higher, the credit risk is minimal and does not dominated the value change
- impact of foreign currency basis spreads (materialised through the forward points included in the hedging relationship). The hedging horizon is adapted to limit the impact of currency basis spread (3-month or 12-month basis, depending on the interest rate level associated to the hedged currency).

As 31 December 2021, Euroclear Bank monthly secures an average of €-equivalent 24,879,000 currency stream (2020: €-equivalent 20,420,000).

Interest rate hedges

Since November 2021, Euroclear Bank enters into interest rate derivatives aiming to reduce the income volatility linked to the reinvestment of the stable part of its client deposits in USD and the repricing of short-term assets financed by its core equity. The hedged items are the highly probable variable cash flows stemming from the reinvestment of client deposits and core equity.

The total hedging position will be built-up gradually over time.

In assessing Euroclear Bank's exposure to interest rate risk, the following assumptions are taken to assign:

- a maximum term of 5 years and an average duration of 2.5 years for the core equity
- a maximum maturity of 5 years for the stable operational balances in USD

The following sources of ineffectiveness are identified and monitored:

- Change in timing and/or level of the incoming flows of the hedged item and the outgoing flows of the hedging instruments. To mitigate this risk, Euroclear Bank ensures that the timing and level of the incoming flows of the hedged item and the outgoing flows of the hedging instrument will be closely matched.
- Significant discrepancy between the stable operational client deposits and the notional amount of interest rate derivatives. In accordance with the evolution of the stable operational client deposits, Euroclear will adjust the notional amounts.

The fair value and notional amounts of the group's derivatives used for cash flow hedges were as follows:

(€'000)	Notional amount	Fair value	
		Assets	Liabilities
At 31 December 2021			
Foreign exchange derivatives			
- Forward foreign exchange	293,265	1,066	9,387
Interest rate derivatives			
- Interest rate swaps	126,219	5,317	4,053
Total	**419,484**	**6,383**	**13,440**
At 31 December 2020			
Foreign exchange derivatives			
- Forward foreign exchange	245,065	9,391	2,154
Interest rate derivatives			
- Interest rate swaps	-	-	-
Total	**245,065**	**9,391**	**2,154**

During the year, no ineffectiveness arose from cash flow hedging (2020: €649,000 unrealised losses were anticipatively recognised into profit or loss after hedging transactions were ceased due to lower probable USD incoming interest cash flows expected to occur).

At the reporting date, the group has considered the most recent forecast, and no new ineffectiveness was observed.

The amounts recognised in the cash flow hedging reserve at year-end will be gradually released to the income statement (net gains/losses on foreign exchange and net interest income) in the following year, when the related cash flows materialise.

The movements in the cash flow hedging reserve can be detailed as follows:

		Foreign exchange derivatives			Interest rate derivatives			Total derivatives		
(€'000)	Notes	Gross amount	Deferred tax	Net amount	Gross amount	Deferred tax	Net amount	Gross amount	Deferred tax	Net amount
At 1 January 2021		**7,237**	**(1,809)**	**5,428**	**-**	**-**	**-**	**7,237**	**(1,809)**	**5,428**
Change of fair value directly recognised in other comprehensive income		(14,529)	3,632	(10,897)	1,199	(300)	899	(13,330)	3,332	(9,998)
Amount released from other comprehensive income to profit or loss										
- Amount reclassified to profit and loss because hedged future cash flows are no longer expected to incur		-	-	-	-	-	-	-	-	-
- Amount reclassified to profit and loss because hedged item has affected profit or loss		(1,028)	257	(771)	-	-	-	(1,028)	257	(771)
Total change to cash flow hedging reserve	XXIV	**(15,557)**	**3,889**	**(11,668)**	**1,199**	**(300)**	**899**	**(14,358)**	**3,589**	**(10,769)**
At 31 December 2021		**(8,320)**	**2,080**	**(6,240)**	**1,199**	**(300)**	**899**	**(7,121)**	**1,780**	**(5,341)**
At 1 January 2020		**(2,928)**	**732**	**(2,196)**	**-**	**-**	**-**	**(2,928)**	**732**	**(2,196)**
Change of fair value directly recognised in other comprehensive income		7,339	(1,835)	5,504	-	-	-	7,339	(1,835)	5,504
Amount released from other comprehensive income to profit or loss										
- Amount reclassified to profit and loss because hedged future cash flows are no longer expected to incur		649	(162)	487	-	-	-	649	(162)	487
- Amount reclassified to profit and loss because hedged item has affected profit or loss		2,177	(544)	1,633	-	-	-	2,177	(544)	1,633
Total change to cash flow hedging reserve	XXIV	**10,165**	**(2,541)**	**7,624**	**-**	**-**	**-**	**10,165**	**(2,541)**	**7,624**
At 31 December 2020		**7,237**	**(1,809)**	**5,428**	**-**	**-**	**-**	**7,237**	**(1,809)**	**5,428**

XV.2. Hedges of net investments in foreign operations

The group has hedged, until July 2011, part of the currency translation risk of net investments in foreign operations (EMXCo, Euroclear UK & International, the UK branch of Euroclear SA/NV and Euroclear Sweden).

The balance of the hedge of net investments in foreign operations reserve can be detailed as follows:

(€'000)	Notes	2021	2020
At 1 January and 31 December	XXIV	(18,238)	(18,238)

XVI. Other assets

(€'000)	Notes	2021	2020
Items in process of collection		19,773	11,152
Other taxation and social security		27,768	25,012
Other assets (after impairment)		298,284	63,078
At 31 December		**345,825**	**99,242**

Items in the process of collection principally relate to coupon and redemption proceeds for participants of Euroclear Bank.

The MFEX group contributes to €202,917,000 in other assets, mainly related to the delivery of services, and including funds commissions to be collected and redistributed.

XVII. Property, plant and equipment

								of which Right-of-use assets:		
(€'000)	Notes	Land and buildings	Leasehold improvements	Furniture and fixtures	IT equipment	Other equipment	Total	Land and buildings	Vehicles and other equipment	Total
Cost										
At 1 January 2021		**186,645**	**53,328**	**15,791**	**164,120**	**8,285**	**428,169**	**141,253**	**7,685**	**148,938**
Acquisition of subsidiaries		296	-	-	-	3,431	3,727	296	-	296
Additions		13,954	3,655	966	18,177	2,082	38,834	13,682	1,753	15,435
Capitalisation of dilapidation provisions	XXI	-	150	-	-	-	150	-	-	-
Transfer to Non-current assets and assets of disposal groups classified as held for sale		(377)	-	-	-	(208)	(585)	(377)	-	(377)
Transfers		-	328	119	176	(669)	(46)	-	-	-
Sales and disposals		(15,746)	(2,489)	(86)	(11,613)	(92)	(30,026)	(15,746)	-	(15,746)
Exchange differences		1,236	453	80	387	14	2,170	1,236	(1)	1,235
At 31 December 2021		**186,008**	**55,425**	**16,870**	**171,247**	**12,843**	**442,393**	**140,344**	**9,437**	**149,781**
Accumulated depreciation										
At 1 January 2021		**(75,222)**	**(39,937)**	**(12,854)**	**(130,024)**	**(153)**	**(258,191)**	**(44,116)**	**-**	**(44,116)**
Acquisition of subsidiaries		(222)	-	-	-	(2,112)	(2,334)	(222)	-	(222)
Depreciation charge		(19,534)	(4,321)	(983)	(16,696)	(174)	(41,708)	(19,534)	-	(19,534)
Transferred to Non-current assets and assets of disposal groups classified as held for sale		31	-	-	-	182	213		-	-
Transfers		-	2	-	-	-	2	-	-	-
Sales and disposals		15,746	2,480	86	11,582	-	29,894	15,746	-	15,746
Exchange differences		(3,692)	(393)	(108)	(1,594)	1,291	(4,496)	(3,691)	-	(3,691)
At 31 December 2021		**(82,893)**	**(42,169)**	**(13,859)**	**(136,732)**	**(966)**	**(276,620)**	**(51,817)**	**-**	**(51,817)**
Net book value at 31 December 2021		**103,115**	**13,256**	**3,011**	**34,515**	**11,877**	**165,773**	**88,527**	**9,437**	**97,964**

(€'000)	Notes	Land and buildings	Leasehold improvements	Furniture and fixtures	IT equipment	Other equipment	Total	of which Right-of-use assets Land and buildings	and other equipment	Total
Cost										
At 1 January 2020		**215,185**	**54,586**	**15,404**	**158,386**	**9,701**	**453,262**	**103,997**	**9,072**	**113,069**
Additions		39,542	962	610	6,572	(1,377)	46,309	39,137	(1,378)	37,759
Capitalisation of dilapidation provisions	XXI	-	4,583	-	-	-	4,583	-	-	-
Transfers		-	2	-	-	-	2	-	-	-
Sales and disposals		(66,201)	(6,205)	(61)	(380)	(24)	(72,871)	-	-	-
Exchange differences		(1,881)	(600)	(162)	(458)	(15)	(3,116)	(1,881)	(9)	(1,890)
At 31 December 2020		**186,645**	**53,328**	**15,791**	**164,120**	**8,285**	**428,169**	**141,253**	**7,685**	**148,938**
Accumulated depreciation										
At 1 January 2020		**(92,637)**	**(42,332)**	**(11,761)**	**(114,585)**	**(164)**	**(261,480)**	**(18,294)**	**-**	**(18,294)**
Acquisition of subsidiaries		(7,434)	-	-	-	-	(7,434)	(7,434)	-	(7,434)
Depreciation charge		(21,935)	(4,259)	(1,275)	(16,147)	(21)	(43,637)	(18,742)	-	(18,742)
Transfers		-	(1)	-	(5)	6	-	-	-	-
Sales and disposals		46,431	6,203	59	380	23	53,096	-	-	-
Exchange differences		353	452	123	333	3	1,264	353	-	353
At 31 December 2020		**(75,222)**	**(39,937)**	**(12,854)**	**(130,024)**	**(153)**	**(258,191)**	**(44,116)**	**-**	**(44,116)**
Net book value at 31 December 2020		**111,423**	**13,391**	**2,937**	**34,096**	**8,132**	**169,978**	**97,136**	**7,685**	**104,822**

The figures above include cost of property, plant and equipment under construction for an amount of €459,000 (2020: €643,000).

There was no modification made during the year to any of the lease contracts that would have resulted in the recognition of a new contract.

Euroclear Investments has sold 100% of its participation in Calar Belgium on 18 December 2020. The main asset of Calar Belgium was its 51% ownership right on the Euroclear headquarters building located in Brussels. The sale of the 51% stake is shown in the line Sales and disposals. The transaction qualifies as a sale and leaseback transaction at consolidated level as the building remains leased by Euroclear SA/NV. As a result, the right-of-use and lease obligations have been adjusted in December 2020, to reflect the new lease conditions and the full lease (instead of 49% previously already owned by a third party). The sale has generated a total gain of €50,756,000. A portion of this gain (€27,592,000) has been recorded in deduction of the right-of-use, and will be amortised over the lease period in compliance with IFRS 16.

XVIII. Goodwill and intangible assets

(€'000)	Internally developed software	Purchased software	Know-how	Goodwill	Contractual customer relationship	Unpatented technology	Total
Cost							
At 1 January 2021	152,329	106,876	45,893	1,405,488	21,965	59,725	1,792,276
Acquisition of subsidiaries	44,708	-	-	440,007	-	-	484,715
Additions	34,747	15,004	-	-	-	-	49,751
Transfer to Non-current assets and assets of disposal groups classified as held for sale	(2,667)	-	-	-	-	-	(2,667)
Transfers	(24,615)	23,403	-	-	1,259	-	47
Sales and disposals	(1,285)	(525)	-	-	-	-	(1,810)
Exchange differences	293	19	(24)	(2,660)	-	-	(2,372)
At 31 December 2021	**203,510**	**144,777**	**45,869**	**1,842,835**	**23,224**	**59,725**	**2,319,940**
Accumulated amortisation and impairment							
At 1 January 2021	(67,298)	(60,448)	(45,893)	(538,975)	-	(59,725)	(772,339)
Acquisition of subsidiaries	(15,178)	-	-	-	-	-	(15,178)
Amortisation charges	(18,236)	(15,523)	-	-	-	-	(33,759)
Transfer to Non-current assets and assets of disposal groups classified as held for sale	1,938	-	-	-	-	-	1,938
Transfers	613	(614)	-	-	-	-	(1)
Sales and disposals	1,285	514	-	-	-	-	1,799
Exchange differences	2,212	(2,513)	24	311	(430)	-	(396)
At 31 December 2021	**(94,664)**	**(78,584)**	**(45,869)**	**(538,664)**	**(430)**	**(59,725)**	**(817,936)**
Net book value at 31 December 2021	**108,846**	**66,193**	**-**	**1,304,171**	**22,794**	**-**	**1,502,004**

(€'000)	Internally developed software	Purchased software	Know-how	Goodwill	Contractual customer relationship	Unpatented technology	Total
Cost							
At 1 January 2020	116,427	102,526	45,847	1,399,352	21,965	59,725	1,745,842
Additions	35,877	6,164	-	-	-	-	42,041
Transfer and disposals	-	(2)	-	-	-	-	(2)
Sales and disposals	(219)	(1,807)	-	-	-	-	(2,026)
Exchange differences	244	(5)	46	6,136	-	-	6,421
At 31 December 2020	**152,329**	**106,876**	**45,893**	**1,405,488**	**21,965**	**59,725**	**1,792,276**
Accumulated amortisation and impairment							
At 1 January 2020	(52,261)	(47,698)	(45,847)	(538,391)	-	(59,725)	(743,922)
Amortisation charges	(15,268)	(14,068)	-	-	-	-	(29,336)
Impairment	-	(90)	-	-	-	-	(90)
Transfer and disposals	253	(253)	-	-	-	-	-
Sales and disposals	-	1,657	-	-	-	-	1,657
Exchange differences	(22)	4	(46)	(584)	-	-	(648)
At 31 December 2020	**(67,298)**	**(60,448)**	**(45,893)**	**(538,975)**	**-**	**(59,725)**	**(772,339)**
Net book value at 31 December 2020	**85,031**	**46,428**	**-**	**866,513**	**21,965**	**-**	**1,019,937**

Goodwill and the contractual customer relationship relate to the acquisition of EMXCo, Euroclear Belgium, Euroclear Finland, Euroclear France, Euroclear Nederland, Euroclear Sweden, Euroclear UK & International and the MFEX Group.

The unpatented technology relates to the infrastructure of Euroclear Finland and Euroclear Sweden, which was fully amortised by mid-2012.

XVIII.1. Determination of the cash-generating units

Goodwill impairment reviews are based on the cash-generating units (CGUs) for the group's three relevant operating segments: the ESES CSDs (Euroclear Belgium, Euroclear France and Euroclear Nederland), Euroclear UK & International (Euroclear UK & International and EMX Company Ltd which was integrated into Euroclear UK & International in 2010), Euroclear Finland and Euroclear Sweden.

Except for Euroclear Sweden, goodwill and contractual customer relationship are expressed and tested for impairment purposes in euros. At the time of the acquisition of Euroclear UK & International, the related goodwill was considered as a non-monetary asset of the acquirer and therefore expressed in euros. At the time of migration to IFRS, which considers goodwill to be a monetary asset of the acquired entity, Euroclear decided not to restate prior years' business combinations.

XVIII.2. Basis on which recoverable amounts have been determined

The recoverable amounts are based on the 'value in use' using the discounted cash flow methodology for each segment. The 2021 valuation of all the entities concerned is based on a five-year free cash flow forecast with projections for periods beyond this assuming a perpetual annuity ranging between 1.9% and 2% depending on the concerned entity.

The net book values of the goodwill, and Euroclear Belgium's contractual customer relationships, are set out in the table below:

(€'000)	2021	2020
Euroclear UK & International	204,354	203,269
ESES	484,626	484,626
Euroclear Finland	37,689	37,689
Euroclear Sweden	159,460	162,894
MFEX	440,007	-
	1,326,136	888,478

These are intangible assets considered to have indefinite useful lives.

XVIII.3. Key assumptions related to discount factors

The appropriate discount rates are determined by applying the Capital Asset Pricing Model (CAPM). The discount rates and perpetual growth rates used for each CGU in the 2021 and 2020 impairment reviews were as follows:

	2021		2020	
	Discount rate	Perpetual growth rate	Discount rate	Perpetual growth rate
Euroclear UK & International	6.00%	1.90%	4.70%	1.80%
ESES	5.70%	1.90%	5.60%	1.80%
Euroclear Finland	5.60%	1.90%	5.60%	1.80%
Euroclear Sweden	5.40%	2.00%	5.30%	2.00%

XVIII.4. The 2021 impairment review

The key assumptions for the valuation exercise are based on both external sources of information and on internal expectations (assets held in custody, transaction volumes, interest rates, etc.). Forecasts are taken from Board approved plans which translate into resilient profitability trends throughout 2022 and over the next four years. For all operating segments, their valuation indicated that the current values of goodwill and related intangibles are fair and justified.

The Board concluded that in 2021, there is no goodwill impairment risk arising from the review.

As far as sensitivity analysis is concerned, neither an increase of the discount rate by 1%, nor a decrease of the business drivers by 5%, would have resulted in an impairment in one of the CGUs (all other factors being equal).

The changes in the parameters used for the sensitivity analysis set out above are based on management's estimates of what level of change is reasonably possible. For example, the choice of a 5% decrease for business volumes is justified by the highest yearly negative deviation observed between forecasts and actuals over the past five years while the increase of the discount rate is justified by the highest yearly variance over the past five years.

A goodwill impairment exercise (relying on peers multiples and a comparison of actual figures versus expectations) was performed for MFEX in the fourth quarter.

XIX. Other liabilities

(€'000)	Notes	2021	2020
Funds to be assigned		82,892	55,344
Taxation and social security		21,359	36,883
Creditors		342,924	48,157
Other		47,042	7,688
At 31 December		**494,217**	**148,072**

'Funds to be assigned' principally represent funds received and other items in the process of reconciliation.

The MFEX group contributes to €264,082,000 in other liabilities, mainly related to the delivery of services, and including funds commissions to be redistributed.

XX. Debt securities issued and funds borrowed

(€'000)	Maturity date	2021	2020
At 31 December			
Certificates of Deposits issued in GBP	2021	-	783,969
Certificates of Deposits issued in USD	2021	-	1,151,704
Certificates of Deposits issued in EUR	2022	555,378	-
Certificates of Deposits issued in GBP	2022	773,492	-
Certificates of Deposits issued in USD	2022	732,581	-
Total certificate of deposits		**2,061,451**	**1,935,673**
Medium Term Notes issued in EUR	2021	-	500,112
Medium Term Notes issued in EUR	2022	499,722	498,741
Medium Term Notes issued in EUR	2023	500,177	499,497
Medium Term Notes issued in GBP	2024	416,519	388,858
Medium Term Notes issued in EUR	2025	497,288	496,457
Medium Term Notes issued in USD	2026	529,558	-
Total medium term notes		**2,443,264**	**2,383,665**
EUR 600,000,000 10 year Fixed rate senior debt	2026	597,306	596,691
EUR 300,000,000 12 year Fixed rate senior debt	2030	301,448	301,245
EUR 400,000,000 30 year Fixed rate Corporate Hybrid Debt	2028	405,281	404,947
EUR 350,000,000 30 year Fixed rate Corporate Hybrid Debt	2031	349,457	-
Total long term debt issued		**1,653,492**	**1,302,883**
Total debt securities issued		**6,158,207**	**5,622,221**
Overdrafts		12,668	1,151
Overnight borrowings		3,736	66,054
Fixed term borrowings		-	54,998
Repos		207,300	-
Total funds borrowed		**223,704**	**122,203**
Total debt securities issued and funds borrowed		**6,381,911**	**5,744,424**

In December 2016, Euroclear Investments SA issued a senior, unsecured and unsubordinated Eurobond on the Euronext Amsterdam stock exchange for an amount up to €600,000,000 (10 year maturity - fixed coupon).

In April 2018, Euroclear Investments also issued a €300,000,000 of unsecured and unsubordinated 12-year-fixed rate senior note and a €400,000,000 of subordinated resettable 30-years fixed-rate hybrid note callable at the option of the issuer after 10 years. These notes were listed on the Irish Stock Exchange.

The 2016 issuance was deemed to enhance the group funding flexibility, while the proceeds of the dual tranche issuance realised in 2018 were downstreamed by Euroclear Investments to Euroclear Bank for €600,000,000 and to Euroclear SA/NV for €100,000,000 in order to structure relevant loss absorption mechanisms to restore the capital position of these group entities in recovery and resolution scenarios in accordance with the Banking Recovery and Resolution Directive.

On 16 June 2021, Euroclear Investments SA issued a 30-year non-callable 10-year hybrid, subordinated Eurobond on the Irish Stock Exchange for an amount up to €350,000,000. The proceeds of this long term debt were downstreamed by the Company to Euroclear SA/NV in order to fund the acquisition of the MFEX Group and mitigate the impact that such acquisition the Euroclear SA/NV's regulatory capital adequacy.

XXI. Provisions for liabilities and charges

(€'000)	Notes	HR-related	Dilapidation	Litigation	Commitments and guarantees given	Other provisions	Total
At 1 January 2021		**1,263**	**8,114**	**1,257**	**10**	**3,276**	**13,920**
Impact of acquisition of subsidiaries	XXIX	-	-	230	-	-	**230**
Capitalisation of dilapidation provision	XVII	-	150	-	-	-	**150**
Additions		-	637	-	29	1,625	**2,291**
Unused amounts reversed during the period		(215)	(439)	-		(571)	**(1,225)**
Amounts used		(238)	(258)	-	(10)	(2,722)	**(3,228)**
Exchange differences		-	86	-		-	**86**
At 31 December 2021		**810**	**8,290**	**1,487**	**29**	**1,608**	**12,224**

Provisions for dilapidation costs are recorded to reflect end-of-lease obligations in several countries.

The current portion of the provisions for liabilities and charges is estimated at €5,872,000 (2020: €7,386,000).

XXII. Defined benefit plans

The group operates various post-employment schemes, including defined benefit (DB) and defined contribution (DC) pension plans, and post-employment medical plans.

The group has several DB pension plans covering employees in Belgium, France, Japan, the Netherlands and Sweden under broadly similar regulatory frameworks. The plans exclusively provide retirement and death benefits to the eligible participants. All of the DB pension plans are final or average salary pension plans, which provide benefits to members in the form of a lump sum payment or a guaranteed level of pension payable for life. The level of benefits provided generally depends on members' length of service and their salary in the final years leading up to retirement. The plans face broadly similar risks, as described below. The majority of benefit payments are from the administered funds; however, there are also a limited number of unfunded plans where the company meets the benefit payment obligation as it falls due (Japan). Plan assets are governed by local regulations and practice in each country, as is the nature of the relationship between the group and the pension funds' Board of Directors. Responsibility for governance of the plans – including investment decisions and contribution schedules – lies jointly with the sponsoring companies and the Board of Directors. The Board of Directors must be composed of representatives of the company and plan participants in accordance with the plan's regulations.

The group also operates a number of post-employment medical benefit schemes, in Belgium and France. These plans are unfunded. The method of accounting, significant assumptions and the frequency of valuations are similar to those used for DB pension schemes with the addition of actuarial assumptions relating to the long-term increase in healthcare costs.

Finally, the group operates certain DC schemes in Belgium which present particular features usually associated with DB plans. These plans indeed foresee a legally guaranteed rate of return. As a result of the persisting low interest rate environment, this legally guaranteed return may not be matched by the return provided by the insurance companies. This means that the financial market risk related to these plans is partially borne by the employer, who therefore might face a net liability. The latter does however not materially impact the group's net DB liability as the insurance company has continued so far to guarantee the legal minimum guaranteed interest rate.

All employees joining on or after 1 January 2019 are affiliated to a Belgian DC scheme, while all other employees made the choice between staying in the existing DB plan, which turned from an annuity into a lump sum plan as of 1 January 2019, or joining to the new DC plan. The DC scheme presents features of a DB plan because of the Belgian legal guaranteed return of currently 1.75%. The DC plan is a regular pension plan, with premiums paid by the employer. The premium is a fixed percentage per bracket of the base salary. Neither the DC plan nor the DB lump sum plan affect the benefits accrued for past service, which continue to be revalued with salary increases (so called dynamic management). The end date for both plans is age 67. Both plans are managed by the Euroclear Pension Fund OFP.

A full actuarial valuation of the plans, under IFRS, was made by independent qualified professional actuaries as of 31 December 2021 and showed a deficit of €169,116,000 (2020: €215,894,000) offset by a pension surplus of €617,000 (2020: €587,000) (71% in Belgium, 18% in France, 5% in Sweden, 5% in NL, 1% in Japan). The valuation covered all the DB plans and DC plans with DB-like features.

The pension charge recognised in profit and loss in 2021 amounts to €33,428,000 (2020: €32,081,000). The contribution, reflecting employer's contributions for funded plans and benefit disbursements for unfunded plans, amounted to €30,258,000 (2020: €13,402,000).

The major assumptions used by the actuaries in their valuations were:

	2021	2020
Discount rate	1.13%	0.73%
Expected inflation rate	1.99%	1.75%
Future salary increases	3.11%	2.99%
Expected medical cost trend rate	2.43%	2.30%

The above percentages are weighted averages of the assumptions used for the individual plans.

Assumptions regarding future mortality experience are set based on advice and published statistics in each territory (IABE prospective tables in Belgium for retirement benefits, TGHF 05 table in France, AG Prognosetafel 2020 with 2019 experienced mortality in the Netherlands, EPF 2020 rates in Japan and PRI 2011 in Sweden).

The amounts recognised in the balance sheet are as follows:

(€'000)	2021	2020
Present value of funded obligations	(522,658)	(514,624)
Fair value of plan assets	417,981	367,855
	(104,677)	(146,769)
Present value of unfunded obligations (principally made of medical plans)	(63,822)	(68,538)
Net pension deficit	**(168,499)**	**(215,307)**

The value of assets in all plans were:

(€'000)	2021 Quoted	2021 Unquoted	2021 Total	2020 Quoted	2020 Unquoted	2020 Total
Equity instruments						
- European equities	46,020	-	46,020	48,148	-	48,148
- Global equities	125,265	-	125,265	103,995	-	103,995
- Emerging markets equities	16,415	-	16,415	4,339	-	4,339
- European real estate equities	13,636	-	13,636	11,809	-	11,809
Debt instruments						
- EMU government bonds	81,033	-	81,033	60,261	-	60,261
- EMU corporate bonds	72,469	-	72,469	55,174	-	55,174
- Euro inflation-linked bonds	17	-	17	23,619	-	23,619
Property	3,371	-	3,371	3,016	-	3,016
Cash and cash equivalents	1,204	-	1,204	883	-	883
Qualifying insurance policies	-	836	836	-	846	846
Other	57,715	-	57,715	55,765	-	55,765
Total market value of assets	**417,145**	**836**	**417,981**	**367,009**	**846**	**367,855**

The assets of the funded plans are held separately from those of the group. The group ensures that the investment positions are managed within an asset-liability matching (ALM) framework that has been developed to achieve long-term investments that are in line with the obligations under the pension schemes. Within this framework, the group's ALM objective is to match assets to the pension obligations by investing in long-term fixed interest securities with maturities that match the benefit payments as they fall due and in the appropriate currency. The company actively monitors how the duration and the expected yield of the investments are matching the expected cash outflows arising from the pension obligations. A large proportion of assets consists of equities and bonds, although the group also invests in property, cash and holds some insurance assets. The group believes that equities offer the best returns over the long term with an acceptable level of risk.

The vast majority of the group's pension assets are quoted and highly liquid.

The changes in the net deficit are as follows:

		Medical plans			Pension plans				All plans
(€'000)	Notes	Present value of obligations	Fair value of plan assets	Total	Present value of obligations	Fair value of plan assets	Total	Asset Ceiling	Net pension deficit
At 1 January 2021		**66,591**	**-**	**66,591**	**516,571**	**(367,855)**	**148,716**	**-**	**215,307**
Current service cost	IX	2,692	-	2,692	28,562	(4)	28,558	-	31,250
Past service cost	IX	-	-	-	669	-	669	-	669
Net interest expense/(income)	VI	463	-	463	3,743	(2,697)	1,046	-	1,509
Income statement		**3,155**	**-**	**3,155**	**32,974**	**(2,701)**	**30,273**	**-**	**33,428**
Remeasurements									
Return on plan assets (excluding interest)		-	-	-	-	(30,793)	(30,793)	-	(30,793)
Experience (gains)/losses		(1,217)	-	(1,217)	5,582	(97)	5,485	-	4,268
(Gains)/losses due to change in financial assumptions		(5,918)	-	(5,918)	(17,285)	-	(17,285)	-	(23,203)
Statement of other comprehensive income		**(7,135)**	**-**	**(7,135)**	**(11,703)**	**(30,890)**	**(42,593)**	**-**	**(49,728)**
Employer's contributions		-	(515)	(515)	-	(29,743)	(29,743)	-	(30,258)
Exchange differences		-	-	-	(742)	527	(215)	-	(215)
Benefit payments		(515)	515	-	(12,716)	12,681	(35)	-	(35)
At 31 December 2021		**62,096**	**-**	**62,096**	**524,384**	**(417,981)**	**106,403**	**-**	**168,499**

		Medical plans			Pension plans				All plans
(€'000)	Notes	Present value of obligations	Fair value of plan assets	Total	Present value of obligations	Fair value of plan assets	Total	Asset Ceiling	Net pension deficit
At 1 January 2020		**70,754**	**-**	**70,754**	**480,106**	**(372,285)**	**107,821**	**-**	**178,575**
Current service cost	IX	3,194	-	3,194	27,143	-	27,143	-	30,337
Net interest expense/(income)	VI	705	-	705	4,907	(3,868)	1,039	-	1,744
Income statement		**3,899**	**-**	**3,899**	**32,050**	**(3,868)**	**28,182**	**-**	**32,081**
Remeasurements									
Return on plan assets (excluding interest)		-	-	-	-	5,534	5,534	-	5,534
Experience (gains)/losses		(1,867)	-	(1,867)	928	-	928	-	(939)
(Gains)/losses due to change in demographic assumptions		3,124	-	3,124	1,550	-	1,550	-	4,674
(Gains)/losses due to change in financial assumptions		(8,865)	-	(8,865)	17,182	-	17,182	-	8,317
Statement of other comprehensive income		**(7,608)**	**-**	**(7,608)**	**19,660**	**5,534**	**25,194**	**-**	**17,586**
Employer's contributions		-	(454)	(454)	-	(12,948)	(12,948)	-	(13,402)
Exchange differences		-	-	-	1,432	(965)	467	-	467
Benefit payments		(454)	454	-	(16,677)	16,677	-	-	-
At 31 December 2020		**66,591**	**-**	**66,591**	**516,571**	**(367,855)**	**148,716**	**-**	**215,307**

The weighted average duration of the defined benefit obligations is 16.9 years (2020: 18.4 years).

Funding levels are monitored on an annual basis and contributions are made to comply with minimum requirements as determined by local regulations and, if applicable, internal funding policy. The group considers that the contribution rates set at the last valuation date are sufficient to eliminate the deficit over the agreed period.

Expected contributions to post-employment benefit plans for the year ending 31 December 2022 are €26,231,000.

The cumulative actuarial loss recognised in other comprehensive income as at 31 December 2021 was €91,607,000 (2020: €141,335,000).

The sensitivity of the defined benefit obligations to a 1% movement in the weighted principal assumptions is:

	Increase in assumption	Decrease in assumption
Discount rate	(14.1%)	16.9%
Salary increase rate	10.9%	(10.9%)
Inflation rate	8.1%	(8.1%)
Medical trend rate	2.9%	(2.2%)

The above sensitivity analysis is based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. When calculating the sensitivity of the defined benefit obligations to significant actuarial assumptions, the same method (present value of the defined benefit obligation calculated with the projected unit credit method at the end of the reporting period) has been applied as when calculating the pension liability recognised within the statement of financial position. As the majority of the liabilities are not affected by the life expectancy risk (because of lump sum payments), no life expectancy sensitivity is considered.

Through its defined benefit pension plans and post-employment medical plans, the group is exposed to a number of risks, the most significant of which are detailed below:

- Asset volatility: the risk is kept under control thanks to proper risk management procedures and strategic asset allocation driven by the financial characteristics of the plans, in particular the plans liabilities and the risk tolerance of the Board and the group. The plan liabilities are calculated using a discount rate set with reference to corporate bond yields; if plan assets underperform this yield, this will create a deficit. Belgian plans hold 60% of equities, which are expected to outperform corporate bonds in the long-term while providing volatility and risk in the short-term. The group believes that due to the long-term nature of the plan liabilities and the strength of the supporting group, a level of continuing equity investment is an appropriate element of the group's long term strategy to manage the plans efficiently. See above for more details on the group's asset-liability matching strategy.
- Changes in bond yields: a decrease in corporate bond yields will increase plan liabilities, although this will be partially offset by an increase in the value of the plans' bond holdings.
- Inflation risk: the plans' benefit obligations are linked to inflation (see sensitivity impact), and higher inflation will lead to higher liabilities. The impact is however limited and the assumptions are cautiously monitored annually.
- Life expectancy: as mentioned, longevity risk is limited as the majority of the benefit payments are lump sums.
- Medical trend rate risk: as the liabilities of the Belgian and French medical plans are very sensitive to the used medical trend rate, the evolution of this trend rate is monitored regularly to make sure that this trend rate properly reflects the long term expected evolution of the medical cost.
- Salary increase: as the pension liabilities are quite sensitive to salary increase, the used assumptions are monitored closely and historic salary evolution is compared against the used assumptions.

The group has not changed the processes used to manage its risks from previous periods.

The movement in the deferred tax asset relating to the pension deficit is as follows:

(€'000)	Notes	2021	2020
Amount credited/(charged) through equity	XII	(12,177)	4,881
Amount credited/(charged) through the income statement	XII	773	4,656
Exchange differences		(44)	140
Increase/(decrease) in deferred tax asset		**(11,447)**	**9,677**

XXIII. Share capital and share premium

Issued, allotted and fully paid share capital	Number of ordinary shares	Share Capital (€'000)	Share Premium (€'000)	Total (€'000)
At 1 January and 31 December 2021	**3,147,463**	**3,147**	**943,441**	**946,588**

Issued, allotted and fully paid share capital	Number of ordinary shares	Share Capital (€'000)	Share Premium (€'000)	Total (€'000)
At 1 January and 31 December 2020	**3,147,463**	**3,147**	**943,441**	**946,588**

At 31 December 2021 and 31 December 2020, there was no stock option plan on the shares of Euroclear Holding SA//NV or any subsidiary.

XXIV. Other reserves

(€'000)	Notes	Equity instruments at FVOCI	Debt instruments at FVOCI	Cash flow hedging reserve	Hedge of net inv. in foreign operations reserve	Foreign currency translation reserve	Legal reserve	Total
At 1 January 2021		**408,142**	**49,599**	**5,428**	**18,238**	**(37,801)**	**115,811**	**559,417**
Fair value adjustments	XIII, XV	(159,223)	(51,998)	(14,358)	-	-	-	(225,579)
Deferred tax on fair value adjustments	XII, XV	1,440	12,916	3,589	-	-	-	17,945
Foreign currency translation differences		-	-	-	-	7,392	-	7,392
Transfer to legal reserve		-	-	-	-	-	58	58
At 31 December 2021		**250,359**	**10,517**	**(5,341)**	**18,238**	**(30,409)**	**115,869**	**359,233**

(€'000)	Notes	Equity instruments at FVOCI	Debt instruments at FVOCI	Cash flow hedging reserve	Hedge of net inv. in foreign operations reserve	Foreign currency translation reserve	Legal reserve	Total
At 1 January 2020		**299,986**	**23,032**	**(2,196)**	**18,238**	**(40,783)**	**116,388**	**414,665**
Fair value adjustments	XIII, XV	109,141	35,345	10,165	-	-	-	154,651
Deferred tax on fair value adjustments	XII, XV	(985)	(8,778)	(2,541)	-	-	-	(12,304)
Foreign currency translation differences		-	-	-	-	2,982	-	2,982
Transfer to legal reserve		-	-	-	-	-	(577)	(577)
At 31 December 2020		**408,142**	**49,599**	**5,428**	**18,238**	**(37,801)**	**115,811**	**559,417**

The hedge of net investment in foreign operations reserve and the foreign currency translation reserve relate to the group's subsidiaries in Sweden and the United Kingdom.

In addition to the translation of structural currency exposures relating to the group's subsidiaries and joint venture with a functional currency other than EUR, the foreign currency translation reserve includes the translation impact of goodwill and intangible assets expressed in Swedish krona (SEK) and GBP that were recognised at the time of acquisition of subsidiaries in Sweden, and EMXCo in the United Kingdom.

The legal reserve represents non-distributable amounts required to be established as separate reserves in compliance with local laws in certain countries where the group operates.

XXV. Dividends paid

€ per share	2021	2020
Equity paid	**164.80**	-

(€'000)		
Equity paid	**518,702**	-

Euroclear Holding SA/NV paid two interim dividends (€259,350,951 each) in respect of the financial year ending 31 December 2021.

No dividends were paid in 2020 following the European Central Bank's recommendation asking credit institutions to hold back dividend distribution during the COVID-19 crisis.

XXVI. Contingent liabilities and commitments

(€'000)	2021	2020
At 31 December		
Collateral pledged, of which:	4,151,843	3,821,859
- Own assets	630,347	430,180
- Re-use of collateral received	3,521,496	3,391,679
Financial guarantees	11,031,321	7,403,055
Loan commitments	2,526	3,905

The collateral pledged mainly relates to:

- securities deposited with the National Bank of Belgium as potential collateral, principally for Target2-related exposures. It includes investment securities with a market value of €601,261,000 (2020: €426,093,000) and the reuse of securities received as collateral for reverse repurchase agreements from participants with a market value of €3,521,496,000 (2020: €3,391,679,000); There was no exposure at 31 December 2021 (2020: €0);
- a bank deposit of €3,887,000 pledged by Euroclear SA/NV to a landlord (2020: €3,887,000) ; and
- Other operational pledged deposits for a total amount of €25,200,000 (2020: €200,000).

Financial guarantees principally relate to guarantees under the Securities Lending and Borrowing (SLB) and GCA (Global Collateral Access) programmes. Under the terms of the Euroclear SLB Programme, Euroclear Bank provides a guarantee to securities lenders whereby if a securities borrower is unable to return the securities, Euroclear Bank guarantees the lender to receive replacement securities or their cash equivalent. The guarantee is valued at market value of the loan securities plus accrued interest. Euroclear Bank's policy is that all securities borrowings are covered by collateral pledged by the borrowing banks and clients. Euroclear Bank also provides a guarantee to the GCA lenders, should the GCA borrowers fail to return lent Securities. This guarantee is provided on a net basis (difference between the market value of the unreturned Loan Securities and the market value of the Collateral Securities relating to the unreturned Loan Securities).

XXVII. Lease commitments

	2021			2020		
(€'000)	Software	Property	Vehicles and other equipment	Software	Property	Vehicles and other equipment
Group company as lessee						
Future aggregate minimum lease payments under non-cancellable leases:	**36,611**	**113**	**3**	**42,747**	**56**	**216**
- up to one year	13,163	104	1	16,825	1	172
- later than one year and not later than five years	23,185	9	2	24,799	55	44
- over five years	263	-	-	1,123	-	-

The lease expenses/revenues in the income statement are as follows:

(€'000)	Notes	2021	2020
Net interest income	VI		
Interest expenses on lease liabilities		463	792
Administrative expenses	IX		
Depreciation expenses	XVII	18,006	18,742
Expenses from low-value assets		542	397
Expenses from sotware leases		19,952	13,734
Expenses from car leases (including non-lease components)		9,388	8,935

XXVIII. Related party disclosures

Euroclear Holding SA/NV, incorporated in Belgium, is the ultimate parent and controlling party of the group.

Euroclear Holding SA/NV's investments in its subsidiaries are set out in Note I.

Transactions with related parties, other than those between companies of the group eliminated on consolidation, principally relate to investments in subsidiaries and joint ventures and to key management compensation.

Besides this, the group considers its Belgian pension fund as a related party as it has the ability to exercise significant influence over it in taking financial or operational decisions. Disclosures related to the pension funds are presented in Note XXII.

	2021			2020		
(€'000)	Other group companies	Joint ventures and Associates	Total	Other group companies	Joint ventures and Associates	Total
Assets						
Loans and advances at amortised cost	917	-	917	6,095	-	6,095
Non-trading financial assets mandatorily at FVPL	4,335	513	4,848	7,250	-	7,250
Other assets	17	-	17	-	-	-
Prepayments and accrued income	-	-	-	3	-	3
Investments in subsidiaries and joint ventures	6,975	-	6,975	14,094	-	14,094
Total assets	**12,244**	**513**	**12,757**	**27,442**	**-**	**27,442**
Income statement						
Interest income	155	13	168	417	-	417
Fee and commission income	-	-	-	3	-	3
Other operating income/expense	206	-	206	-	-	-
Impairment	(2)	(800)	(802)	(23)	-	(23)
Total income statement	**359**	**(787)**	**(428)**	**397**	**-**	**397**
Off-balance sheet						
Liquidity facility given	(1,190)	-	(1,190)	(1,224)	-	(1,224)
Total off-balance sheet	**(1,190)**	**-**	**(1,190)**	**(1,224)**	**-**	**(1,224)**

XXVIII.1. Transactions with other companies of the Euroclear group

XXVIII.1.a. Administrative support

Certain administrative support costs are periodically recharged to and by other companies within the Euroclear group.

XXVIII.1.b. Loans and liquidity facilities provided

Euroclear SA/NV has outstanding loans with Quantessence Ltd, for a total amount of GBP 4,350,000, of which GBP 750,000 are non-convertible and should be reimbursed by June 2024. The remaining portion of GBP 3,600,000, if not converted, is expected to be paid back by December 2026 at latest.

In July 2021, Euroclear SA/NV has granted a €500,000 loan to Pref-X, on top of the €800,000 capital injection made in 2020 in return for a 33.3% stake. Pref-X provides an innovative solution for managing private debt placement. The platform standardises and digitalises the operational processes related to origination and monitoring of a transaction, by bringing all market participants together in a secured manner.

XXVIII.2. Key management compensation

The compensation of key management (members of the Management Committees of Euroclear SA/NV and its (I)CSD subsidiaries, group division heads and the Euroclear Holding SA/NV General Manager) and non-executive directors was as follows:

(€'000)	2021	2020
Short-term employee benefits	28,509	27,266
Post-employment benefits	3,105	3,048
Other long-term benefits	2,796	2,239
Termination benefits	370	3,923
Total compensation of key management	34,780	36,476
Emoluments of non-executive directors	3,387	4,393
Total compensation of key management and directors	**38,167**	**40,869**

The NBB has been informed of the compensation principles for the members of the Management Committees of Euroclear SA/NV and Euroclear Bank and of certain other Senior Management, taking into account the applicable regulations. The amounts - as approved by the respective Remuneration Committees/Boards - reflect these principles and more specifically the allocation between short-term and long-term benefits.

No loans or similar transactions occurred with directors, key management or their close family members.

The companies employing the Euroclear SA/NV non-executive directors are subject to the same terms, conditions and tariffs as other companies.

Directors' emoluments are in the form of fees with the exception of life insurance benefits for one director amounting to €74,000 (2020: €13,000).

XXIX.Business Combinations

On 15 September 2021, Euroclear SA/NV acquired 100% of the share capital of MFEX Holding and its nine subsidiaries, for a total price consideration of €513,234,000, including a capital contribution of €7,500,000 (see note I).

The acquisition of MFEX aims at strengthening the fund distribution offering of Euroclear's FundsPlace where Euroclear's strategic ambition is to capture the increasing demand for outsourcing of fund distribution by expanding FundsPlace's service offering and building out vertically integrated operations.

The MFEX group contributed €13,929,000 of fees revenues and €4,426,000 of net loss during the fourth quarter 2021 (after acquisition date).

For the full financial year 2021, the MFEX group generated total business revenues amounting to €56,078,000 and ends up with a net loss of €9,244,000.

The details of the assets and liabilities recognised, and goodwill, at the date of acquisition are set out below. The fair values are not yet considered to be final.

(€'000)	Notes	Acquiree's carrying value	Fair value
Total purchase consideration paid			**513,234**
Assets			
Loans and advances at amortised cost	IV	117,836	117,836
Non-trading financial assets mandatorily at FVPL		311	311
Current income tax assets		155	155
Deferred income tax assets	XII	1,850	1,850
Other assets	XVI	182,109	182,109
Pre-payments and accrued income		11,877	11,877
Property, plant and equipment	XVII	1,393	1,393
Intangible assets	XVIII	29,530	29,530
Total assets		**345,061**	**345,061**
Liabilities			
Debt securities issued and funds borrowed	XX	(14,920)	(14,920)
Lease liabilities		(91)	(91)
Other liabilities	XIX	(250,334)	(250,334)
Accruals and deferred income		(7,280)	(7,280)
Current income tax liabilities		1,163	1,163
Provisions for liabilities and charges	XXI	(230)	(230)
Pension deficit	XXII	(141)	(141)
Total liabilities		**(271,833)**	**(271,833)**
Fair value of assets and liabilities acquired			**73,228**
Goodwill, representing residual amount of purchase consideration			**440,007**
Cost of acquisition			
Cash consideration			513,234
Total			**513,234**
Cash outflow on acquisition			(513,234)
Less: Cash and cash equivalents in subsidiaries acquired			117,836
Net cash outflow			**(395,398)**

The purchase price allocation exercise will only be finalised in 2022, and will influence the final amount of goodwill recognised.

XXX. Discontinued operations

Fondab is a subsidiary of the MFEX Group in Sweden which offers a B-to-C fund platform and related services for fund distribution.

Euroclear has engaged discussions with potential buyers to sell Fondab. While Fondab's financial and business profiles are sound, the capacity of MFEX stand-alone to bring the company to a next level of growth has been considered remote due to the limited strategic fit of Fondab with MFEX/Euroclear Fund Strategy. Therefore, in accordance with IFRS 5, Euroclear has recognised the assets and liabilities in separate lines of the Statement of Financial Position (at the lower of carrying value or the fair value less cost to sell).

Fondab has contributed €115,000 of pre-tax profit during the fourth quarter.

(€'000)	2021
Non-current assets classifed as held for sale	
Tangible assets	371
Intangible ssets	729
Assets of disposal group classifed as held for sale	
Cash and balances with central banks	
Current income tax assets	187
Other assets	248
Pre-payments and accrued income	1,112
Total assets	**6,652**
Liabilities of disposal group classifed as held for sale	
Lease liabilities	190
Other liabilities	2,998
Accruals and deferred income	318
Current income tax liabilities	423
Total liabilities	**3,929**

XXXI. Events after the balance sheet date

Euroclear is closely monitoring the invasion of Ukraine by Russia, and has taken the necessary measures to reflect the various sanctions that are issued by the different authorities. While not influencing the 2021 financial statements, we expect these sanctions to materially influence the size of our balance sheet going forward. We do not expect the sanctions to materially impact our financial performance. A consequence of the sanctions is that assets owned by sanctioned parties are blocked in the respective financial market infrastructures, including Euroclear. As the assets mature through their lifecycle, cashflows (e.g. coupons and redemptions) that are normally transferred to the underlying parties accumulate on our balance sheet for as long as the sanctions remain in place. As of end of March 2022, Euroclear Bank's balance sheet increased by €28 billion compared to last December, which creates associated capital requirements, costs and reinvestment challenges. In line with its role of financial market infrastructure (FMI), Euroclear is carefully managing the various aspects resulting from this situation in cooperation with the competent authorities.

The Board is not recommending to shareholders to approve the payment of an additional dividend for the year ending 31 December 2021 at the Annual General Meeting as part of the usual profit allocation process. Instead, the Board envisages approving the payment of such a dividend in the second half of 2022 under the form of an interim distribution, in accordance with the Belgian Companies Code and Euroclear Holding SA/NV's Articles of Association.

Statutory auditors' report

to the general shareholders' meeting on the consolidated financial statements for the year ended 31 December 2021

Statutory auditor's report to the shareholders' meeting of Euroclear Holding SA for the year ended 31 December 2021 - Consolidated financial statements

In the context of the statutory audit of the consolidated financial statements of Euroclear Holding SA ("the company") and its subsidiaries (jointly "the group"), we hereby submit our statutory audit report. This report includes our report on the consolidated financial statements and the other legal and regulatory requirements. These parts should be considered as integral to the report.

We were appointed in our capacity as statutory auditor by the shareholders' meeting of 3 May 2021, in accordance with the proposal of the board of directors ("bestuursorgaan" / "organe d'administration"). Our mandate will expire on the date of the shareholders' meeting deliberating on the financial statements for the year ending 31 December 2023. We have performed the statutory audit of the consolidated financial statements of Euroclear Holding SA for 4 consecutive periods.

Report on the consolidated financial statements

Unqualified opinion

We have audited the consolidated financial statements of the group, which comprise the consolidated statement of financial position as at 31 December 2021, the consolidated statement of comprehensive income, the consolidated statement of changes in equity and the consolidated statement of cash flow for the year then ended, as well as the summary of significant accounting policies and other explanatory notes. The consolidated statement of financial position shows total assets of 29 399 906 (000) EUR and the consolidated statement of comprehensive income shows a profit for the year then ended of 462 550 (000) EUR.

In our opinion, the consolidated financial statements give a true and fair view of the group's net equity and financial position as of 31 December 2021 and of its consolidated results its consolidated cash flow for the year then ended, in accordance with International Financial Reporting Standards (IFRS) as adopted by the European Union and with the legal and regulatory requirements applicable in Belgium.

Basis for the unqualified opinion

We conducted our audit in accordance with International Standards on Auditing (ISA), as applicable in Belgium. In addition, we have applied the International Standards on Auditing approved by the IAASB applicable to the current financial year, but not yet approved at national level. Our responsibilities under those standards are further described in the "Responsibilities of the statutory auditor for the audit of the consolidated financial statements" section of our report. We have complied with all ethical requirements relevant to the statutory audit of consolidated financial statements in Belgium, including those regarding independence.

We have obtained from the board of directors and the company's officials the explanations and information necessary for performing our audit.

We believe that the audit evidence obtained is sufficient and appropriate to provide a basis for our opinion.

Emphasis of matter – post balance sheet event

We draw attention to note 31 of the consolidated financial information, which describes the consequences of the conflict situation between Russia and Ukraine on the balance sheet. While not influencing the 2021 financial statements, the impacts of this crisis affect the structure of balance sheet in 2022. Our conclusion is not modified in respect of this matter.

Responsibilities of the board of directors for the preparation of the consolidated financial statements

The board of directors is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with International Financial Reporting Standards (IFRS) as adopted by the European Union and with the legal and regulatory requirements applicable in Belgium and for such internal control as the board of directors determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the board of directors is responsible for assessing the group's ability to continue as a going concern, disclosing, as applicable, matters to be considered for going concern and using the going concern basis of accounting unless the board of directors either intends to liquidate the group or to cease operations, or has no other realistic alternative but to do so.

Responsibilities of the statutory auditor for the audit of the consolidated financial statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue a statutory auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISA will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

During the performance of our audit, we comply with the legal, regulatory and normative framework as applicable to the audit of consolidated financial statements in Belgium. The scope of the audit does not comprise any assurance regarding the future viability of the company nor regarding the efficiency or effectiveness demonstrated by the board of directors in the way that the company's business has been conducted or will be conducted.

As part of an audit in accordance with ISA, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from an error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
- obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the group's internal control;
- evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the board of directors;
- conclude on the appropriateness of the use of the going concern basis of accounting by the board of directors and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our statutory auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our statutory auditor's report. However, future events or conditions may cause the group to cease to continue as a going concern;
- evaluate the overall presentation, structure and content of the consolidated financial statements, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- obtain sufficient appropriate audit evidence regarding the financial information of the entities and business activities within the group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, amongst other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Other legal and regulatory requirements

Responsibilities of the board of directors

The board of directors is responsible for the preparation and the content of the directors' report on the consolidated financial statements.

Responsibilities of the statutory auditor

As part of our mandate and in accordance with the Belgian standard complementary to the International Standards on Auditing (ISA) as applicable in Belgium, our responsibility is to verify, in all material respects, the director's report on the consolidated financial statements, as well as to report on this matter.

Aspects regarding the directors' report on the consolidated financial statements

In our opinion, after performing the specific procedures on the directors' report on the consolidated financial statements, this report is consistent with the consolidated financial statements for that same year and has been established in accordance with the requirements of article 3:32 of the Code of companies and associations.

In the context of our statutory audit of the consolidated financial statements we are also responsible to consider, in particular based on information that we became aware of during the audit, if the directors' report on the consolidated financial statements is free of material misstatement, either by information that is incorrectly stated or otherwise misleading. In the context of the procedures performed, we are not aware of such material misstatement.

Statements regarding independence

- Our audit firm and our network have not performed any prohibited services and our audit firm has remained independent from the group during the performance of our mandate.
- The fees for the additional non-audit services compatible with the statutory audit, as defined in article 3:65 of the Code of companies and associations, have been properly disclosed and disaggregated in the notes to the consolidated financial statements.

Signed at Zaventem.

The statutory auditor

Digitally signed by
Yves Dehogne
DocuSign
Signed By: Yves Dehogne (Signature)
Signing Time: 14-apr-2022 | 18:47 CEST
C: BE
Issuer: Citizen CA
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Deloitte Bedrijfsrevisoren/Réviseurs d'Entreprises BV/SRL
Represented by Yves Dehogne

Deloitte.

Deloitte Bedrijfsrevisoren/Réviseurs d'Entreprises BV/SRL
Registered Office: Gateway building, Luchthaven Brussel Nationaal 1 J, B-1930 Zaventem
VAT BE 0429.053.863 - RPR Brussel/RPM Bruxelles - IBAN BE86 5523 2431 0050 - BIC GKCCBEBB

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