Euroclear Holding SA/NV

Consolidated financial statements
at 31 December 2022

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 2022.

Group overview and principal activities

The Euroclear group ('the group' or 'Euroclear') is the world's leading provider of post-trade services. The group provides settlement, safekeeping, and servicing of domestic and cross-border securities, including bonds, equities, and investment funds. The Euroclear group includes:

- Euroclear Bank, the International Central Securities Depository (ICSD) with a Banking Licence, which also operates issuer CSD services for Ireland;
- the domestic Central Securities Depositaries (CSDs), Euroclear Belgium, Euroclear Finland, Euroclear France, Euroclear Nederland, Euroclear Sweden and Euroclear UK & International;
- the MFEX group, which is being integrated into the group following its acquisition in September 2021.

Euroclear SA/NV provides system development and support services to the other companies of the group while Euroclear Investments SA is the group intermediary financial holding company and debt issuing entity.

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.

On 31 December 2022 midnight, Euroclear Investments SA moved its corporate seat from Luxembourg to Belgium and became a Belgian Corporate entity.

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 the aforementioned companies.

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 Euroclear Bank in recovery and resolution scenarios in accordance with the Banking Recovery and Resolution Directive applicable to Euroclear Bank. These instruments were fully subscribed by Euroclear Investments SA, with €300 million out of the total amount issued recognised as Tier 2 regulatory capital by the National Bank of Belgium.

Besides the above Long-Term Notes issued, Euroclear Bank launched 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 (CSDR).

At the end of 2022, Euroclear Bank had a total amount equivalent to €2.5 billion in issuance in euro (EUR) and United States dollar (USD) by the end of 2022 through its EMTN programme, and a total of €2.0 billion of CDs, mainly in USD and British pound sterling (GBP) but also in EUR for maturities from one week to one year. The CD multi-currency program addresses unforeseen liquidity shortfalls beyond extreme but plausible liquidity stress scenarios consistent with the recovery plan of Euroclear Bank.

During 2022, Euroclear SA/NV strengthened its investments in existing participations and made new strategic investments in Greenomy SRL ('Greenomy'), Fnality International Limited ('Fnality')[1], Impact Cubed Ltd ('Impact Cubed)'[2] and Goji Holdings Limited ('Goji')[3] (with the latter subject to regulatory approval). The total amount injected in new and existing investments in 2022 was €44 million and further committed amounts over the coming years amount to over €60 million. At year-end 2022, Euroclear SA/NV holds a 54.9% stake in Greenomy.

Strategy and business review

The Euroclear group at a glance

As a financial market infrastructure (FMI) group, Euroclear operate secure platforms where a wide network of the world's largest financial firms and central banks hold and transact securities issued by companies and governments.

The group's principal operating entities are central securities depositories (CSDs) being Euroclear Bank, an international CSD and the domestic CSD for Ireland, and six other domestic European CSDs. Through its acquisition of MFEX in 2021 and the acquisition of Goji in 2022 (subject to regulatory approvals), the group is enriching its capabilities in the global funds and private equity markets, alongside other investments in strategic fintech providers.

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[1] An international consortium of global banks and financial market infrastructures focused on building regulated payment systems to support the adoption of tokenized assets and marketplaces.
[2] A leading UK-based provider of ESG tech-enabled analytics and data science solutions.
[3] A leading UK-based provider of digital access and technology-enabled solutions to private markets.

Together, Euroclear's group companies provide solutions for domestic and global financial market participants to invest in securities issued by governments, corporations, and fund 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.

The Euroclear network comprises 2,000 financial institutions which use its platform to access 50 different markets and settle transactions in 46 currencies. On their behalf, the group holds almost €36 trillion of assets under custody and enables over 300 million transactions per year, worth an equivalent of €1 quadrillion.

A new, purpose-driven strategic vision

Having delivered against the previous 5-year plan and key targets two years ahead of schedule, the group management and the Board undertook a strategic review in 2022 to lay the foundations for the next phase of Euroclear's growth.

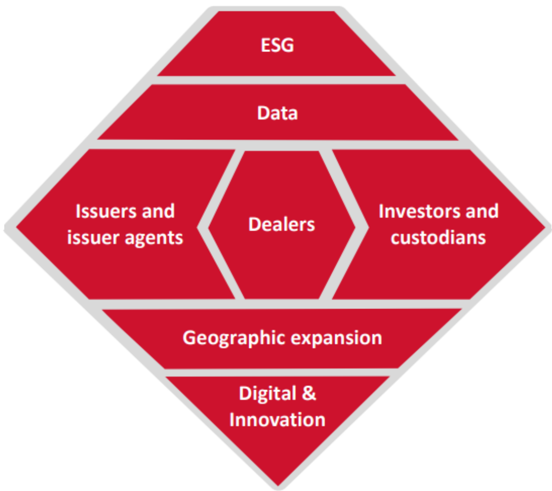
The Euroclear group made its purpose explicit, namely: "*We innovate to bring safety, efficiency and connections to financial markets for sustainable economic growth*".

Euroclear's purpose, combined with its culture and values, underpins the long-term aspiration to become a digital and data-enabled financial market infrastructure (a D^2-FMI).

To realise this vision, Euroclear will continue to build an open, shared platform providing a catalogue of services to all market stakeholders and complemented by third parties. Euroclear's aim is to evolve the current market model to provide efficiencies that deliver more client value, building on previous successes in collateral and funds.

Introducing Euroclear's business strategy

To achieve its long-term vision, group management and the Board defined a five-year business strategy.

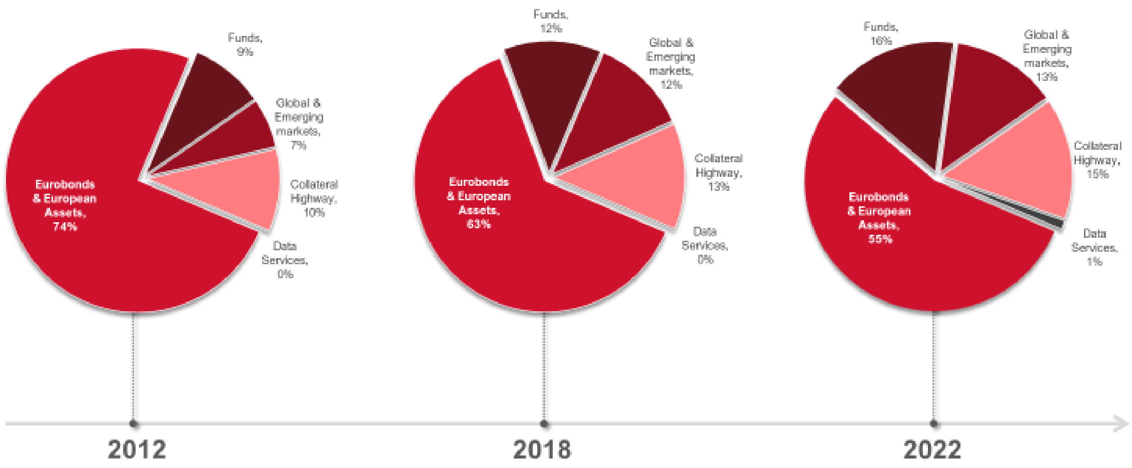


The new strategy takes a stronger client lens, focusing on the issuers, dealers and investor communities which are central to Euroclear's ecosystem.

The strategy seeks to enhance the value that is provided to these clients through Euroclear's core product and service offering, while upgrading its capabilities in ESG, data, digital and, as it continues to expand, its geographic reach.

Through the strategy, Euroclear expects to continue to grow and diversify its business income, building on the considerable progress made over prior years.

Euroclear group business lines diversification on the period 2012-2022



The strategy will be driven predominantly by organic growth coming from the group's attractive customer offering in an addressable market which is estimated will grow at 4%-5% per annum through-the-cycle.

In addition, the group intends to accelerate towards its long-term vision through selective M&A and partnerships, with a goal to add capabilities and scale to the client offering while being accretive to shareholder value.

Euroclear's people and technology are the key enablers of the business strategy, and detailed plans have been defined to drive business value through continued investment in these core capabilities.

The new strategic direction places an even greater emphasis on Euroclear's responsibilities to communities and society. As such, the group has taken this opportunity to crystalise further plans to reach its own sustainability goals.

Strategic focus on client needs across the financial market ecosystem

Euroclear is a central part of the financial market infrastructure that connects issuers with investors: providing a platform for capital to flow to where required throughout the global economy.

Between those two parties are intermediaries, including issuer agents, which perform multiple tasks on behalf of issuers including primary issuance and corporate actions; broker-dealers, that buy and sell securities on behalf of their investor community clients and actively support the origination of issuance and bringing investors to the right products; and custodians, which safeguard the assets on behalf of underlying investors.

Euroclear remains focused on client needs and the revised corporate strategy places explicit focus on reinforcing and extending its offer for:

- issuers and their agents;
- the investor community and their custodians;
- the broker-dealer community.

For issuers and their agents, Euroclear's core offering is to provide a secure place of issuance for their securities in order to access funding from the capital markets. All six domestic CSDs and Euroclear Bank, the international CSD, play the role of issuer CSD, which is to be the digital notary for the issued securities. A broad range of financial instruments are issued through the (I)CSDs, including equities, fixed income, and exchange traded funds (ETFs).

Issuers require place of issuance to allow for multiple asset classes and currencies, to have the right legal frameworks and to be attractive to investors. Moreover, issuers and their agents want to maintain a loyal investor base while meeting their regulatory responsibilities and ESG considerations.

Investors and custodians expect to transact and hold their securities in a safe and efficient way. They are looking to meet their investment goals through access to a variety of financial markets, while minimising risk. Many investors are looking to diversify their portfolios by accessing new geographical markets, multiple asset classes and in developing sustainable finance marketplace.

Custodians seek to benefit from efficiency through the automation and standardisation of processes across the entire life cycle of the securities they hold for investors. This includes seamless asset servicing and related tax processes where modernisation and standardisation are hallmarks of Euroclear's custody services.

As broker-dealers act as a conduit for the trading process for the investment community, they require efficient and reliable financial market infrastructure with access to liquidity. This enables them to focus on managing operational and credit risks in line with their regulatory responsibilities.

Ensuring market liquidity

Euroclear supports the need for liquidity by providing settlement services and by providing a neutral, interoperable collateral management utility, known as the Collateral Highway.

Over 2022, the Euroclear group processed a record 304 million netted transactions for clients with a total value of €1,066 trillion, which was an increase of 7% compared to 2021 – itself a year of significant activity. Each of the group's settlement systems has proven to be robust faced with these volume levels, with an overall systems uptime of 99.9%. The group continues to invest to ensure that core settlement systems are built on robust, modern technology to maintain long-term business resilience and as part of its strategic vision.

The Collateral Highway supports the financial market's requirement for a neutral, interoperable utility to source, mobilise and segregate collateral. It offers clients a complete view of exposures across the full spectrum of their asset classes and enables them to optimise collateral.

In 2022, demand for collateral management services remained robust, with the exceptionally challenging conditions in bond and equity markets resulting in higher need for financing services. At year-end 2022, the average daily collateral outstanding on the Collateral Highway was €1.8 trillion, with the business line contributing 15% of group business income.

The Collateral Highway's growth has benefited from Euroclear's leading global role in providing triparty solutions as clients implement new uncleared margin rules (UMR) for derivatives under the Basel frameworks. The regulation requires broker-dealers and investors to post margin across transactions to reduce counterparty and systemic risk.

Such new global regulations are expected to drive ongoing demand for collateral management services across a broader spectrum of market participants. The final waves of the multi-year UMR implementation were conducted in the course of 2022, and Euroclear continued to support new clients in their onboarding process.

Users of collateral management services increasingly apply an ESG lens to their decision-making processes. In 2022, Euroclear began adding ESG solutions to the Collateral Highway with the first phase being to create dynamic ESG criteria by adding 65 ESG indices for both fixed income and equity collateral. It is now possible to restrict accepted collateral to only green bonds by simply selecting a Green Bond Index as the eligibility criteria. The second phase, expected in 2023, will see the roll-out of a more granular solution allowing the selection of individual ESG securities in addition to indices.

As Euroclear looks to enhance its offering in providing liquidity, it continues to focus on connectivity across different geographies and providing greater efficiency through the automation of processes.

One area of opportunity is through the group's connections to the European Central Bank's (ECB) TARGET2-Securities (T2S) system. Euroclear Bank is currently focusing on its connection to the Eurosystem Collateral Management System (ECMS) as part of its collateral highway offering, with a goal to support clients in optimising liquidity management and reducing their financing costs.

From a settlement perspective, since 2016, Euroclear's ESES CSDs (Euroclear Belgium, France and Nederland) have been connected to T2S system and the Finnish market is scheduled to join T2S in 2023. During last year, Euroclear Finland continued its preparations towards this milestone, working closely with its clients to test and prepare for the launch.

Euroclear Sweden also pursued its own pre-study in tandem with Riksbanken, following the latter's directional decision to change the SEK central bank money settlements and to move them to the Eurosystem's T2/T2S-platform.

Asset class focus: growing investment fund services

One asset class where Euroclear has increased the scope of its service offering is investment funds. Euroclear has established a comprehensive offering comprising services to distributors, custodians, and asset managers. The group administers €2.8 trillion of fund assets, servicing approximately 2,000 fund distributors and 2,500 fund management companies spanning 85 countries. Euroclear offers flexible order execution to settlement services for mutual, money market, alternative funds, and ETFs (including international ETFs). In 2022, funds contribution to group business income was 16%.

The core of Euroclear's investment funds proposition is the automated order routing, settlement, and asset servicing through both Euroclear Bank and the domestic CSDs. In addition, Euroclear has acted as a place of issuance for both domestic and international exchange traded fund (ETFs). In 2021, the group significantly enhanced its offer in funds through the acquisition of MFEX group.

MFEX brings a broad fund distribution network which is complementary to Euroclear's existing post-trade expertise in investment funds. This combination allows Euroclear to offer an end-to-end suite of digital solutions for investment fund issuers across mutual funds, ETFs, and alternative asset classes.

Euroclear is making good progress with the integration of MFEX and is on-track to realise the revenue and cost synergies expected by the acquisition, even though financial market conditions were exceptionally challenging for investment funds throughout 2022.

The group took another step towards providing a one-stop shop for asset managers and fund administrators through the proposed acquisition of Goji (subject to regulatory approvals). Goji is a UK-based fintech providing innovative digital access and technology-enabled solutions to the private markets.

Progress has also been made at another fund-related fintech acquired by Euroclear. Quantessence provides financial institutions with technological support for a range of savings and investment products. In 2022, Quantessence won several key clients and has generated revenue for the first time. At the end of the year, the company has relocated its EU regulated activities to Brussels and Quantessence Financial SA/NV is now regulated by the Financial Services and Market Authority in Belgium and by the Financial Conduct Authority in the UK.

Continued geographic expansion

Around the world, growth economies are seeking greater levels of foreign investment to help fund long-term development needs. In parallel, international investors want opportunities to diversify their investments and access higher yielding opportunities.

Building on its foundations in Europe and Eurobonds, 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.

Over the past decade, Euroclear's Global and Emerging Markets business has proven attractive to both issuers and investors, and a source of both growth and diversification. In 2022, Global and Emerging Markets contributed 13% of business income, compared to just 7% in 2012. Even if global macroeconomic conditions have been increasingly volatile, in 2022, assets under custody in Euroclear Global and Emerging Markets business grew by 12% to €1.7 trillion.

Last year, Euroclear Bank and Saudi Arabia's Securities Depository Center Company (Edaa) launched a fully Euroclearable link for Saudi Arabia. The new link enables international investors unprecedented access to the Saudi Arabia sovereign sukuk market. Consequently, such investors are able to use Saudi sovereign and quasi-sovereign sukuks for multi-currency settlement. At the World Economic Forum in May 2022, the Saudi Ministry of Finance announced that such issuance to international investors accessing the market through their Euroclear accounts would strongly develop the local debt markets.

Further geographic expansion saw Euroclear cooperate with the Ministry of Finance and Central Bank of the UAE to assist in the launch of domestic treasury bonds. By building this local currency bond market, Euroclear assists in boosting the local financial and banking sector, as well as providing safe investment alternatives for local and foreign investors.

Also in 2022, Euroclear signed a Memorandum of Understanding (MOU) with the Korean Securities Depository to make the South Korean capital markets more accessible to foreign investment.

The Asian-Pacific region is important for further Euroclear growth, as evidenced by its support of further international ETFs (iETFs) issuance in the region. Last year, Euroclear assisted in the first ever cross-listing of iEFTs in the region, allowing European issuers to expand their distribution networks.

Euroclear's global presence has been further expanded by its integration with MFEX. The entire group can now boast physical offices in 21 locations, in five continents, spanning North America to South-East Asia.

Supporting financial markets on the ESG journey

The ESG marketplace strategy builds on Euroclear's long-standing commitment to sustainability, which is rooted in the group's conviction that acting responsibly is in the best interest of the company and its stakeholders in the long-term.

Euroclear has long provided services to facilitate good governance and investor engagement. For example, by providing accurate and easy-to-understand information Euroclear helps investors make their role in corporate governance more efficient.

Euroclear also has a track-record of providing governance-related issuer services, which include, for example, those provided by Euroclear Sweden and Euroclear Finland which help facilitate corporate general meetings (AGMs). Following the pandemic, these services have been adapted to support issuers with hybrid physical and digital AGMs.

Today, over 2,000 issuer clients use Euroclear Sweden's issuer services and there are 125 companies choosing Euroclear Finland's general meeting services. In 2022, 91 of these issuer clients also used Euroclear Finland's advanced voting service. Such services provide a strong foundation on which to provide new data-enabled solutions for issuers as part of Euroclear's D2-FMI vision. These products, including InvestorInsight and Vantage by Euroclear, focus on shareholder identification service which supports issuers across the European Union in the context of the incoming Shareholder Rights Directive (SRDII).

Having identified their shareholder base, issuers can implement targeted investor relations activities, helping to anticipate investor actions or requirements at their general meetings. Additional service developments are underway to support further issuers in their investor engagement.

Euroclear is also taking actions to support the development of the sustainable finance marketplace. One area of focus is the access to reliable ESG data for both issuers and investors. The group has made two strategic investments in fintechs with ESG data capabilities, namely Greenomy and Impact Cubed.

Greenomy is a Belgium-based sustainable fintech that aims to support issuers and investors for compliance with increasing ESG taxonomy standards, especially in the European Union. The service supports issuers by simplifying complex reporting requirements and, over time, is expected to be used by investors to flag potential misalignment between sustainability reporting and the EU's taxonomy, which may help to identify potential risk of greenwashing.

Impact Cubed's digital solutions collate and create outcome-based impact data for listed companies globally – giving investors insight into their impact on the world around them. The data points can support investors by providing tangible visual representations of information reported by issuing companies and provides objective analysis versus ESG metrics, such as the UN Sustainable Development

Goals. The partnership will enable Euroclear to integrate, whenever it is possible and relevant, ESG data into Euroclear's existing range of products and services.

Following its 2021 joint study with PwC, Euroclear has begun to engage extensively with both financial market participants and related stakeholder groups to define the priorities for infrastructure developments to scale sustainable finance.

Further detail on ESG can be found in the Euroclear Sustainability Report**.**

Building a data-enabled services platform

At the core of its vision to build a D^2-FMI is Euroclear's ambition to provide a catalogue of data-enabled services available to all market players and complemented by third parties.

Several new data-enabled services have been developed, many of which are ESG-related. In recent years, issuers have increasingly sought to know and engage more closely with shareholders as part of their corporate governance practices. This trend has been further strengthened by new regulatory imperatives around Know Your Customer (KYC) and the SRD II.

New shareholder identification services have been developed for issuers in the context of the incoming Shareholder Rights Directive (SRDII). ESES launched its new data-enabled service called InvestorInsight in late 2021 for issuers across the European Union. InvestorInsight is rapidly gaining traction with over 300 issuers clients already signed-up to the service.

Another similar product, 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. A similar product offering is also under development for Euroclear Finland.

Furthermore, the strategic investments in Greenomy and Impact Cubed demonstrate how third-party capabilities can be integrated into the Euroclear platform.

Yet, the data opportunity goes far beyond the ESG marketplace. With almost €36 trillion of assets under custody, Euroclear manages huge quantities of financial transaction data. Euroclear has extended its role in bringing greater transparency and liquidity in global capital markets by harnessing more of this untapped data.

Launched in 2021, LiquidityDrive enables clients to access a unique dataset containing information on settled volumes and prices, liquidity scores, concentration and holding information, and transactional detail. In 2022, a range of enhancements were made to the service to improve the cleanliness of the output and maintain the service's relevance to the market, which included further excluding primary market activity, intra-entity trades and bi-lateral repo.

As well as the product enhancements, Euroclear saw renewed engagement across a range of sectors, including both buy- and sell-sides, as well as vendors. To further enhance LiquidityDrive's appeal and reduce entry barriers particularly for the buy-side, a new pricing policy was deployed meaning users only pay for what they consume. Moreover, partnerships are now in play with a number of external specialists to create a user-friendly GUI, complementing our full API service package.

Building on resilient technologies to embrace digital and innovation opportunities

Euroclear's foundations as a financial market infrastructure are its technology platforms and the operational resilience provided by its people and systems. Having invested consistently in technology capabilities and infrastructure platforms, Euroclear remains highly relevant, reliable, and scalable to meet growing market demand. In 2022, the group again met its systems uptime targets while supporting record volumes, with 304 million netted transactions processed.

However, operational incidents can and do happen. In the summer of 2022, Euroclear UK & International suffered a major system outage which impacted settlement activities and required the implementation of back-up procedures.

Euroclear UK & International is undertaking a multi-year transformation and resilience programme to incrementally modernise and replace the current CREST settlement system. This should further increase the operational resilience and accessibility of the platform, ensuring market stability.

Euroclear's technology investments remain focused on heightening resilience and cyber security capabilities, but also on modernising its platforms as part of building a D^2-FMI.

In 2022, Euroclear launched its Artificial Intelligence-enabled matching tool, EasyFocus, to help its global client base avoid settlement penalties under the CSDR regime. Last year, over 70 entities benefitted from being able to predict pending transactions that might fail and cause penalties, and ahead of time take corrective measures.

As part of Euroclear's innovation agenda, the group regularly identifies and partners with innovative fintech companies to access new technologies and business models.

As part of its M&A strategy, Euroclear previously acquired Taskize, which is an inter-company work routing and workflow platform for global financial operations professionals. The Taskize platform is designed to drive efficiency in manual interventions both within and between financial services firms, including in post-trade processing issue resolution. In 2022, Taskize launched a customised workflow for disputing penalties under CSDR as well as a new application programming interface (API) to further automate the resolution process and release even more capacity in operations.

Euroclear is also exploring opportunities to apply Distributed Ledger Technology (DLT), commonly known as blockchain, and digital currency settlement. In addition to its participation in multiple pilots on Central Bank Digital Currencies, including collaborations with the

Banque de France, the group has invested in Fnality. Fnality is an international consortium of global banks and financial market infrastructures, which is working to support the adoption of tokenised assets and marketplaces.

At Sibos 2022 in Amsterdam, the first physical gathering since the pandemic, Euroclear showcased its fintech partners and their services. In line with its purpose, Euroclear continues to explore future opportunities to innovate to bring safety, efficiency, and connections to financial markets for sustainable economic growth.

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 by Euroclear clients in the group's CSDs. The value of bonds is based on nominal value, whilst market value is taken into consideration for equities.
- 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 programs, 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 amortization, 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.

Operating highlights

The Euroclear group delivered robust business performance in 2022 driven by high market volatility and favourable interest environment despite higher regulatory, cyber security and climbing inflationary pressures.

The value of securities held for Euroclear clients at the end of 2022 reached €35.6 trillion, representing a 5.5% decrease compared to €37.6 trillion in 2021 as 2022 saw negative returns for both equity and fixed income valuations.

Settlement turnover, or the value of securities transactions settled, increased by 7.5% to €1.066 trillion in 2022. The number of netted transactions settled in the Euroclear group reached 304.0 million in 2022, a 3.1% increase compared to 295.0 million in 2021 mainly due to settlement volatility following the Russia-Ukraine war.

Euroclear's global Collateral Highway secured a yearly average of daily outstanding of €1.8 trillion at the end of 2022, a decrease of 7.5% compared to last year. The sustained volumes in Euroclear's global collateral management infrastructure reflect strong and continuous needs from market participants driven by regulatory requirements.

Financial performance highlights

Foreword

Russia's invasion of Ukraine resulted in market-wide application of international sanctions, with Euroclear playing a material role in implementation as a financial market infrastructure. A consequence of the sanctions is that assets owned by sanctioned parties are blocked in the respective financial market infrastructures, including Euroclear group. As the assets mature through their lifecycle, cashflows (e.g., coupons and redemptions) that are normally transferred to the underlying parties accumulate on the Company's balance sheet for as long as the sanctions remain in place. As per Euroclear's standard process, which is the same for any clients' long cash balances, the cash balances arising from the sanctions are invested to limit the credit risk generated by such balances which, depending on the prevailing interest rates, results in interest income.

With the growth of sanctioned liabilities and the increase of interest rates, the materiality of revenues on cash balances arising from sanctions on Russia on the group's financial results is unprecedented. The Board recognises that the unexpected profit should be managed prudently, in line with its corporate purpose and considering its responsibilities towards stakeholders and society, as well as a more uncertain risk environment. Euroclear has maintained regular dialogue with all concerned stakeholders, including regulators and external auditors, and will continue to act in a transparent manner with all authorities involved.

In line with the prudent management of the sanctions and their application, Russia sanction-related earnings are segregated from the underlying performance and are not distributed while uncertainties persist. For more information, please refer to the section *"Implications of Russian sanctions"* hereunder.

Highlights on consolidated results

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

Net fee and commission income, which includes liquidity line fees, amounted to €1,574.0 million in 2022, an increase of 8.1% compared to the previous year.

Net interest income reached €908.6 million compared to €62.9 million last year. The increase is mainly explained by interest rates hikes across currencies, and particularly in the USD, in response to inflationary pressures in 2022, as well as by the reinvestment of frozen sanctioned-party-owned assets.

Meanwhile, other income reached €286.8 million in 2022, an increase of 431.2% compared to 2021.

Operating income, composed of net fee and commission income, net interest income and other income, increased by 76.1% to reach €2,769.4 million in 2022.

Administrative expenses increased by 22.1% to €1,150.2 million in 2022. The increase in administrative expenses was driven by continued investments in the business to foster technology capabilities, product enhancements, regulatory-driven and cyber security initiatives, along with inflation impacts on the Company's people and infrastructure costs.

Operating profit before impairment and taxation reached €1,617.3 million in 2022, an increase of 156.5% compared to 2021.

Impairments were recorded in 2022 for €12.2 million, principally related to the write down of small historical group participations (€7.0 million) and intangible assets (€5.0 million).

Effective tax rate amounted to 25%, in line with 2021.

Net profit for the year ended 31 December 2022 reached €1,200.0 million, compared to a profit of €462.6 million for the year ended 31 December 2021. This corresponds to a year-on-year increase of 159.4%.

Balance sheet review

The balance sheet information below includes Russia sanction-related balances. For more information on the Russia sanction-related balances, segregated from the underlying balance sheet, please refer to the section *"Implications of Russian sanctions"* hereunder.

Total assets amounted to €127,639.0 million on 31 December 2022, up by €98,239.1 million compared to the previous year, corresponding to a year-on-year increase of 334.1%.

Loans and deposits at central banks totalled €107,377.9 million on 31 December 2022, compared to €17,700.1 million the year before.

Shareholders' equity totalled €5,397.5 million at year-end 2022, up €615.2 million or 12.9% compared to the prior-year figure.

Net asset value per share (total shareholder's equity divided by the year-end number of shares) amounted to €1,715 on 31 December 2022, compared to €1,519 in 2021.

Implications of Russian sanctions on Euroclear Holding SA/NV's financials

Consolidated profit and losses statement (P&L) and balance sheet (B/S)

Euroclear Holding SA/NV - Consolidated P&L (IFRS) (EUR Mln)	FY 2021	FY 2022	Russian sanctions impacts	FY 2022 Underlying	*Underlying vs. 2021*	
Operating income	1,615	2,769	814	1,955	340	*21%*
Business income	1,525	1,600	-7	1,607	*82*	*5%*
Interest, banking & other income	90	1,170	821	348	*259*	*289%*
Operating expenses	-988	-1,150	-20	-1,131	*-143*	*14%*
Share of result	0	-2	0	-2	*-2*	*n.a.*
Operating profit before impairment	627	1,617	795	823	*195*	*31%*
Impairment	-16	-12	-1	-12	*4*	*-25%*
Pre-tax profit	611	1,605	794	811	*199*	*33%*
Tax	-153	-405	-197	-208	*-55*	*36%*
Net profit	458	1,200	597	603	*144*	*31%*

Note 1: *2021 figures have been restated to include MFEX pro-forma in order to allow like-for-like comparison.*
Note 2: *The line Net Interest, banking & other income includes the cost related to liquidity lines. This cost is classified as fee expense (part of Net business income) in the financial statements.*

Euroclear Holding SA/NV - Consolidated B/S (IFRS) (End-of-year | EUR Mln)	2021	2022 Total	2022 Russia	2022 Underlying	*Underlying vs. 2021*	
Cash and balances with central banks	6,054	83,543	73,837	9,706	*3,652*	*60%*
Loans and advances	11,646	23,834	11,913	11,922	*275*	*2%*
Financial assets	9,279	17,105	7,630	9,475	*196*	*2%*
Goodwill and intangible assets	1,502	1,501	0	1,501	*-1*	*0%*
Other assets	918	1,655	0	1,655	*736*	*80%*
Total Assets	**29,400**	**127,639**	**93,380**	**34,259**	***4,859***	***17%***
Deposits from banks and customers	17,116	114,473	92,782	21,690	*4,575*	*27%*
Debt securities issued and funds borrowed	6,382	6,243	0	6,243	*-139*	*-2%*
Other Liabilities	1,120	1,526	0	1,526	*406*	*36%*
Shareholders' equity	4,782	5,397	597	4,800	*18*	*0%*
Total Liabilities and Shareholders' Equity	**29,400**	**127,639**	**93,380**	**34,259**	***4,859***	***17%***

Underlying business performance and impact from Russian sanctions

Excluding the impact of the Russian sanctions, Euroclear’s underlying business continues to perform strongly with net profit rising by 31.5% to €602.7 million.

Business income was up 5.3% to €1,606.7 million, reflecting continued growth of Euroclear’s business lines. On the other hand, the international sanctions, as well as Russian countermeasures, resulted in a reduction of Russia-related business income of around €7.0 million.

Interest, banking, and other income increased by 288.9% to €348.4 million on an underlying basis, benefitting from rising interest rates. As per Euroclear’s standard process, which is the same for any client’s long cash balances, the cash balances arising from the sanctions are invested to minimise credit risk. Over 2022, interest arising on cash balances from Russia-sanctioned assets was €821.5 million.

Like any underlying earnings there is a dependency on the prevailing interest rate environment. This is true also for earnings linked to the sanctions, as well as any developments to the sanctions themselves. The Board expects interest income to continue to grow as blocked payments and redemptions continue to accumulate, albeit at a slower pace during 2023.

Underlying operating expenses increased to €1,130.7 million, up 14.5% compared to the prior year, partly due to inflation on costs but also as Euroclear continued to invest in its technology and service offering as previously outlined. In addition, the group also incurred €19.5 million of costs related to the management, implementation and monitoring of the sanctions and counter sanctions in relation to the Russia-Ukraine crisis.

Euroclear continues to expect expenditure to remain above its 'through-the-cycle' target of 4-6% p.a. in 2023, due to accelerating investment in both its strategy and the resilience of the business, coupled with continued inflationary pressures on the cost base. However, profitability is expected to rise as inflation headwinds are more than offset by higher net interest income from subsequent rate increases.

On the balance sheet, the cash on the balance sheet has increased as blocked coupon payments and redemptions accumulate. Excluding Russian-sanction related balances, the group’s total assets summed up to €34,259.3 million at the end of the year, an increase of €4,859.4 million or 16.5% compared to last year.

Shareholders’ equity on an underlying basis totalled €4,800.2 million at year-end 2022, up €17.9 million compared to the prior-year figure.

As previously stated, in line with the prudent management of the sanctions and their application, Russia sanction-related earnings in 2022 (€597.3 million) are not distributed while uncertainties persist.

Key performance indicators

Business income margin (business income excluding administrative expenses compared to business income) decreased from 35% in 2021 to 28% in 2022 amidst an inflationary environment.

From 40% in 2021, operating margin (operating profit before impairment and taxation compared to operating income) increased to 58% (42% excluding results from reinvestment of frozen sanctioned-party-owned assets), mainly driven by subsequent interest rate hikes in 2022, especially in the USD.

Unit cost ratio (administrative expenses compared to the average value of securities held) decreases from 0.45 basis points (bps) in 2021 to 0.15 bps in 2022 as higher cost base were more than compensated by higher average value of securities held.

Return on equity (profit for the year compared to average shareholders’ equity) increased from 9.7% to 23.6% in 2022, or 12.6% when results from reinvestment of frozen sanctioned-party-owned assets are excluded.

In line with higher earnings, net earnings per share (profit for the year divided by the weighted average number of shares) increased to €381.3 in 2022, or €191.7 when results from reinvestment of frozen sanctioned-party-owned assets are excluded, compared to €147.0 in 2021.

Employee evolution

The average number of persons employed by the group during the year was 4,901 as compared to 4,281 in 2021. This 14% increase is in line with our continued investment in people as an enabler to achieving our business objectives.

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 2022.

Dividends

A dividend amounting to €278,550,475.5 (€88.5 per share) was paid under the form of an interim dividend in October 2022.

The Board envisages approving the payment of a dividend in the second half of 2023 under the form of an interim distribution, in accordance with the Belgian Companies Code and Euroclear Holding SA/NV's Articles of Association.

Post-balance sheet events

Euroclear continues to closely monitor the invasion of Ukraine by Russia, and to implement the various sanctions. 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. Future earnings linked to the sanctions will continue to depend on the prevailing interest rate environment and the evolution of the sanctions. The Board expects interest income to continue to grow materially as blocked payments and redemptions continue to accumulate in a rising interest rate environment, albeit at a slower pace in 2023.

In order to contain risks for its participants, Euroclear Bank informed them early February 2023 of the closure of its cash correspondent account in Russia and the withdrawal of rouble as a settlement currency. This means that money transfer instructions in rouble or any incoming rouble payments, including income and redemption events, are consequently no longer processed through the account.

Information on circumstances that might materially influence the development of the Company or its subsidiaries

Other than set out in the section above, 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 'Strategy & business review' section of this report. Euroclear also continued investing in market research in line with its mission to provide increasingly commoditized market infrastructure services.

Risk management at Euroclear

Enterprise Risk management framework and governance

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 for the three lines model. The first line is the risk owner and the primary source of (non-independent) assurance on the adequacy and effectiveness of the control environment. The second line comprises Risk Management and Compliance and Ethics (C&E), who provide independent oversight of risk-taking activities and compliance with applicable regulation respectively. Internal Audit sits in the third line, providing independent reasonable assurance and insight 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.

Main risks affecting the group

The Euroclear group has a comprehensive Risk Library, which includes all sources of risk that the group is exposed to. CSDs of the group are designated as critical national infrastructure in seven countries.

2022 has been a year of great change and uncertainty with following key external drivers:

- **Covid** became endemic and lockdowns gave way to new ways of working, particularly hybrid working between home and office;
- **Russia** invaded Ukraine disrupting the stable world order that has persisted since the 2nd world war triggering secondary effects;
- **Energy crisis** as Russia weaponised its supply in response to international financial sanctions**;**
- **Supply chain constraints** persist driven by slower response to demand post Covid and as a result of the war in Ukraine and energy constraints;
- **Inflation** re-emerges as a result of supply chain constraints and the energy crisis, to which central bank respond by aggressively increasing interest rates to stop inflation expectations becoming embedded.

Whilst these drivers have had significant impacts on the environment in which the group operates in, overall, the group's risk profile remained relatively stable, supported by a robust control environment and the dedication and expertise of its staff.

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 number of incidents and operational errors demonstrate the robustness of the control environment, with continued CSDR license.

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. The Business Resilience division supports the entities in strengthening their resilience and readiness for crisis management activities. The group continues investing in its business resilience capabilities for the next years to come.

The group continues to monitor and react appropriately with a view of safeguarding employees, clients (and their assets) and maintaining service levels.

Euroclear has continued to invest significantly in its cyber and information security capabilities including delivery of the most critical aspects of the Information Security Control Framework, Data Protection reinforcement, Security Monitoring and Platform and Network Security, Cyber Defence Centre and Identity and Access Management improvements. Further investment will continue in 2023 and beyond to further reduce the residual risks and ensure sustainability.

- *Financial risks (credit, market, and liquidity)*

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. The Financial Risks have increased in 2022 as a result of the significantly increased balance sheet as Euroclear Bank has implemented the international sanctions against Russia by blocking incoming cash proceeds as per sanctions legislations and reinvesting this cash safely to protect the Company and the clients, in line with CSD Regulation. More specifically, the only material market risk experienced linked to Russian exposures was due to Euroclear Bank's decision to convert its rouble balances into euros in anticipation of the withdrawal of rouble as a settlement currency. This created a short-term and limited foreign exchange (FX) risk given the currency mismatch between rouble liabilities towards its clients and euro assets from reinvestment. This FX risk was initially hedged via the use of non-deliverable forwards, and subsequently in early 2023 structurally mitigated by the conversion of these liabilities into euros, in accordance with the Terms and Conditions governing the use of Euroclear.

Financial Risks have been managed but not eliminated and the capital impacts contained. Euroclear Bank's financial soundness remains strong. Euroclear Bank continues to operate a strong credit, liquidity and market 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.

- *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. Legal and compliance challenges arise from the scale and complexity of new sanctions and the high volume and variety of new regulations. These risks continue to be monitored and managed through the robust application of Euroclear's legal and compliance risk management framework, including the Code of Ethics and Business Conduct. In 2022, legal and compliance challenges arose from the scale and complexity of international sanctions and Russian countersanctions. Euroclear has implemented all relevant international sanctions and ensures its continued compliance with relevant legislations. Uncertainties remain with regards to the Russian countermeasures taken against the international financial community, which will continue to pose risks to the investors, including increased risk of confiscation by Russia of assets blocked by the Russian CSD.

- *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. Early in 2022 Euroclear had defined a strategic direction to make sure that its service offering remains viable longer term. Since then, Euroclear has taken initial steps towards the strategy execution. Managing effectively change and project risks by reliance on project and programme management capabilities at corporate level, will be crucial for the successful execution of the strategy in the coming years.

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 defense 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 regulatory rules and guidance, a Recovery, Restructuring and Wind-down (RRW) plan is in place for Euroclear Bank as part of its overall approach to a recovery, restructuring or orderly wind-down situation. As a minimum, this plan is reviewed and approved by the Board of Directors, upon recommendation of the Risk Committee, on an annual basis. The aim of the RRW plan is to demonstrate Euroclear Bank's ability to recover from a series of extreme but plausible stresses that could threaten its financial viability, such that Euroclear Bank can, to the extent possible, ensure the continuous provision of critical (economic) functions. To this end, the RRW plan identifies and analyses a number of recovery and restructuring options that could be used in order to restore Euroclear Bank's capital base, liquidity position or profitability, over a short-to-medium timeframe. Finally, should these recovery and restructuring options prove insufficient to negate the stress, and thus could not recover Euroclear Bank, then the RRW plan also contains a series of wind-down actions that could be taken to ensure, to the extent possible, the orderly wind-down of the Euroclear Bank's critical (economic) functions such that it does not exacerbate or create a stress on the market.

Euroclear SA/NV and Euroclear Bank are also subject to resolution requirements. To this end, Euroclear is implementing a multi-year resolution programme to ensure it can be deemed resolvable as it delivers the various resolution requirements. This will allow the resolution authority to resolve Euroclear in an effective way, should a very unlikely extreme event occur, where Euroclear is unable to recover.

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 of Euroclear Holding SA/NV.

Non-financial information

Euroclear responsibility

Euroclear takes its responsibility for helping to create a more just and equitable world seriously. In 2022, Euroclear firmly embedded ESG into its new corporate purpose and strategy. After the appointment of a Chief Sustainability Officer in 2021 and the establishment of a Central Sustainability Office in 2022, the group made progress against each of its ESG ambitions: in its marketplace, for the environment, in the workplace, in its communities, and through robust and transparent governance practices.

- *Marketplace: facilitating and accelerating a sustainable financial system*

Please refer to the Euroclear Sustainability Report for details on the progress in this area.

- *Building a climate resilient business and support climate resilient financial markets through the management of climate risk*

Euroclear continuously strives to reduce its impact on the planet, aiming for the lowest possible carbon level. Since 2012, Euroclear has been carbon neutral to PAS 2060 standards. In April 2022, Euroclear made a commitment to reach net zero by 2050 at the latest and its new carbon reduction targets were submitted to the Science-based Targets Initiative for accreditation, re-baselining against 2019. A pathway for achieving that goal is being set out and the group's intermediate targets and action plans will be published in the 2022 Sustainability Report.

In the meantime, Euroclear continues to monitor its carbon emissions compared to a 2014 baseline. The final reduction for 2022 will be published in the 2022 Sustainability Report. As Euroclear has implemented a hybrid working model, this figure also considers homeworking emissions.

In 2022, Euroclear contracted with a third party to carry out the ESG assessment of its critical and high spend suppliers, including an assessment of their carbon emissions. In Belgium, Euroclear continues to reduce the carbon emissions in its car fleet. Euroclear also offers a comprehensive mobility programme which encourages employees to use public transport and greener transport options. In 2022, 35% of Euroclear's total fleet was either electric or hybrid and 70% of orders for 2023 are either electric or hybrid vehicles.

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

In the course of 2022, the group has worked to update its people strategy with a specific focus on corporate culture as well as skills and capabilities at all levels of the company. Recognising the importance of People as an enabler to realise the business strategy and its purpose, the group undertook a detailed study of the culture which involved the entire organisation as well as extensive reviews of the company's talent. The outcomes of the studies were encouraging and showed that Euroclear has a strong corporate culture when compared to relevant benchmarks. Further work is underway to build on these studies as part of the company's multiyear transformation and ensure the culture is aligned to the company purpose.

The year 2022 continued to be a challenging year, with Covid-19 restrictions still in place early in the year, the outbreak of war in Ukraine and rising inflation. Euroclear puts its people at the centre of everything it does, and the result of the employee engagement survey shows that staff remain engaged and motivated, with the employee engagement score reaching 7.7 out of 10. This represents an increase of 0.3 compared to 2021. Compared to the November 2019 baseline, employee engagement has risen by 1.1 points.

Last year saw the introduction of a new, flexible way of working. As Covid-19 restrictions were finally lifted coupled with successful remote working, Euroclear took advantage of the opportunities for embedding a new approach to working. The group's hybrid model is activity-based, offering staff the flexibility to work both from home and in the office, depending on clients', teams', and individual needs. Euroclear has invested in technology and training to enable a successful hybrid working model and provided home office equipment to make homeworking as effective as possible. Not only does this provide flexibility for Euroclear's staff, but it also contributes to its environmental objectives.

Euroclear further increased its focus on ensuring that the group has the right skills in place to meet future business demands and deliver on its new strategy. Key skills were identified, and the group hired over 900 new employees in 2022, while 636 employees have changed jobs internally. In 2022 the group launched its new Euroclear campus network, partnering with 40 different University campuses worldwide to support its global recruitment efforts in hiring a diverse future workforce.

In the coming years, targeted group-wide upskilling programmes will be set up to re-enforce the group's business strategy, in addition to existing training, development and coaching support for all employees. The group's People strategy also places a focus on ensuring its culture evolves in support of its purpose and business strategy.

Continuous development is a key element of Euroclear's People strategy, offering a wide range of training opportunities and specialised mentoring and coaching to all staff.

Euroclear is proud of its diverse workforce, with over 80 nationalities across the group and a 50/50 split between men and women. The group continues to strengthen its Diversity & Inclusion (D&I) programme; in 2022 Euroclear re-enforced its D&I governance model and is in the process of agreeing a series of new KPIs against which progress can be measured. This year the employee community groups were re-enforced with a focus on different aspects of diversity. There are five community groups, focussing on Gender Diversity and Inclusion; Ethnic & Cultural Diversity and Inclusion; Disability Inclusion; LGBTQ+ Network Community and Age Inclusion. Through these groups, staff are actively involved in promoting equality and raising awareness among their colleagues and management. This resulted in excellent D&I scores in the staff engagement survey:

- Non-discrimination at 8.5/10, an increase of +0.4% from 2021;
- Inclusiveness scored 8.1/10, an 0.8% increase; and
- Diversity at 8.5/10, an 0.3% increase.

- *Demonstrating the impact of Euroclear's support in local communities*

The Community stream focuses on four main pillars: alleviation of poverty; coaching and education, social and financial inclusion, and the environment. All employees can volunteer a minimum of 8 hours a year for corporate projects.

Euroclear continues to support many local projects as well as our corporate partners Street Child, Junior Achievement, and the Pan-Asia Women's Association (PAWA), giving special focus to financial inclusion. Last year, with the on-going Russian war in Ukraine, the group worked with its Polish employees and organisations to support those impacted by the war and help colleagues and their families wherever possible, including psychological expertise.

Participation in Euroclear's "My Volunteering" programme rose from 500 in 2020 to over 1,000 in 2022. Euroclear offers many volunteering opportunities across the group's locations and there is keen take up from both staff members and senior colleagues. Junior Achievement is one of Euroclear's flagship volunteering partnerships, with Euroclear volunteers providing master classes on entrepreneurial topics. Volunteers also coach the Start Up Programme, where students create and manage their own small-scale businesses under the guidance of advisers and volunteers from the business community. In 2022, we also sponsored the annual Junior Achievement Event in Belgium.

Euroclear sponsors the “International Social Entrepreneurship Challenge - Uniting for sustainable change” together with the Belgian University, Vrije Universiteit Brussel (VUB), which allows Euroclear’s people to use their skills to find sustainable solutions to some of the most challenging problems in the world and help achieve the UN SDGs. Euroclear volunteers act as coaches for social entrepreneurs to help strengthen their projects and develop their business models.

This year, Euroclear signed a contract with Close the Gap, a social enterprise which repurposes companies’ old IT assets and redeploys them where they are most needed, thereby addressing the challenge of tackling e-waste, while also making a positive social impact.

- *Ensuring robust and transparent governance across the organisation and encourage good governance through the group’s value chain*

Euroclear SA/NV and its major subsidiaries are all subject to a variety of financial services regulations, most notable the CSDR Regulation and Banking Regulations which detail very specific governance requirements. The group publishes detailed governance charters which outline the main aspects of the Corporate Governance framework of the major entity in the group. The group is also subject to new climate and ESG regulations and standards coming from the ECB, European Commission (CRR-3/CRD-6) and related EBA Guidelines. Euroclear is actively monitoring these regulatory developments to determine their impact. For those regulations and standards which have already taken effect, resources have been mobilized across the organisation to address and close gaps and meet supervisory expectations.

In 2023, in addition to reporting according to the Global Reporting Initiative (GRI) standards, Euroclear is also following the UN Global Compact framework and the Task Force on Climate-related Financial requirements (TCFD). Euroclear reports on the EU Taxonomy regulation in its annual sustainability report.

Following the launch of the *“Code of Ethics & Business Conduct: We live our values together”* in December 2021, Euroclear organised several communication campaigns focussing on the ethical principles of the code. In this way, Euroclear aims to put ethics at the heart of Euroclear employees’ decision-making processes.

In 2022, Euroclear further improved the whistleblowing and anti-retaliation frameworks. This included awareness campaigns on the topic, encouraging colleagues to use its speak up grievance mechanisms which led to a significant increase in the use of the whistleblowing hotline. All reports are closely followed up on and action taken when necessary.

Last year, Euroclear has been working with an external party to significantly update its ESG Policy, which we plan to make public in the second quarter of 2023.

ESG in Euroclear supply chain

Euroclear manages the supply chain risks of its suppliers 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, the group partnered with EcoVadis, a leading sustainability rating provider, to increase the robustness of its Euroclear’s ESG supply chain assessment and will further build on this in 2023.

For more details on all these topics, please refer to the group’s 2022 Sustainability Report *“Our Responsibility”*, set out in accordance with the Global Reporting Initiative Standards, which will be published in April 2023.

ESG risks

For an overview of the group’s approach to ESG risks, 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 which owns, directly or indirectly, the entire issued ordinary share capital of the group companies. Euroclear Holding SA/NV is a financial holding company under the Belgian Banking Act.

Euroclear SA/NV is the Belgian parent company of the central securities depositories of the Euroclear group, and of the other operational subsidiaries of the 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 SA, which itself is wholly owned by Euroclear Holding SA/NV through Euroclear AG.

Euroclear SA/NV, as the approved and designated Financial Holding Company of the group, has the responsibility to ensure compliance with the requirements relating to the consolidated supervision for the Euroclear group.

Insofar as the governance structure is concerned, Euroclear Holding SA/NV and Euroclear Investments SA are managed by a Board of Directors, and Euroclear SA/NV is managed by a Board of Directors and a Management Committee, in accordance with the applicable legislation and regulatory requirements.

Composition and activities of the Board and Board Committees of Euroclear Holding SA/NV in 2022

- *The Board of Euroclear Holding SA/NV*

Since July 2021, to improve effective decision making and strategy implementation, the Boards of these two companies - Euroclear Holding SA/NV and Euroclear SA/NV - have been 'mirrored', and since 1 January 2023 when Euroclear Investments SA has been domiciliated in Belgium, the Board of Euroclear Investments SA has also been 'mirrored' with the two other Boards. Therefore, the composition of the three Boards is the same.

At the end of 2022, the Euroclear Holding SA/NV Board was composed of 17 directors, seven of whom were senior executives proposed by firms that are shareholders. This Board composition is the result of the resignation of Mrs. Javary, Mr. Swann and Mr. La Salla during 2022, and the appointment of Mr. Eric Lombard, proposed by CDC, and appointed as non-executive director by the Euroclear Holding SA/NV Board. Mr. Lombard became a non-executive director on 29 November 2022.

Mr. Francesco Vanni d'Archirafi is the Chairman of the Board, and Mr. Harold Finders and Mr. Franco Passacantando are both Deputy Chairmen. Both Mr. Finders and Mr. Passacantando are independent directors, as defined by Article 3, 83°, of the Belgian Banking Law.

Further to the BNP Paribas SA transaction to SFPI and the ICE transaction to SFPI and CDC, Mrs. Javary and Mr. Swann resigned from the Euroclear Holding SA/NV Board with effect on 20 May 2022. Mr. La Salla's was appointed as President and CEO of DTCC and therefore resigned as Director from Euroclear Holding SA/NV Board as of 10 June 2022. CDC has appointed Mr. Lombard, who was confirmed suitable by the NBB on 29 November 2022, and SFPI has appointed Mr. Feys, whose nomination is pending NBB decision.

- *Board advisory committees of Euroclear Holding SA/NV*

Audit & Compliance Committee (ACC)

The ACC is an advisory committee of the Board composed of five non-executive directors of the Company and established to assist the Board in fulfilling its financial reporting, audit, risk, and compliance and ethics oversight responsibilities.

In 2022, 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 like the revised Group Speak Up Policy in alignment with the new EU Whistleblowing Directive, Conflict-of-Interest Group Policy and Anti-Money Laundering and Market Abuse policies, among others. The ACC also advised the Board on the internal audit plan and the compliance and ethics plan.

Nominations and Governance Committee (NGC)

The NGC is composed of 5 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 2022, 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 on the appointment of new non-executive directors after the resignations of Mrs. Javary, Mr. Swann and Mr. La Salla during 2022.

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 2022, 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. Necessary changes were made in order to prepare the appointment of Mr. Kristof Macours as General Manager of Euroclear Holding 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.

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- *The Board's activities*

During 2022, Euroclear SA/NV Board re-defined its corporate purpose as: "*We innovate to bring safety, efficiency, and connections to financial markets for sustainable economic growth*." To pursue this goal, Euroclear SA/NV launched a new strategy with a long-term vision to enhance its openness and services across market players, while further developing ESG, data and digital capabilities and generating value for clients, employees, and shareholders.

It closely followed the evolution of the Russia-Ukraine war and the implications of the market-wide application of international sanctions related to Russia, maintaining standard procedures to navigate uncertainty while complying with those sanctions as a financial market infrastructure.

In 2022, a total of forty Committee Meetings and thirty Board Meetings took place. Separate induction and Board trainings were organised as well.

- *Board advisory committees of Euroclear SA/NV*

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 members of each Committee are independent directors. 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 composed of five 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.

With the Russia-Ukraine war unfolding, the ACC, together with 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 in order to comply with the international sanctions imposed, maintaining standard procedures to navigate uncertainty while complying with those sanctions as a financial market infrastructure.

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 policies and the 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 is composed by five non-executive directors of Euroclear SA/NV, 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.

With the Russia-Ukraine war unfolding, the RC, together with the ACC, 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 in order to comply with the international sanctions imposed, maintaining standard procedures to navigate uncertainty while complying with those sanctions as a financial market infrastructure.

The ACC and the RC continued joint work on supervising the strengthening of both Euroclear SA/NV 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 five non-executive directors of Euroclear SA/NV and it 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 2022, the NGC led the Board's continued work on the governance reform process, including the relationship with Euroclear Holding SA/NV and the composition of the Board, Euroclear Investments SA, and the tri-mirrored Board composition.

The NGC also managed a Board Effectiveness Review, with the assistance of external experts, which led to a number of recommendations and actions.

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.

Remuneration Committee (RemCo)

The RemCo comprises five non-executive directors of Euroclear SA/NV, which 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.

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.

Further information on the Euroclear governance bodies can be found on the website 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).

Non-audit services

The amount of fees charged to Euroclear Holding SA/NV and its subsidiaries for non-statutory audit services amounted to €940,000, with the largest part 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
30 March 2023

Board and Committees - composition

as at 31 December 2022

NAME	Board	Audit Committee	Nominations & Governance Committee	Remuneration Committee
Francesco Vanni d'Archirafi (Chairman) Independent	•			
Harold Finders (Deputy Chairman) Independent	•		•	•
Franco Passacantando (Deputy Chairman) 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 of Belgian shareholders	•		•	
Yuxin Du Non-Executive Director Kuri Atyak Investment Ltd.	•			•
Christophe Hémon Non-Executive Director London Stock Exchange (C) Ltd.	•	•		
Eric Lombard Non-Executive Director Caisse de Dépôts et Consignations	•		•	
François Marion Non-Executive Director Sicovam Holding s.a.	•	•		
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 2022

(€'000)	Notes	2022	2021
Interest income	VI	1,126,171	165,157
Interest expense	VI	(217,546)	(102,248)
Net interest income		**908,625**	**62,909**
Fee and commission income	VII	2,165,397	1,942,103
Fee and commission expense	VII	(591,361)	(486,485)
Net fee and commission income		**1,574,036**	**1,455,618**
Net interest and fee income		**2,482,661**	**1,518,527**
Dividend income		7,948	9,141
Net gains/(losses) on financial assets measured at amortised cost		(58)	34
Net gains/(losses) on non-trading financial assets mandatorily at FVPL		(918)	536
Net gains/(losses) on financial assets and liabilities held for trading	VIII	275,228	30,354
Net gains/(losses) on foreign exchange		(2,915)	6,439
Other operating income		7,491	7,476
Operating income		**2,769,437**	**1,572,507**
Administrative expenses	IX	(1,150,187)	(941,872)
Share of the profit/(loss) of investments accounted for using equity method	I	(1,905)	-
Operating profit/(loss) before impairment and taxation		**1,617,345**	**630,635**
Impairment	X	(12,173)	(15,908)
Operating profit/(loss) before taxation		**1,605,172**	**614,727**
Taxation	XI, XII	(405,171)	(152,177)
Profit/(loss) for the year		**1,200,001**	**462,550**

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 2022

(€'000)	Notes	2022 Gross	2022 Tax	2022 Net	2021 Gross	2021 Tax	2021 Net
Changes in other comprehensive income							
Debt instruments measured at FVOCI	XIII, XXVI	(240,904)	59,731	(181,173)	(51,998)	12,916	(39,082)
Cash flow hedges	XV, XXVI	(64,851)	16,213	(48,638)	(14,358)	3,589	(10,769)
Foreign currency translation reserve	XXVI	(29,858)	-	(29,858)	7,392	-	7,392
Recyclable subsequently to profit/(loss)		(335,613)	75,944	(259,669)	(58,964)	16,505	(42,459)
Equity instruments designated at FVOCI	XIII, XXVI	(94,680)	3,774	(90,906)	(159,223)	1,440	(157,783)
Defined benefit plans	XXII	78,518	(19,322)	59,196	49,728	(12,177)	37,551
Not recyclable subsequently to profit/(loss)		(16,162)	(15,548)	(31,710)	(109,495)	(10,737)	(120,232)
Derecognised equity instruments designated at FVOCI		(2,979)	-	(2,979)	213,449	-	213,449
Other comprehensive income for the year		**(354,754)**	**60,396**	**(294,358)**	**44,990**	**5,768**	**50,758**
Profit/(loss) for the year		**1,605,172**	**(405,171)**	**1,200,001**	**614,727**	**(152,177)**	**462,550**
Total comprehensive income for the year		**1,250,418**	**(344,775)**	**905,643**	**659,717**	**(146,409)**	**513,308**

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

Consolidated statement of changes in equity

For the year ended 31 December 2022

(€'000)	Notes	Called up share capital	Share premium account	Treasury shares	Other reserves	Retained earnings	Total equity
At 1 January 2022		**3,147**	**943,441**	**-**	**359,233**	**3,476,478**	**4,782,299**
Profit for the year		-	-	-	-	1,200,001	1,200,001
Other comprehensive income							
- Debt instruments measured at FVOCI	XXVI	-	-	-	(181,173)	-	(181,173)
- Equity instruments designated at FVOCI	XXVI	-	-	-	(90,906)	(2,979)	(93,885)
- Cash flow hedges	XV, XXVI	-	-	-	(48,638)	-	(48,638)
- Foreign currency translation reserve	XXVI	-	-	-	(29,858)	-	(29,858)
- Defined benefit plans	XXII	-	-	-	-	59,196	59,196
Total Other Comprehensive Income		**-**	**-**	**-**	**(350,575)**	**56,217**	**(294,358)**
Total Comprehensive Income		**-**	**-**	**-**	**(350,575)**	**1,256,218**	**905,643**
Movements in treasury shares	XXV	-	-	(12,267)	-	-	(12,267)
Transfer to legal reserve	XXVI	-	-	-	7,669	(7,669)	-
Dividends paid	XXVII	-	-	-	-	(278,183)	(278,183)
At 31 December 2022		**3,147**	**943,441**	**(12,267)**	**16,327**	**4,446,844**	**5,397,492**

		Called up share capital	Share premium account	Treasury shares	Other reserves	Retained earnings	Total equity
At 1 January 2021		**3,147**	**943,441**	**-**	**559,417**	**3,281,688**	**4,787,693**
Profit for the year		-	-	-	-	462,550	462,550
Other comprehensive income							
- Debt instruments measured at FVOCI	XXVI	-	-	-	(39,082)	-	(39,082)
- Equity instruments designated at FVOCI	XXVI	-	-	-	(157,783)	213,449	55,666
- Cash flow hedges	XV, XXVI	-	-	-	(10,769)	-	(10,769)
- Foreign currency translation reserve	XXVI	-	-	-	7,392	-	7,392
- Capital reimbursment		-	-	-	-	37,551	37,551
Total Other Comprehensive Income		**-**	**-**	**-**	**(200,242)**	**251,000**	**50,758**
Total Comprehensive Income		**-**	**-**	**-**	**(200,242)**	**713,551**	**513,308**
Transfer to legal reserve	XXVI	-	-	-	58	(58)	-
Dividends paid	XXVII	-	-	-	-	(518,702)	(518,702)
At 31 December 2021		**3,147**	**943,441**	**-**	**359,233**	**3,476,478**	**4,782,299**

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

Consolidated statement of financial position

As at 31 December 2022

(€'000)	Notes	2022	2021
Assets			
Cash and balances with central banks	IV	83,543,419	6,053,927
Loans and advances at amortised cost	IV	23,834,459	11,646,221
Financial assets at FVOCI	XIII	17,104,911	9,279,304
Non-trading financial assets mandatorily at FVPL		33,301	19,558
Financial assets held for trading	XIV	61,088	19,879
Derivatives used for hedging	XV	46,243	6,383
Current income tax assets	XI	27,123	10,849
Deferred income tax assets	XII	178,372	109,326
Other assets	XVI	873,828	345,825
Pre-payments and accrued income		240,994	226,613
Pension asset	XXII	6,207	617
Property, plant and equipment	XVII	163,896	165,773
Goodwill and intangible assets	XVIII	1,501,351	1,502,004
Investments in subsidiaries and joint ventures	I	18,781	6,975
Non-current assets and assets of disposal groups classified as held for sale	XXXII	5,012	6,652
Total assets		**127,638,985**	**29,399,906**
Liabilities			
Deposits from central banks	IV	82,121,932	440,972
Deposits from banks and customers	IV	32,350,931	16,674,645
Debt securities issued and funds borrowed	XX	6,242,965	6,381,911
Financial liabilities held for trading	XIV	316,708	13,850
Derivatives used for hedging	XV	112,615	13,440
Lease liabilities		129,564	134,532
Other liabilities	XIX	574,367	494,217
Accruals and deferred income		286,722	251,667
Current income tax liabilities		11,445	23,968
Deferred income tax liabilities	XII	6,784	3,136
Provisions for liabilities and charges	XXI	22,724	12,224
Pension deficit	XXII	61,570	169,116
Non-current liabilities and liabilities of disposal groups classified as held for sale	XXXII	3,166	3,929
Total liabilities		**122,241,493**	**24,617,607**
Shareholders' equity			
Called up share capital	XXIV	3,147	3,147
Share premium account	XXIV	943,441	943,441
Treasury shares	XXV	(12,267)	-
Other reserves	XXVI	16,327	359,233
Retained earnings		4,446,844	3,476,478
Total shareholders' equity		**5,397,492**	**4,782,299**
Total liabilities and shareholders' equity		**127,638,985**	**29,399,906**

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

These financial statements were authorised for issue by the Board of Directors on 30 March 2023 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 2022

(€'000)	Notes	2022	2021
Profit/(loss) before taxation		**1,605,172**	**614,727**
Adjustments for:			
- Depreciation and amortisation	XVII, XVIII	80,872	75,467
- Impairment	X	12,173	15,908
- Provisions for liabilities and charges	XXI	8,679	1,066
- Dividends received		(7,948)	(9,141)
- (Gains)/losses on disposal of property, plant and equipment		(2,035)	(11)
- Share of the (profit)/loss of investments accounted for using equity method	I	1,905	-
- Interest on financing activities	VI	75,724	41,885
- Interest on leases	XXIX	356	463
Other non-cash movements		357,381	69,395
of which effect of exchange rate changes		362,451	24,828
Cash flows from operating profit/loss before changes in operating assets/liabilities		**2,132,279**	**809,759**
Net increase/(decrease) in deposits and short term funds borrowed		96,772,420	1,347,446
Net (increase)/decrease in loans and advances (including central banks)	IV	(3,410,880)	(152,687)
Net (increase)/decrease in other assets		(534,721)	(69,047)
Net increase/(decrease) in other liabilities		78,617	98,787
Net cash inflow/(outflow) from operating activities		**95,037,715**	**2,034,258**
Tax paid		(430,096)	(137,918)
Net cash from operating activities		**94,607,619**	**1,896,340**
Cash flows from investing activities			
Investments in subsidiaries and joint ventures	I	(20,686)	(4,696)
Acquisition of new subsidiaries	XXXI	-	(395,398)
Purchase of financial instruments at FVOCI	XIII	(26,848,910)	(13,974,262)
Redemption and disposals of financial instruments at FVOCI	XIII	18,704,646	14,592,468
Purchase of property, plant and equipment	XVII	(18,994)	(23,399)
Purchase of intangible assets	XVIII	(60,509)	(49,751)
Sale of property, plant and equipment		2,033	11
Dividends received		7,948	9,141
Loans/(reimbursement of loans)	XXX	(16,532)	(2,115)
Net cash from/(used in) investing activities		**(8,251,004)**	**151,999**
Cash flows from financing activities			
Reimbursment of financing activities	XX	(12,278,281)	(5,591,038)
Proceeds from financing activities	XX	12,169,565	6,088,916
Interest paid on financing activities		(43,266)	(29,868)
Movements in shares acquired for share-based payments		(12,267)	-
Equity dividends paid	XXVII	(278,183)	(518,702)
Payment of lease liabilities		(23,441)	(11,988)
Net cash from/(used in) financing activities		**(465,873)**	**(62,680)**
Net increase/(decrease) in cash and cash equivalents		**85,890,742**	**1,985,659**
Cash and cash equivalents at beginning of year		16,224,860	13,531,432
Effects of exchange rate changes on cash and cash equivalents		334,065	707,769
Cash and cash equivalents at end of year		**102,449,667**	**16,224,860**
Cash and balances with central banks	IV	83,543,419	6,053,927
Loans and advances	IV	23,834,459	11,646,221
Excluding loans and advances with intitial maturity above three months		(4,928,211)	(1,475,288)
Cash and cash equivalents at end of year		**102,449,667**	**16,224,860**

Reconciliation of liabilities arising from financing activities

(€'000)	Notes	2021	Cash flows	Non-cash changes	2022
Long term senior debts		**1,653,492**	(26,563)	28,059	**1,654,988**
Medium term notes		**2,443,264**	(19,044)	34,313	**2,458,533**
Certificates of deposits		**2,061,451**	(106,375)	23,079	**1,978,155**
Total debt securities issued and funds borrowed	XX	**6,158,207**	**(151,982)**	**85,451**	**6,091,676**
Lease liabilities		**134,532**	(23,441)	18,473	**129,564**
Total liabilities arising from financing activities		**6,292,739**	**(175,423)**	**103,924**	**6,221,240**

(€'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**

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 2022, 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] (Held for sale)	Sweden	Fund trading and distribution services	100%
Global Fund Watch GFW AB[1]	Sweden	Fund trading and distribution services	100%
Greenomy SRL[1]	Belgium	Sustainability reporting services	55%
MFEX France[1]	France	Fund trading and distribution services	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	Holding company and Fund trading and distribution service	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%
STAK Euroclear[1]	Belgium	Foundation	100%
Taskize Limited[1]	United Kingdom	Proprietary services	100%
Number of wholly owned subsidiaries			25
Number of non-wholly owned subsidiary			1
Total subsidiaries			26

[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)

In January 2022, Euroclear SA/NV has acquired a 55% shareholding in Greenomy SRL for a total value of €20,686,000. The company is a provider in sustainability reporting software-as-a-service, helping companies in measuring and improving their sustainability scoring according to the various standards and taxonomies. This new shareholding provides Euroclear with an opportunity to develop its ESG-related offering and to further expand its services to the issuer community. The company is consolidated using the equity method.

A Belgian private foundation (STAK Euroclear) has been incorporated in June 2022 for the purpose of certifying shares. Under the certification agreement, Euroclear SA/NV transfers Euroclear Holding SA/NV shares to STAK Euroclear in return for certificates distributed as share-based payments.

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 (see note XXXI).

Euroclear SA/NV owns 71% of Quantessence Limited (€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, less impairment, in the statement of financial position. The aggregate amount of Quantessence capital and reserves was GBP -2,913,000 as at the end of 2022 (2021: GBP 339,000), made of capital and share premium of GBP 6,193,000 (2021: GBP 6,193,000) and accumulated losses of GBP 9,106,000 (2021: GBP 5,854,000). Quantessence Limited is not 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. The value of the participation has been fully impaired in 2022 and an additional provision of €2,430,000 has been recorded, allowing to recognise the losses accumulated so far (see note XXI).

Taskize Limited is consolidated since July 2021, when the remaining minority interests were acquired. The losses accumulated by the entity over the prior years and first 6 months of 2021 (€13,746,000), have been recognised one off in the profit and loss account in 2021 (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 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 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 2022

The following standard and amendments to standards 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)
- Amendments to IAS 1 Presentation of Financial Statements and IFRS Practice Statement 2: Disclosure of Accounting policies (issued on 12 February 2021)
- Amendments to IAS 8 Accounting policies, Changes in Accounting Estimates and Errors: Definition of Accounting Estimates (issued on 12 February 2021)
- Amendments to IAS 12 Income Taxes: Deferred Tax related to Assets and Liabilities arising from a Single Transaction (issued on 7 May 2021)

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.

As a consequence of the international financial sanctions imposed on Russia, various Russian countermeasures were issued, introducing special procedures regarding the repayment of debt by the Russian state and Russian debtors to non-Russian creditors. In application of these measures, National Settlement Depository (NSD), the Russian CSD, opened new types of restricted accounts (C- and I-accounts) in the name of Euroclear Bank where all amounts received from Russian issuers are blocked. For the clients of Euroclear Bank, the main consequence is that the funds were paid on these accounts in RUB and blocked in accordance with the countermeasures. These new accounts do not meet the definition of financial assets, and are accordingly not recorded on balance sheet.

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.2.15.c. Share-based payments

The group offers two types of cash-settled share-based payment plans to senior executives of Euroclear SA/NV, a fixed remuneration plan and a variable remuneration plan.

The fixed remuneration plan is settled with a variable amount of shares, subject to a retention period of 3 years so that the final amount received is still based on the share performance of the group. The beneficiary receives a put option at grant date that allows to sell back the shares to Euroclear SA/NV after the 3-year blocking period, making it a cash-settled plan. The remuneration is recorded as an expense against a liability. The liability is reduced when the units are released and transferred to the beneficiaries, followed by a corresponding derecognition in treasury shares at the level of Euroclear Holding SA/NV. There are no vesting conditions attached to the scheme.

The variable remuneration plan is settled with a fixed amount of shares and is released over a period of 5 years. The beneficiary receives a put option at grant date that allows to sell back the shares to Euroclear SA/NV immediately at the release date, making it a cash-settled plan. The fair value of services rendered by employees in consideration for the granting of share-based payments is recorded as an expense. This expense is recognised in profit and loss when services are rendered. At each reporting date and until the liability settlement date, the group remeasures the fair value of the liability based on the fair value of Euroclear Holding SA/NV's shares and adjusted to reflect the performance vesting conditions. Changes in the fair value of the liability are recognised in profit or loss. When the units are released and transferred to the beneficiaries, the liability is reduced and the treasury shares derecognised.

II.2.16. Treasury shares

Treasury shares are purchased for the purpose of the share-based payment program offered to senior executives of Euroclear SA/NV. Treasury shares are deducted from equity. Upon the vesting of the shares or their repurchase from the beneficiaries, the shares are respectively derecognised or recognised. Shares issued to employees are recognised on a first-in-first-out basis.

II.2.17. 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.2.18. 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 effects of the Russian sanctions 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.

No impairment charge was deemed necessary at the end of 2021 and 2022. 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.

III.3. Blocked accounts opened by NSD in the name of Euroclear Bank

In light of the loss of control of Euroclear Bank on the blocked accounts (C- and I- accounts) and in accordance with the risk transfer measures foreseen in Euroclear Bank's Terms and Conditions governing use of Euroclear, Euroclear Bank would have no longer a debt obligation towards its clients for the amounts that are held in these new types of accounts in case of insolvency of NSD. The client money is currently not under the control of Euroclear Bank and no economic benefits associated with the client money flow to Euroclear Bank. Euroclear Bank does not bear the credit risk associated with these sanctioned accounts according to Euroclear Bank's Terms and Conditions governing use of Euroclear. Furthermore, in case of bankruptcy, the amounts in these accounts represent amounts paid by the issuer for the benefit of the owners of the securities and would not fall within the bankrupt estate of Euroclear Bank.

As long as the Russian sanctions are maintained, the amounts on these accounts do not meet the definition of a financial asset (and an associated liability).

III.4. 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.5. 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.6. 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.7. 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.8. 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.

- 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.

A weighting of 25% base/75% is given to the scenarios reflecting the deteriorating global economic conditions. 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.

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 internal 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 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 model, 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 model

Euroclear operates a three lines model that facilitates the effective operation 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 while maintaining effective governance and the management of risks.

The first line role is primarily to manage the risks and provide the first source of 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 role 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 role 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.

The third line role is performed by Internal Audit who provides the Board with independent reasonable assurance and insight 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 internal 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 trust of all key stakeholders. Euroclear articulates and monitors its risk appetite normally 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 to be consistent with the Group's purpose: "We innovate to bring safety, efficiency and connections to financial markets for sustainable economic growth":

- 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 & Business Risk:** The risks arising from strategic decisions and supporting business model and risks that the company does not achieve its aimed and predicted financial results.

	Pension Risk: The risks that Euroclear 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, benefits, budget and time to market).
Operational Risk	The risk of loss resulting from inadequate or failed internal processes, due to people and systems failings, or from external events. This definition excludes legal and compliance risk.
Legal and Compliance Risk	Risk of financial loss or reputational damage arising from failure to (a) comply with legal and regulatory requirements and material contractual obligations necessary to maintain our license to operate or (b) protect the Group's rights and interests.
Conduct and Culture Risk	Risk arising from our corporate and risk culture, governance arrangements, conduct and dealings with stakeholders and shareholders, and our corporate responsibility as an international financial market infrastructure. Stakeholders might include clients, participants, suppliers, regulators, competitors and other counterparts (e.g. treasury counterparts, depository,...)
Credit Risk	The risk to Euroclear's earnings or capital arising from Euroclear's obligor's 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 counterparts and issuers of securities in the investment, liquidity and treasury book securities portfolio.
Liquidity Risk	Risks arising from being unable to settle a cash or securities obligation when due resulting from inappropriate and/or insufficient liquidity sources.
Market Risk	Market risk is the uncertainty on the value of assets and liabilities (on- or off-balance sheet) and on the future earnings (linked to foreign exchange or interest rate movements) due to changes in market rates or prices.
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

Euroclear views ESG risks as drivers of existing risk types, in particular for (i) Operational risk, (ii) Legal and Compliance risk and (iii) Strategic and Business risk. ESG risks and factors are being more explicitly described in the Euroclear Risk Library, across existing risk types where the impact is material. Due to the specific nature of Euroclear's business, it is not exposed to significant direct ESG risks in its credit exposures.

The focus for the coming years is to strengthen the identification, management, monitoring and disclosure of ESG risks in line with company ambitions and emerging regulatory requirements and expectations.

Risk monitoring

Euroclear monitors the ongoing effectiveness of the risk and control framework to ensure that risk taking is appropriate, aligned with our strategy 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 Euroclear's Internal Control System (ICS).

An annual, externally audited ISAE3402 report is produced for each Euroclear' 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 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, 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) and Internal Audit (third line) opinions. This reporting by the three lines 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 with entity specific reports submitted 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, on annual basis, Risk Management reports on the control environment through the Internal Control System Report submitted to the Euroclear SA/NV Board and the overall effectiveness assessment of the ERM framework reported to the ESA Risk Committee.

Risk Management is equally responsible for the maintenance of the Internal Capital and Liquidity Adequacy Assessment Process (ICLAAP) and Recovery and Resolution Plans (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, due to failings of 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
- Fraud Risk
- ICT & Data Risks
- ICT Security Risks
- 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 identify and monitor operational risk effectively. Risk Management has also established an incident management framework to ensure that all incidents are consistently and timely identified, documented, analysed, escalated and followed up, regardless of 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 resilience and 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 2023 and beyond to further reduce the residual risks and ensure sustainability and resilience.

IV.3. 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 book 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 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 low credit risk appetite: 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[4] (e.g. exempted entities as per Article 23(2) of Regulation (EU) 390/2017).

Euroclear Bank also has treasury exposures resulting from depositing and investing clients' end-of-day cash positions and its own capital and liquidity. Treasury credit exposures are either with central banks, or with the market with high-quality counterparties for a short duration, preferably by using reverse repurchase agreements (reverse repos) or on 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 (borrowing participants) 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, 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.

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

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	2022 Total exposure	2022 Of which secured:	2021 Total exposure	2021 Of which secured:
At 31 December					
Financial assets					
- Cash and balances with central banks		83,543,419	2,389,995	6,053,927	2,078,458
- Loans and advances at amortised cost		23,834,459	21,350,464	11,646,221	8,702,674
- Financial assets at FVOCI	XIII	17,104,911	-	9,279,304	-
- Non-trading financial assets mandatorily at FVPL		33,301	-	19,558	-
- Financial assets held for trading	XIV	61,088	-	19,879	-
- Derivatives used for hedging	XV	46,243	-	6,383	-
Total financial assets		**124,623,421**	**23,740,459**	**27,025,272**	**10,781,132**
Loan commitments	XXVIII	2,088	-	2,526	-
Financial guarantees	XXVIII	11,507,515	9,376,199	11,060,407	7,419,987
Total		**136,133,024**	**33,116,658**	**38,088,205**	**18,201,119**

The war in Ukraine, the associated sanctions on Russia and Russian countermeasures has fundamentally affected the balance sheet of Euroclear Bank.

A consequence of the international sanctions applicable to Russian entities and individuals is that assets owned by sanctioned parties are blocked in the respective financial institutions and market infrastructures, including Euroclear Bank. As the assets mature through their lifecycle, cashflows (i.e. income payments and redemptions) that are normally transferred to the underlying parties must remain blocked and accumulate on Euroclear Bank's balance sheet for as long as the sanctions remain in place (more information can be found under section: IV.6 Russian sanctions impact). The higher assets do not result in material change in credit risk profile, as the cash is principally redeposited with Central Banks in its own currency.

Financial guarantees relate to guarantees issued in favor to securities lenders in the context of the SLB and GCA programs (see note XXVIII).

The credit quality of Euroclear's credit exposures can be assessed by reference to the internal rating system adopted by the group[5] 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+' and the internal rating 'Ea' sums up the ratings 'Ea-', 'Ea' and 'Ea+' of the internal ratings scale.

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)	2022	2021
At 31 December		
Loans and advances at amortised cost (incl. cash and balances with central banks)		
Eaaa	70,964,536	5,234,680
Eaa	22,634,036	7,943,114
Ea	12,578,412	3,976,218
Ebbb+ and Ebbb	946,329	353,998
Ebbb- and below	256,110	193,078
Total gross carrying amount	**107,379,423**	**17,701,088**
Expected credit loss allowance	(1,545)	(940)
Carrying amount	**107,377,878**	**17,700,148**

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.

[5] 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'.

An increase in credit risk has been observed since March 2022 on Euroclear Bank's exposures towards its Russian cash correspondents (moved to IFRS9 stage 2). The stage 2 exposures at year end principally relate to the cash in RUB deposited with NSD prior to the sanctions (€30,463,000 equivalent). The credit risk remains very limited as new exposures accumulate on restricted accounts (C- and I-accounts) that were opened by NSD in the name of Euroclear Bank as countermeasure to the international financial sanctions imposed. These restricted accounts are not recognised on balance sheet (see notes II and III). The amounts held on the restricted C- and I-accounts amount to respectively RUB 188.5 billion and RUB 28.9 billion at year end.

Credit Management remains comfortable with the creditworthiness of the other group's exposures (i.e. all exposures remain in stage 1).

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	2022	2021
At 31 December			
Debt instruments at FVOCI			
AAA		4,242,056	5,671,656
AA+		922,594	586,115
AA		826,725	1,127,955
AA-		384,887	557,766
A+ to A-		9,525,084	16,768
BBB+		18,267	19,094
Carrying amount	XIII	**15,919,613**	**7,979,354**
Including expected credit loss allowance		(877)	(789)

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	2022	2021
At 31 December			
Loan commitments and financial guarantees			
Eaaa		308,344	503,964
Eaa		3,375,995	2,703,405
Ea		5,687,995	5,976,582
Ebbb+ and Ebbb		2,131,915	1,719,042
Ebbb- and below		5,354	130,853
Carrying amount	XXVIII	**11,509,603**	**11,033,846**
Including expected credit loss allowance		(55)	(29)

IV.3.1.b. Credit risk mitigation

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

Clients benefiting from an aggregated credit facility 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 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. 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 exposures. Frequent monitoring shows that more than 99% of the collateral securing the exposures of Euroclear Bank 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, foreign exchange and liquidity risks. Haircuts are computed at least once a day for each security, reflecting the latest 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 USD3 billion at the end of 2022 (2021: USD3 billion) 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 not 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 an 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 2022						
Total financial assets	95,735,161	23,047,490	4,839,784	983,104	17,882	124,623,421
Total financial liabilities	11,909,923	98,201,434	2,503,126	8,197,086	463,146	121,274,715
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

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 is unable to settle a cash or security obligation when due, resulting from inappropriate and/or insufficient liquidity sources.

On an annual basis, the group conducts an Internal Liquidity Adequacy Assessment Process to thoroughly review its liquidity risks, liquidity resources and risk appetite. This review is performed at the Euroclear Holding SA/NV, Euroclear SA/NV consolidated and Euroclear Bank SA/NV levels, with final approval by their respective Boards. The main liquidity risks of the group are within Euroclear Bank in the management of clients long and short balances and its extension of credit to clients to support settlement.

IV.3.2.a. Liquidity risk at Euroclear Bank

Euroclear Bank provides its borrowing 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 day to day 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 and that collateral supporting credit can be readily monetised.

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 €2,672 billion each day (2022 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 program). Since Euroclear Bank's daily payment receipts typically match its payment obligations, 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 long cash balances 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 held of regulatory purposes and funded by the debt issued for that purpose. Furthermore, Euroclear Bank has broad access to the inter-bank market and has contingency liquidity facilities 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 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.

The balance between Euroclear Investments SA's issuance and subscriptions is held as a liquidity reserve invested in the Common Investment Fund.

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 €2.5 billion in EUR, USD and GBP at the end of 2022 (2021: €2.1 billion). Out of its Certificate of Deposits program, Euroclear Bank has a total outstanding amount of €2.0 billion in EUR, USD and GBP (2021: €2.1 billion).

During 2022 Euroclear Bank's balance sheet expanded as a result of build-up of sanctioned clients cash balances which were reinvested as described in the Credit section above principally in central bank and sovereign exposures, in order to minimise the credit risk and capital requirements of these balances and preserve their liquidity to plan for any future sanctions lifting.

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, these are also used as part of the ILAAP.

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 Bank has to comply with regulatory liquidity stress test Liquidity Coverage Ratio (LCR), in accordance with Regulation (EU) 575/2013. The LCR aims 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. Euroclear Bank complies with LCR regulatory requirements and has set higher targets than the regulatory limits as part of its risk appetite framework.

While Euroclear Bank is not subject to the Net Stable Funding Ratio (NSFR) requirement according to Article 6 of Regulation (EU) 575/2013 as amended by Regulation (EU) 2019/876, Euroclear Bank still monitors and complies with the ratio. The NSFR is defined as the amount of available stable funding (Liabilities) relative to the amount of required stable funding (Assets).

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.

Euroclear SA/NV and Euroclear Holding SA/NV are subject to and comply with regulatory requirements on LCR and NSFR. Higher targets than the regulatory limits are also set as part of their risk appetite framework.

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 all liquidity sources including contingency sources 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 €1.0 bilateral standby facility, approximatively €11.4 billion committed forex swap facilities and a total of €2.2 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, are invested on a rollover basis; and
- surplus cash investments, which includes the working cash needs of these entities, are always 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 investments 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 to mitigate 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 2022									
Financial liabilities									
- Deposits from central banks		82,121,932	-	-	-	-	-	**82,121,932**	**82,121,932**
- Deposits from banks and customers		32,218,372	124,897	7,869	-	-	-	**32,351,138**	**32,350,931**
- Debt securities issued and funds borrowed	XX	151,285	1,933,459	72,813	536,766	2,757,679	1,102,250	**6,554,252**	**6,242,965**
- Financial liabilities held for trading	XIV	315,237	1,471	-	-	-	-	**316,708**	**316,708**
- Derivatives used for hedging	XV	1,273	2,635	1,935	470	106,302	-	**112,615**	**112,615**
- Lease liabilities		-	6,920	6,427	10,752	62,388	43,077	**129,564**	**129,564**
Total financial liabilities		**114,808,099**	**2,069,382**	**89,044**	**547,988**	**2,926,369**	**1,145,327**	**121,586,209**	**121,274,715**

(€'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 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**

The deposits from banks and clients include an amount of €99,567,000,000-equivalent at 31 December 2022 (2021: €6,683,000,000-equivalent) of deposits blocked following applicable international sanctions measures, of which €92,570,000,000-equivalent related to Russian sanctions (2021: €0) . Furthermore, as of 31 December 2022, assets in safe custody also include securities for a market value of €163,957,000,000-equivalent blocked pursuant to these same sanctions (2021: €11,416,000,000-equivalent) of which €153,525,000-equivalent related to Russian sanctions.

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 2022					
Financial assets					
Financial assets at FVOCI	XIII				
- Equity instruments		322,143	810,409	52,746	**1,185,298**
- Debt instruments		15,919,613	-	-	**15,919,613**
Non-trading financial assets mandatorily at FVPL					
- Debt instruments		-	-	14,711	**14,711**
- Loans		-	-	18,590	**18,590**
Financial assets held for trading	XIV				
- Forward foreign exchange		-	61,088	-	**61,088**
Derivatives used for hedging	XV				
- Forward foreign exchange		-	30,837	-	**30,837**
- Interest rate swaps		-	15,406	-	**15,406**
Total financial assets		**16,241,756**	**917,740**	**86,047**	**17,245,543**
Financial liabilities					
Financial liabilities held for trading	XIV				
- Forward foreign exchange		-	316,708	-	**316,708**
Derivatives used for hedging	XV				
- Forward foreign exchange		-	6,313	-	**6,313**
- Interest rate swaps		-	106,302	-	**106,302**
Total financial liabilities		**-**	**429,323**	**-**	**429,323**

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

(€'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				
- Interest rate swaps		-	1,066	-	**1,066**
Total financial assets		**8,404,391**	**879,144**	**36,272**	**9,319,807**
Financial liabilities					
Financial liabilities held for trading	XIV				
- Forward foreign exchange		-	5,317	-	**5,317**
Derivatives used for hedging	XV				
- Forward foreign exchange		-	9,387	-	**9,387**
- Interest rate swaps		-	4,053	-	**4,053**
Total financial liabilities		**-**	**18,757**	**-**	**18,757**

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

(€'000)	Notes	At 31 December 2021	(Disposals)/ acquisitions	Fair value adjustment released in profit or loss	Fair value adjustment recognised in equity	Accrued Interest	At 31 December 2022
Financial assets							
Financial assets at FVOCI	XIII						
- Equity shares		16,714	32	-	36,000	-	**52,746**
Non-trading financial assets mandatorily at FVPL							
- Debt instruments		14,711	-	-	-	-	**14,711**
- Loans		4,847	13,327	-	-	416	**18,590**
Total financial assets		**36,272**	**13,359**	**-**	**36,000**	**416**	**86,047**

(€'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**

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 2022						
Financial assets						
- Cash and balances with central banks		81,153,424	2,389,995	-	83,543,419	83,543,419
- Loans and advances at amortised cost		2,404,849	21,429,610	-	23,834,459	23,834,459
Total financial assets		**83,558,273**	**23,819,605**	**-**	**107,377,878**	**107,377,878**
Financial liabilities						
- Deposits from central banks		82,121,932	-	-	82,121,932	82,121,932
- Deposits from banks and customers		32,218,372	132,559	-	32,350,931	32,350,931
- Debt securities issued and funds borrowed	XX	5,738,850	151,289	-	5,890,139	6,242,965
- Lease liabilities		-	129,564	-	129,564	129,564
Total financial liabilities		**120,079,154**	**413,412**	**-**	**120,492,566**	**120,845,392**

(€'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 advancesat 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**

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 uncertainty on the value of assets and liabilities (on- or off-balance sheet) and on the future earnings (linked to foreign exchange or interest rate movements) due to changes in the market rates or prices.

In accordance with the Group's Risk Appetite, the market risk appetite is low for Euroclear Holding, Euroclear SA/NV, Euroclear Bank and the CSDs.

The main sources of market risk in Euroclear are fluctuations in interest rates (IR) and foreign exchange rates (FX); and maturity mismatches between Assets and Liabilities in banking activities.

The main concepts and metrics used for measuring the market risk in Euroclear are:
- Interest rate risk: sensitivities of economic value and net interest income under different scenarios for Interest rate risk in the banking book
- Foreign exchange risk: future earnings not in EUR, end-of-day exposure and daily FX VaR at a 99% confidence level.

IV.3.3.a. Market risk at Euroclear Bank

The majority of market risk in the group is concentrated at Euroclear Bank. The Euroclear Bank Financial Risk Policy Handbook, documents and requires the adequacy of the risk framework put in place to measure, monitor and control the interest rate and foreign exchange risk managed by Euroclear Bank.

With a low risk appetite for market risk, by policy, a prudent investment strategy is applied in order to preserve the core equity of Euroclear Bank. Euroclear Bank's core equity (shareholders' equity plus retained earnings) is invested in EUR highly rated and liquid debt instruments rated AA- or higher. These assets have a maximum maturity of 5 years and an average maturity target of 2.5 years.

Euroclear Bank does not engage in any activity that is not consistent with 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.

An appropriate hedging strategy is applied so as to protect future earnings against adverse market conditions. Euroclear Bank has engaged in a series of market derivatives in order to hedge the forex risk exposure resulting from future non-EUR 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, with the whole process overseen by the Euroclear Bank Credit Assets & Liabilities Committee (CALCO).

Euroclear Bank partially manages the NIE volatility through the interest rate cycle through the use of interest rate swap hedges. On a monthly basis, the CALCO reviews the evolution of the investment and hedging strategy and associated hedge effectiveness. Controls are in place to ensure that the hedging item and instruments remain aligned to minimise market risk.

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 Holding, 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
- 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 Holding, 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). The aim is to better mitigate 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 in case of negative 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 €1.05 billion (2021: €1.08 billion) as of end 2022 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 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, 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[6]) and future profitability (NIE[7]) for Euroclear Bank stand-alone and Euroclear SA/NV consolidated (and Euroclear Holding). 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/expenses.

In 2022 the daily IR VaR calculation was decommissioned as a market risk control, given that Euroclear's exposure to interest rate risk is more adequately covered via IRRBB metrics such as the economic value of equity (EVE) and net interest earnings (NIE) sensitivity analysis.

The table below shows the IRRBB at the level of Euroclear Holding SA/NV. Assets and liabilities held in the Banking book[8] 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.

More specifically, the table shows the economic values of the interest rate sensitive positions in the banking book portfolio under the base and the 2 interest rate parallel shock scenarios. The column with effective 2022 result represents the actual interest earned over the reporting year while 2023 is a projection for the next year.

		Income sensitivity	
(€'000)	Economic value of banking book	Interest result Effective 2022	Interest result Expected 2023
Interest scenario's			
Parallel increase in interest rates with 200 basis points	3,563,286	-	4,283,807
No movement	3,743,237	908,625	2,868,005
Parallel decrease in interest rates with 200 basis points	3,931,735	-	1,584,480

6 Economic Value of Equity
7 Net interest earnings
8 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 2021	Income sensitivity: 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

The tables below reflect the interest rate risk profile of assets and liabilities at 31 December 2022 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 2022								
Assets								
- Cash and balances with central banks	83,513,392	-	-	-	-	-	30,027	83,543,419
- Loans and advances at amortised cost	11,957,656	11,768,521	6,818	3,856	27,883	-	69,725	23,834,459
- Financial assets at FVOCI	74,997	11,800,006	393,333	762,309	2,482,062	379,469	1,212,735	17,104,911
- Non-trading financial assets mandatorily at FVPL	-	-	-	11,275	4,581	2,255	15,190	33,301
- Financial assets held for trading	-	-	-	-	-	-	61,088	61,088
- Derivatives used for hedging	-	12,969	9,536	8,332	3,956	-	11,450	46,243
- Other assets	-	-	-	-	-	-	3,015,564	3,015,564
Total assets	**95,546,045**	**23,581,496**	**409,687**	**785,772**	**2,518,482**	**381,724**	**4,415,779**	**127,638,985**
Liabilities								
- Deposits from central banks	82,121,932	-	-	-	-	-	-	82,121,932
- Deposits from banks and customers	32,217,754	124,218	7,813	-	-	-	1,146	32,350,931
- Debt securities issued and funds borrowed	150,801	1,925,442	52,712	499,621	2,546,658	1,043,546	24,185	6,242,965
- Financial liabilities held for trading	-	-	-	-	-	-	316,708	316,708
- Derivatives used for hedging	-	3,908	1,935	470	100,451	-	5,851	112,615
- Lease liabilities	-	6,920	6,427	10,752	62,388	43,077	-	129,564
- Other liabilities	-	-	-	-	-	-	966,778	966,778
Shareholders' equity	-	-	-	-	-	-	5,397,492	5,397,492
Total liabilities and shareholders' equity	**114,490,487**	**2,060,488**	**68,887**	**510,843**	**2,709,497**	**1,086,623**	**6,712,160**	**127,638,985**
Total interest sensitivity gap	(18,944,442)	21,521,008	340,800	274,929	(191,015)	(704,899)	(2,296,381)	-
Cumulative gap	**(18,944,442)**	**2,576,566**	**2,917,366**	**3,192,295**	**3,001,280**	**2,296,381**	**-**	**-**

(€'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	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**	**-**	**-**

IV.3.3.d. Foreign exchange risk

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

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.

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 2022			
- US dollar	2,287	-	2,287
- Pound sterling	204,421	-	204,421
- Swedish krona	78,406	-	78,406
- Polish zloti	20,391	-	20,391
- Hong Kong dollar	8,435	-	8,435
- Singapore dollar	3,047	-	3,047
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
- Singapore dollar	2,836	-	2,836

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	Canadian Dollar	Pound Sterling	Other	Total
At 31 December 2022						
Total assets	**89,624,868**	**18,445,804**	**23,327**	**14,940,623**	**4,604,363**	**127,638,985**
Total liabilities and shareholders' equity	**76,899,491**	**20,332,661**	**7,785,087**	**14,921,560**	**7,700,186**	**127,638,985**
Net balance sheet position	**12,725,377**	**(1,886,857)**	**(7,761,760)**	**19,063**	**(3,095,823)**	**-**

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 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**	**-**

Euroclear Bank has set tight market risk limits that are controlled via strict hedging and investment policies and daily monitoring. The Foreign Exchange market risk sensitivity relative to the management of the FVOCI portfolio of Euroclear Bank 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.

The FX-VaR is shown on an aggregated basis. The significant increase in the average and maximum FX-VaR in 2022 was a result of Euroclear Bank's conversion of RUB assets cash into EUR. This action resulted in a short–term currency mismatch on Euroclear Bank's balance sheet, which entailed foreign exchange risk based on the EUR/RUB FX rate. This FX risk exposure was then fully hedged with the use of non-deliverable forward contracts, decreasing FX Risk to normal levels.

(€'000)	2022 average	2022 min	2022 max	2021 average	2021 min	2021 max
Aggregate - FX	253	9	5,753	32	7	84

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 Combined Buffer Requirement (CBR)

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 uses a hybrid approach at all levels of consolidation. This implies combining the Advance Measurement Approach (AMA) developed internally and approved by the NBB for regulatory purposes, for Euroclear Bank, Euroclear SA/NV and Euroclear Holding SA/NV, with the 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, 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. Euroclear Holding SA/NV was added to list of O-SIIs in November 2022. Subsequently, the National Bank of Belgium applies a common equity Tier 1 capital ratio surcharge of 0.75% to Euroclear Bank standalone, Euroclear SA/NV 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 Consolidated CET1, Tier 1 and total capital, which comfortably exceed the regulatory requirements.

IV.4.b. Regulatory capital position

(€'000)	2022	2021
Risk-weighted assets[1]	**10,383,065**	**7,962,791**
Capital requirement	**830,644**	**637,023**
- Credit risk	341,157	239,149
- Market risk	18,186	19,733
- Operational risk	471,301	378,141
Capital base[2]	**3,903,098**	**3,090,408**
- CET1	3,900,097	3,087,731
- Tier 2	3,001	2,677
Solvency ratio		
- CET1	37.6%	38.8%
- Tier 1	37.6%	38.8%
- Total	37.6%	38.8%

[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, defined benefit pension fund 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.

In 2022, progress was made for the ERM Framework integration of MFEX through its different components: (i) adoption of the harmonized risk taxonomy and risk rating methodology; (ii) a new risk appetite to increase alignment with Euroclear Group Risk Appetite; (iii) and a risk and control self-assessment in line with the Group ERM Framework providing an aggregated view of risk exposures for the Group's Internal Control System report.

From a going-concern perspective, the business of MFEX by Euroclear (MFEX) does not significantly influence the Group's overall risk profile and exposure. MFEX is being gradually and proportionately incorporated into the Euroclear Group enterprise risk management framework. In 2022, risks in MFEX were integrated into the Group's overall risk assessment documented in the Internal Control Systems Report.

IV.6. Russian sanctions impact

Euroclear Bank has closely monitored and implemented all sanctions defined by the relevant European and international bodies in the context of the Russian invasion of Ukraine, including those related to the freezing of assets of Russian sanctioned entities.

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 the balance sheet and the cash has to be reinvested as long as the sanctions remain in place.

The effect of sanctions implementation and the consequent balance sheet growth has an effect on the overall risk profile of Euroclear Bank, as described below.

IV.6.1. Financial risk aspects

Due to the large volumes compared to day-to-day treasury operations at EB, the balance sheet growth has increased our reinvestment risk. The investment strategy in place for these balances has followed our usual low risk profile in order to minimize and balance financial and operational risks. Where available, and in coordination with the relevant authorities, cash from frozen balances are reinvested with the central bank of the relevant currency. EB currently has access to central bank accounts for EUR (with the National Bank of Belgium) and GBP (with the Bank of England). Where central bank access is not available, and subject to EB's treasury capabilities and market appetite, reinvestments are made short-term and in a secure way with highly rated counterparties, specifically via reverse repos and FX swaps, and to a lesser extent government securities.

This reinvestment activity generates the following financial risks**:**

Credit risk

The reinvestment of sanctioned balances carries a risk that our treasury counterparts could default during the term of the deal, potentially leading to a credit loss.

Reverse repos are short-term and secured in nature. While there is some credit risk linked to this activity, in the absence of central bank access reverse repos are a preferred investment product given their fully collateralized nature. In the event of default, EB would appropriate and monetize the collateral pledged by the repo counterpart in order to eliminate or drastically reduce the risk of loss from the default. Euroclear has a strict framework in place in order to eliminate or drastically reduce the credit risk from this activity:

- In order to mitigate the counterparty credit risk, counterparties must have at least an internal credit rating of BBB+, and all collateral posted must be investment grade.
- Collateral acceptance criteria and collateral haircuts are defined internally by EB's Credit department.
- Repos managed on Triparty are subject to daily margining requirements to mitigate the potential exposure if the value of the collateral falls during the life of the deal.

FX swaps are an effective way to convert into EUR, or other major currencies such as USD, foreign currencies for which it may be difficult to find an acceptable reinvestment option. FX swaps linked to Russian frozen balances are currently done on a bilateral basis (i.e., they are not centrally cleared) with highly rated counterparties, and thus result in counterparty credit risk:

- As part of the EB credit risk framework, counterparty credit risk is managed through global and counterparty family limits for all types of exposures. These limits depend on both the counterparty credit rating and the maturity of the deal.
- During the life of the deal, the credit exposure linked to the FX swap portfolio is minimal as the exposure at default is only equivalent to the positive market value of the swap (instead of the full notional amount). Furthermore, there are strict margin requirements that limit the exposure to the size of the margin call.
- At the time of final settlement of the transaction, EB may be exposed for a limited time to intraday settlement risk for the full notional amount. This risk is expected to be mitigated by mid-2023 via EB gaining indirect access to CLS, which provides payment-vs-payment settlement services for FX products.

Lastly, there is a marginal credit risk linked to the default of central banks (NBB and BoE cash balances) or the US government (for Treasuries). As these exposures are against highly rated central banks and governments in their currency of issuance, credit risk is considered immaterial or risk-free in practice.

Market risk

There is currently no FX risk to capital linked to the reinvestment of frozen balances as these balances are either reinvested in the same currency as the underlying balance or are hedged through the FX markets where the reinvestment is in a different currency to the underlying balance.

The only material market risk experienced linked to Russian exposures was due to Euroclear Bank's decision to convert its rouble balances into euros in anticipation of the withdrawal of rouble as a settlement currency. This created a short-term and limited forex risk given the currency mismatch between rouble liabilities towards its clients and euro assets from reinvestment. This FX risk was initially hedged via the use of non-delivery forwards, and subsequently in early 2023 structurally mitigated by the conversion of these liabilities into euros, in accordance with the Terms and Conditions governing the use of Euroclear.

Lastly, as a post balance sheet event, in early February 2023 Euroclear Bank informed its participants of the closure of its cash correspondent account in Russia and the withdrawal of rouble as a settlement currency. This means that Euroclear Bank is no longer accepting in this account money transfer instructions in roubles or any incoming rouble payments, including income and redemption events.

Liquidity risk

Liquidity risk arising from the reinvestment of cash from sanctioned balances is directly linked to the lifting of sanctions or other measures defined by the relevant authorities which would lead to the return of balances to our participants, and thus is dependent on the notice period provided by the authorities. It is currently mitigated by reinvesting cash from frozen balances via overnight or short-term placements and the ongoing dialogue with the relevant EU and international bodies.

IV.6.2. Operational risk

The number of sanctions that have been introduced since February 2022 are unprecedented. Their speed of issuance and level of complexity have a significant impact on the daily operations of Euroclear Bank. This complexity is compounded by international financial institutions stepping out of their capital market roles and the changing requirements of the Russian CSD resulting in changing counterparties and appearance of new process flows. These events have led to:

- An increased 'Execution, Delivery and Process Management (EDPM) Risk due to (I) the breaking of some internal automated processes linked to the Russian Market such as payment processes or reconciliation, (II) ad-hoc design of new manual operational flows, (III) increased volumes that manually need to be processed,
- Increased Client, product and Business practices risk arising from (I) an increased number of client and underlying client requests, complaints and potential claims related to the prudent way sanctions are interpreted and implemented by Euroclear Bank (II), conflicts between Russian counter sanctions or new Russian regulations trying to mitigate the effects of international sanctions issued by European and International bodies.

The existing operational control framework has been and continues to be adapted. Efforts are made to restore as much as possible STP processing and there is increased hiring of staff to handle with the increased manual volumes. These actions are mitigating significantly the operational risk caused by the Russian sanctions, demonstrated by the low number of operational incidents and minor financial impact.

V. Segment analysis

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

The business segments are reported per entity 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) and Euroclear Properties France SA . None of these qualified as a reportable segment in 2022 or 2021.

A matrix structure exists that allows management to view the business by legal entity but also by product line. MFEX funds platform together with Euroclear Bank's Fundsettle business represent a separate Cash Generating Unit (CGU).

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.

(€'000)	Notes	Euroclear Bank	Euroclear SA/NV	Euroclear UK & International	ESES CSDs	Euroclear Sweden	Euroclear Finland	MFEX	Other	Eliminations	Group
		2022									
Interest income	VI	1,121,152	2,117	1,230	363	305	-	876	32,515	(32,387)	1,126,171
Interest expense	VI	(208,834)	(10,253)	(113)	(1,028)	(257)	(152)	(565)	(28,770)	32,426	(217,546)
Net fee and commission income	VII	1,033,712	32	141,082	215,740	68,754	55,514	56,797	2,435	(30)	1,574,036
Intra-group recharges		3,237	774,843	56	35	67	318	2,220	1,513	(782,289)	-
Other income		277,792	322,542	359	147	(82)	213	(343)	319,901	(633,753)	286,776
Operating income		2,227,059	1,089,281	142,614	215,257	68,787	55,893	58,985	327,594	(1,416,033)	2,769,437
Staff costs	IX	(140,821)	(345,569)	(20,579)	(21,735)	(16,572)	(11,753)	(28,894)	(5,885)	-	(591,808)
Other direct costs	IX	(14,094)	(370,998)	(19,356)	(3,567)	(19,273)	(13,927)	(27,261)	(9,401)	370	(477,507)
Depreciation and amortisation	XVII, XVIII	(9,308)	(61,112)	(89)	(16)	(3,221)	(6,232)	(4,276)	(4,663)	8,045	(80,872)
Royalty fees		(5,774)	-	(630)	(844)	(347)	(205)	-	-	7,800	-
Group non-operational and		(540,695)	(5,153)	(84,496)	(122,865)	(15,864)	(8,585)	(2,701)	(1,723)	782,082	-
Share of result in joint venture		-	(1,905)	-	-	-	-	-	-	-	(1,905)
Operating profit/(loss) before impairment and taxation		1,516,367	304,544	17,464	66,230	13,510	15,191	(4,147)	305,922	(617,736)	1,617,345
Impairment	X	(5,855)	(6,972)	(9)	(466)	(126)	(32)	1,169	118	-	(12,173)
Operating profit/(loss) before taxation		1,510,512	297,572	17,455	65,764	13,384	15,159	(2,978)	306,040	(617,736)	1,605,172
Taxation	XI	(377,649)	2,910	(2,744)	(16,214)	(2,710)	(2,939)	(2,697)	(3,128)	-	(405,171)
Profit/(loss) for the year		**1,132,863**	**300,482**	**14,711**	**49,550**	**10,674**	**12,220**	**(5,675)**	**302,912**	**(617,736)**	**1,200,001**
External revenues		2,987,181	9,634	159,842	219,594	71,799	47,681	58,303	4,052	-	3,558,086
Revenues from other segments		25,945	1,089,788	1,482	34,578	592	8,441	2,220	-	(1,163,046)	-
Total revenues		**3,013,126**	**1,099,422**	**161,324**	**254,172**	**72,391**	**56,122**	**60,523**	**4,052**	**(1,163,046)**	**3,558,086**
Segment assets		123,480,981	1,969,065	222,017	306,611	255,452	131,478	821,739	451,642	-	127,638,985
of which non-current assets		2,910,837	1,243,512	73,314	83,446	156,896	65,779	494,975	256,003	-	5,284,762
Segment liabilities and shareholders' equity		122,147,050	2,487,913	180,499	288,920	52,079	(147,614)	278,872	2,351,266	-	127,638,985

(€'000)	Belgium	France	Sweden	United Kingdom	Other	Group
	2022					
Revenue	3,010,865	169,224	88,053	130,102	159,842	3,558,086
Profit And Loss before Tax	1,505,526	53,901	17,884	10,405	17,456	1,605,172
Tax on Profit and Loss	(375,789)	(13,279)	(7,951)	(5,408)	(2,744)	(405,171)
Total Assets	125,508,383	197,033	1,077,191	222,017	634,361	127,638,985
o.w Non Current Assets	4,183,272	45,503	881,584	12,979	161,424	5,284,762
Total Liabilities	124,666,189	219,679	330,951	180,499	2,241,667	127,638,985
Number of employees on Full Time Equivalent basis	3,905	85	492	154	196	4,832

(€'000)	Notes	2021 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

(€'000)	2021 Belgium	France	Sweden	United Kingdom	Other	Group
Revenue	1,597,884	172,933	109,003	164,528	92,182	2,136,530
Profit And Loss before Tax	442,443	72,058	33,770	35,449	31,007	614,727
Tax on Profit and Loss	(112,839)	(19,698)	(5,407)	(6,729)	(7,504)	(152,177)
Total Assets	27,188,165	207,443	1,163,077	212,660	628,561	29,399,906
o.w Non Current Assets	4,312,545	96,865	651,006	63,208	404,432	5,528,056
Total Liabilities	26,341,780	230,071	420,449	175,772	2,231,834	29,399,906
Number of employees on Full Time Equivalent basis	3,516	79	469	151	134	4,349

The €617,736,000 remaining in the Eliminations column relates to dividends received from companies within the group (2021: €866,234,000).

The country reporting is disclosed in compliance with article 89 of the European Capital Regulatory Directive IV and IFRS 8. The country information reflects the country of residence of the entities.

VI. Net interest income

(€'000)	Notes	2022	2021
Interest income on financial instruments			
- Cash and balances with central banks		426,550	1,249
- Loans and advances at amortised cost		434,817	69,572
- Debt instruments measured at FVOCI		63,553	10,232
- Non-trading financial assets mandatorily at FVPL		460	131
- Derivatives used for hedging (only interest flows)		12,933	89
- Negative interest on financial liabilities		182,442	81,853
- Other		5,409	2,027
Interest income on defined benefit plans	XXII	7	4
Total interest income		**1,126,171**	**165,157**
Interest expense on financial instruments			
- Deposits from central banks		(272)	-
- Deposits from banks and customers		(8,011)	(2,326)
- Debt securities issued and funds borrowed		(85,121)	(44,397)
- Derivatives used for hedging (only interest flows)		(9,933)	(25)
- Negative interest on financial assets at amortised cost		(80,321)	(26,727)
- Negative interest on financial assets at FVOCI		(20,620)	(25,187)
- Other		(11,104)	(1,611)
Interest expense on lease liabilities		(356)	(463)
Interest expense on defined benefit plans	XXII	(1,808)	(1,512)
Total interest expense		**(217,546)**	**(102,248)**
Net interest income		**908,625**	**62,909**

The level of interest revenues has significantly increased due to the increase of interest rates and the growth of cash balances arising from sanctions on Russia.

VII. Net fee and commission income

(€'000)	2022	2021
Fee and commission income		
Clearing and settlement	654,981	602,010
Safekeeping	959,232	896,311
Other	551,184	443,782
Total fee and commission income	**2,165,397**	**1,942,103**
Fee and commission expense		
Clearing and settlement	(153,048)	(114,988)
Safekeeping	(233,814)	(226,649)
Other	(204,499)	(144,848)
Total fee and commission expense	**(591,361)**	**(486,485)**
Net fee and commission income	**1,574,036**	**1,455,618**

Other fee and commission income principally include communication fees amounting to €201,000,000 (2021: €189,000,000), custody servicing fees amounting to €49,000,000 (2021: €49,000,000), issuer and securities services amounting to €41,000,000 (2021: €42,000,000), distribution fees (MFEX) amounting to €32,000,000 (2021: €8,000,000) and the recovery of out-of-pocket expenses.

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

(€'000)	2022	2021
Foreign exchange derivatives	275,228	30,354
Total	**275,228**	**30,354**

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. The number of deals has increased in 2022, as a result of the incoming sanctioned cash in RUB and CAD swapped into euro. Under IFRS, these results may not be included within net interest income.

IX. Administrative expenses

(€'000)	Notes	2022	2021
Staff costs			
- Wages and salaries		426,534	356,965
- Social security costs		91,526	80,811
- Defined benefit plans	XXII	30,331	31,919
- Defined contribution plans		10,825	10,682
- Other staff costs		32,592	28,118
Auditors' remuneration		3,946	3,023
Consultants fees		321,310	240,536
Occupancy		27,363	20,143
Maintenance and repairs		49,402	44,684
Travel and training		12,854	4,530
Communications		8,631	8,043
Other rent and non capitalised expenses		27,704	21,323
Other taxes		21,626	19,533
Depreciation and amortisation	XVII, XVIII	80,872	75,467
Other administrative expenses		45,675	34,211
Provisions for liabilities and charges	XXI	8,679	2,195
Capitalised expenses		(49,683)	(40,311)
Total		**1,150,187**	**941,872**

The average number of persons employed by the group during the year was 4,901 (2021: 4,281).

The line 'Wages and salaries' includes €1,403,750 related to share-based payments (see note XXIII).

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

(€'000)	2022	2021
Fees payable to the Company's auditor for the audit of the Company's financial statements	182	164
Fees payable to the Company's auditor and its associates for other services:		
- The audit of the Company's subsidiaries, pursuant to legislation	2,811	2,277
- Other attest and assurance services	940	1,052
- Other services	13	40
Fees included in the consolidated financial statements	3,946	3,127
Fees in respect of the audit of newly acquired subsidiaries not included in the consolidated financial statements	-	407
Total	**3,946**	**3,533**

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	2022	2021
Impairment charges			
Goodwill and intangible assets	XVIII	5,017	-
Financial assets		706	596
Other assets		(525)	766
Group participations, investments in associates		6,975	14,546
Total		**12,173**	**15,908**

(€'000)	Notes	2022	2021
Other assets impaired			
At 1 January		2,582	3,056
Charge to the income statement		(525)	766
Amounts used		5,938	(1,283)
Exchange differences		(362)	43
At 31 December		**7,633**	**2,582**

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.

The participation in Quantessence Limited has been fully impaired during the year (€6,975,000).

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 2022	146	794	789	29	1,758
Financial instruments originated/acquired during the period	274	1,125	368	55	1,822
Financial instruments derecognised during the period	(146)	(713)	(268)	(29)	(1,156)
Change due to change in credit risk	-	65	(12)	-	53
At 31 December 2022	**274**	**1,271**	**877**	**55**	**2,477**

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	2022	2021
Current	0.89%	0.41%
Less than 30 days	0.76%	0.81%
30 to 60 days	3.48%	3.48%
60 to 90 days	4.11%	4.44%
90 to 360 days	15%-90%	15%-90%
Over 360 days	20%-100%	20%-100%

XI.Taxation

(€'000)	2022	2021
Current income tax expense	405,467	152,482
Adjustments to tax charge in respect of previous years	(2,374)	(995)
	403,093	**151,487**
Deferred tax charge/(income) relating to the origination and reversal of temporary differences	2,108	710
Deferred tax charge/(income) resulting from change in tax rate	(30)	(20)
Tax expense for the year	**405,171**	**152,177**

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)	2022	2021
Operating profit/(loss) before tax	**1,605,172**	**614,727**
At standard rate of tax(1)	401,293	153,682
Effects of:		
- Expenses not deductible for tax purposes	12,979	4,843
- Net tax effect of intercompany dividend elimination and dividend received	(1,578)	(1,977)
- Net tax effect of change in consolidation perimeter	(3,034)	(1,017)
- Impairment of subsidiaries	1,744	3,438
- Share of net tax (profit)/loss of investments accounted for using equity method	476	-
- Income not subject to tax	(748)	(628)
- Different rates in the companies in the group	(3,557)	(5,149)
- Change of tax rate on deferred taxation	(30)	(20)
- Adjustments to tax charge in respect of previous period	(2,374)	(995)
Tax expense for the year	**405,171**	**152,177**

(1) A rate of 25.00% (2021: 25.00%) has been used as the standard rate.

The current income tax asset of €27,123,000 at 31 December 2022 (2021: €10,849,000) 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 2023	Maturity after 31 December 2023
At 31 December 2022			
Assets			
Defined benefit plans	14,333	-	14,333
Financial assets at FVOCI	58,756	5,885	52,871
Financial assets (ECL)	442	442	-
Cash flow hedging reserve	17,993	(6,131)	24,124
Software development	591	591	-
Property, plant and equipment	1,802	448	1,354
Tax loss carried forward	72,553	-	72,553
Other temporary differences	11,902	11,785	117
Total	**178,372**	**13,020**	**165,352**
Liabilities			
Defined benefit plans	(32)	-	(31)
Financial assets at FVOCI	(333)	-	(333)
Financial assets (ECL)	(1)	(1)	-
Software development	1,326	1,326	-
Other temporary differences	2,619	191	2,428
Insurance reserve of Euroclear Re SA	3,204	-	3,204
Total	**6,784**	**1,516**	**5,268**

(€'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)
Cash flow hedging reserve	(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**

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.

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	2022	2021
At 1 January		**106,190**	**95,672**
Acquisition of subsidiaries	XXXI	7,690	1,850
Impact of first time consolidation		-	3,542
Disposal of subsidiary		-	-
Income statement	XI	(2,078)	(690)
Deferred tax relating to items (charged) or credited to equity			
- Defined benefit plans	XXII	(19,322)	(12,177)
- Financial assets at FVOCI		63,505	14,356
- Cash flow hedging reserve	XXVI	16,213	3,589
Exchange differences		(610)	48
At 31 December		**171,588**	**106,190**

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

(€'000)	Notes	2022	2021
Defined benefit plans	XXII	(8,583)	773
Impairment of financial assets		234	151
Software development		(7,281)	217
Property, plant and equipment		(205)	81
Tax losses carried forward		10,610	(4,704)
Insurance reserve		(88)	(214)
Other temporary differences		3,235	3,006
Total		**(2,078)**	**(690)**

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

XIII. Financial assets at FVOCI

(€'000)	2022	2021
At 31 December		
Financial assets at FVOCI		
Equity shares		
- Listed	322,144	425,037
- Unlisted but fair value determinable	52,746	16,715
Equity funds	810,408	858,198
Listed debt instruments	15,919,613	7,979,354
Total	**17,104,911**	**9,279,304**

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 2022		**441,752**	**858,198**	**7,979,354**	**9,279,304**
Additions		33	112,510	26,736,369	26,848,912
Redemptions and disposals		-	(132,515)	(18,575,109)	(18,707,624)
FVOCI revaluation reserve					
- Gains/(losses) on held financial assets		(66,895)	(27,785)	(240,904)	(335,584)
Amortisation of discounts and (premiums)		-	-	3,085	3,085
Net change in accrued interest		-	-	9,648	9,648
Expected credit loss allowance		-	-	(87)	(87)
Exchange difference		-	-	7,257	7,257
At 31 December 2022		**374,890**	**810,408**	**15,919,613**	**17,104,911**

(€'000)	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**

XIV. Financial instruments held for trading

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

(€'000)	Notional amount	Fair value	
		Assets	Liabilities
At 31 December 2022			
Foreign exchange derivatives			
- Forward foreign exchange	15,767,141	61,088	316,708
Total	**15,767,141**	**61,088**	**316,708**
At 31 December 2021			
Foreign exchange derivatives			
- Forward foreign exchange	3,259,074	19,879	13,850
Total	**3,259,074**	**19,879**	**13,850**

The notional amount related to forward foreign exchange contracts at 31 December 2022 and 31 December 2021 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, 6-month or 12-month basis, depending on the interest rate level associated to the hedged currency).

As 31 December 2022, Euroclear Bank monthly secures an average of €-equivalent 130,594,000 currency stream (2021: €-equivalent 24,879,000). The increase of the volumes hedged results from the rising interest rates and higher balances.

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 are 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 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 2022			
Foreign exchange derivatives			
- Forward foreign exchange	1,092,495	30,837	6,313
Interest rate derivatives			
- Interest rate swaps	2,766,899	15,406	106,302
Total	**3,859,394**	**46,243**	**112,615**
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**

During the year, no ineffectiveness arose from cash flow hedging (2021: €0)

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:

(€'000)	Notes	Foreign exchange derivatives			Interest rate derivatives			Total derivatives		
		Gross amount	Deferred tax	Net amount	Gross amount	Deferred tax	Net amount	Gross amount	Deferred tax	Net amount
At 1 January 2022		**(8,320)**	**2,080**	**(6,240)**	**1,199**	**(300)**	**899**	**(7,121)**	**1,780**	**(5,341)**
Change of fair value directly recognised in other comprehensive income		8,623	(2,156)	6,467	(94,694)	24,424	(70,270)	(86,071)	22,268	(63,803)
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		24,221	(6,055)	18,166	(3,000)	-	(3,000)	21,221	(6,055)	15,166
Total change to cash flow hedging reserve	XXVI	**32,844**	**(8,211)**	**24,633**	**(97,694)**	**24,424**	**(73,270)**	**(64,850)**	**16,213**	**(48,637)**
At 31 December 2022		**24,524**	**(6,131)**	**18,393**	**(96,495)**	**24,124**	**(72,371)**	**(71,971)**	**17,993**	**(53,978)**
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	XXVI	**(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)**

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	2022	2021
At 1 January and 31 December	XXVI	(18,238)	(18,238)

XVI. Other assets

(€'000)	Notes	2022	2021
Items in process of collection		82,671	19,773
Other taxation and social security		32,146	27,768
Other assets (after impairment)		759,011	298,284
At 31 December		**873,828**	**345,825**

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

The MFEX group contributes to €205,925,000 in other assets (2021: €202,917,000) mainly related to the delivery of services, and funds commissions to be collected and redistributed. Other assets also include €454,369,000 related to variation margins (2021: €14,558,000).

XVII. Property, plant and equipment

(€'000)	Notes	Land and buildings	Leasehold improvements	Furniture and fixtures	IT equipment	Other equipment	Total	of which Right-of-use assets: Land and buildings	Vehicles and other equipment	Total
Cost										
At 1 January 2022		**186,008**	**55,425**	**16,870**	**171,247**	**12,843**	**442,393**	**140,344**	**9,437**	**149,781**
Acquisition of subsidiaries		6,482	-	-	-	-	6,482	6,482	-	6,482
Additions		13,177	1,916	2,112	13,688	955	31,848	12,869	(15)	12,854
Capitalisation of dilapidation provisions	XXI	-	1,496	-	-	-	1,496	-	-	-
Transfer to Non-current assets and assets of disposal groups classified as held for sale		63	-	-	99	(94)	68	63	-	63
Transfers		-	906	-	1,112	(1,113)	905	-	-	-
Sales and disposals		(208)	(339)	(1,852)	(9,366)	(229)	(11,994)	(208)	-	(208)
Exchange differences		(1,707)	(415)	(175)	(244)	(1)	(2,542)	(1,707)	(2)	(1,709)
At 31 December 2022		**203,815**	**58,989**	**16,955**	**176,536**	**12,361**	**468,656**	**157,843**	**9,420**	**167,263**
Accumulated depreciation										
At 1 January 2022		**(82,893)**	**(42,169)**	**(13,859)**	**(136,732)**	**(966)**	**(276,620)**	**(51,817)**	**-**	**(51,817)**
Acquisition of subsidiaries		(3,001)	-	-	-	-	(3,001)	(3,001)	-	(3,001)
Depreciation charge		(21,370)	(3,784)	(936)	(15,375)	(519)	(41,984)	(20,351)	-	(20,351)
Transfer to Non-current assets and assets of disposal groups classified as held for sale		2	-	-	6	1	9	2	-	2
Transfers		-	97	(2)	(388)	288	(5)	-	-	-
Sales and disposals		208	337	1,813	9,367	241	11,966	208	-	208
Exchange differences		4,433	191	165	90	(4)	4,875	4,433	-	4,433
At 31 December 2022		**(102,621)**	**(45,328)**	**(12,819)**	**(143,032)**	**(959)**	**(304,759)**	**(70,526)**	**-**	**(70,526)**
Net book value at 31 December 2022		**101,194**	**13,661**	**4,136**	**33,504**	**11,402**	**163,897**	**87,317**	**9,420**	**96,737**

								of which Right-of-use assets		
(€'000)	Notes	Land and buildings	Leasehold improvements	Furniture and fixtures	IT equipment	Other equipment	Total	Land and buildings	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)
Transfer 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**

The figures above include cost of property, plant and equipment under construction for an amount of €505,000 (2021: €459,000).

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.

XVIII. Goodwill and intangible assets

(€'000)	Internally developed software	Purchased software	Know-how	Goodwill	Contractual customer relationship	Unpatented technology	Total
Cost							
At 1 January 2022	203,510	144,777	45,869	1,842,835	23,224	59,725	2,319,940
Acquisition of subsidiaries	(15,563)	(13,768)	-	24,063	(1,259)	-	(6,527)
Additions	42,321	12,396	-	-	5,792	-	60,509
Transfer to Non-current assets and assets of disposal groups classified as held for sale	57	(29)	-	-	-	-	28
Transfers	-	(19,807)	-	2,667	(595)	-	(17,735)
Sales and disposals	(21,903)	(2,860)	-	-	(1,259)	-	(26,022)
Exchange differences	14,323	13,707	(90)	(14,504)	1,259	-	14,695
At 31 December 2022	**222,745**	**134,416**	**45,779**	**1,855,061**	**27,162**	**59,725**	**2,344,888**
Accumulated amortisation and impairment							
At 1 January 2022	(94,664)	(78,584)	(45,869)	(538,664)	(430)	(59,725)	(817,936)
Acquisition of subsidiaries	8,026	250	-	-	2,295	-	10,571
Amortisation charges	(23,525)	(14,784)	-	-	(579)	-	(38,888)
Impairment	(5,017)	-	-	-	-	-	(5,017)
Transfer to Non-current assets and assets of disposal groups classified as held for sale	130	29	-	-	-	-	159
Transfers	-	2,015	-	(2,667)	-	-	(652)
Sales and disposals	16,884	2,302	-	-	1,259	-	20,445
Exchange differences	(9,608)	(713)	90	1,136	(3,124)	-	(12,219)
At 31 December 2022	**(107,774)**	**(89,485)**	**(45,779)**	**(540,195)**	**(579)**	**(59,725)**	**(843,537)**
Net book value at 31 December 2022	**114,971**	**44,931**	**-**	**1,314,866**	**26,583**	**-**	**1,501,351**

(€'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)
Transfer and disposals	(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
Transfer and disposals	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**

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 five relevant operating segments: the ESES CSDs (Euroclear Belgium, Euroclear France and Euroclear Nederland), EUI (Euroclear UK & International), Euroclear Finland, Euroclear Sweden and the MFEX group.

The MFEX CGU has been created in 2022 and combines the MFEX group acquired in 2021 and Euroclear Bank's Fundsettle business. MFEX and Fundsettle are highly integrated with clients already being transferred from one to the other and leverage a combined commercial approach, with expected joint synergies.

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 2022 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 of 2.5% compared to 1.9%-2.0% last year, reflecting the increased risk-free rate on the markets.

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

(€'000)	2022	2021
Euroclear UK & International	203,480	204,354
ESES	484,626	484,626
Euroclear Finland	37,689	37,689
Euroclear Sweden	146,966	159,460
MFEX	464,070	440,007
	1,336,831	1,326,136

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 2022 and 2021 impairment reviews were as follows:

	2022		2021	
	Discount rate	Perpetual growth rate	Discount rate	Perpetual growth rate
Euroclear UK & International	8.16%	2.50%	6.00%	1.90%
ESES	7.63%	2.50%	5.70%	1.90%
Euroclear Finland	8.16%	2.50%	5.60%	1.90%
Euroclear Sweden	7.50%	2.50%	5.40%	2.00%
MFEX	10.49%	2.50%	0.00%	0.00%

XVIII.4. The 2022 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 2023 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 2022, 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.

XIX. Other liabilities

(€'000)	Notes	2022	2021
Funds to be assigned		156,513	82,892
Taxation and social security		36,330	21,359
Creditors		298,852	342,924
Other		82,672	47,042
At 31 December		**574,367**	**494,217**

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

The MFEX group contributes to €268,224,000 in other liabilities (2021: €264,082,000), mainly related to the delivery of services, and including funds commissions to be redistributed.

XX. Debt securities issued and funds borrowed

(€'000)	Maturity date	2022	2021
At 31 December			
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
Certificates of Deposits issued in EUR	2023	499,196	-
Certificates of Deposits issued in GBP	2023	731,363	-
Certificates of Deposits issued in USD	2023	747,596	-
Total certificate of deposits		**1,978,155**	**2,061,451**
Medium Term Notes issued in EUR	2022	-	499,722
Medium Term Notes issued in EUR	2023	500,837	500,177
Medium Term Notes issued in GBP	2024	395,063	416,519
Medium Term Notes issued in EUR	2025	498,144	497,288
Medium Term Notes issued in USD	2026	562,999	529,558
Medium Term Notes issued in EUR	2027	501,490	-
Total medium term notes		**2,458,533**	**2,443,264**
EUR 600,000,000 10 year Fixed rate senior debt	2026	597,929	597,306
EUR 300,000,000 12 year Fixed rate senior debt	2030	301,655	301,448
EUR 400,000,000 30 year Fixed rate Corporate Hybrid Debt	2028	405,624	405,281
EUR 350,000,000 30 year Fixed rate Corporate Hybrid Debt	2031	349,780	349,457
Total long term debt issued		**1,654,988**	**1,653,492**
Total debt securities issued		**6,091,676**	**6,158,207**
Overdrafts		741	12,668
Overnight borrowings		103,641	3,736
Fixed term borrowings		18	-
Repos		46,889	207,300
Total funds borrowed		**151,289**	**223,704**
Total debt securities issued and funds borrowed		**6,242,965**	**6,381,911**

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 2022		**810**	**8,290**	**1,487**	**29**	**1,608**	**12,224**
Impact of acquisition of subsidiaries	XXXI	-	-	449	-	489	**938**
Capitalisation of dilapidation provision	XVII	-	1,496	-	-	-	**1,496**
Additions		6,927	-	24	55	4,080	**11,086**
Unused amounts reversed during the period		(389)	(984)	(377)	(29)	(627)	**(2,406)**
Amounts used		-	-	(272)	-	(280)	**(552)**
Exchange differences		48	(108)	-	-	(1)	**(61)**
At 31 December 2022		**7,396**	**8,693**	**1,311**	**55**	**5,269**	**22,724**

Provisions for dilapidation costs are recorded to reflect end-of-lease obligations in several countries. The provisions have been adjusted upwards following the high inflation.

A provision for restructuring has been recorded under HR (€5,689,000), in addition to smaller amounts for redundancy.

The additions in Other provisions include a provision of €2.430.000 related to Quantessence (see Note I).

The current portion of the provisions for liabilities and charges is estimated at €5,153,000 (2021: €5,872,000).

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 2022 and showed a deficit of €61,570,000 (2021: €169,116,000) (60% in Belgium, 34% in France, 3% in Sweden, 3% in Japan), offset by a pension surplus of €6,207,000 (2021: €617,000) (14% in Belgium, 86% in the Netherlands). The valuation covered all the DB plans and DC plans with DB-like features.

The pension charge recognised in profit and loss in 2022 amounts to €32,198,000 (2021: €33,428,000). The contribution, reflecting employer's contributions for funded plans and benefit disbursements for unfunded plans, amounted to €66,166,000 (2021: €30,258,000).

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

	2022	2021
Discount rate	3.70%	1.13%
Expected inflation rate	2.32%	1.99%
Future salary increases	3.35%	3.11%
Expected medical cost trend rate	2.63%	2.43%

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)	2022	2021
Present value of funded obligations	(412,592)	(522,658)
Fair value of plan assets	396,325	417,981
	(16,267)	(104,677)
Present value of unfunded obligations (principally made of medical plans)	(39,096)	(63,822)
Net pension deficit	**(55,363)**	**(168,499)**

The value of assets in all plans were:

	2022			2021		
(€'000)	Quoted	Unquoted	Total	Quoted	Unquoted	Total
Equity instruments						
- European equities	552	-	552	46,020	-	46,020
- Global equities	168,819	-	168,819	125,265	-	125,265
- Emerging markets equities	16,329	-	16,329	16,415	-	16,415
- European real estate equities	12,932	-	12,932	13,636	-	13,636
Debt instruments						
- EMU government bonds	74,757	-	74,757	81,033	-	81,033
- EMU corporate bonds	67,073	-	67,073	72,469	-	72,469
- Euro inflation-linked bonds	15	-	15	17	-	17
Property	3,013	-	3,013	3,371	-	3,371
Cash and cash equivalents	644	-	644	1,204	-	1,204
Qualifying insurance policies	-	845	845	-	836	836
Other	51,346	-	51,346	57,715	-	57,715
Total market value of assets	**395,480**	**845**	**396,325**	**417,145**	**836**	**417,981**

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 2022		**62,096**	**-**	**62,096**	**524,384**	**(417,981)**	**106,403**	**-**	**168,499**
Current service cost	IX	2,476	-	2,476	27,921	-	27,921	-	30,397
Net interest expense/(income)	VI	679	-	679	5,472	(4,350)	1,122	-	1,801
Income statement		**3,155**	**-**	**3,155**	**33,393**	**(4,350)**	**29,043**	**-**	**32,198**
Remeasurements									
Return on plan assets (excluding interest)		-	-	-	-	70,233	70,233	-	70,233
Experience (gains)/losses		(2,090)	-	(2,090)	25,812	-	25,812	-	23,722
(Gains)/losses due to change in demographic assumptions		-	-	-	717	-	717	-	717
(Gains)/losses due to change in financial assumptions		(25,166)	-	(25,166)	(147,995)	-	(147,995)	-	(173,161)
Exchange differences		-	-	-	(29)	-	(29)	-	(29)
Statement of other comprehensive income		**(27,256)**	**-**	**(27,256)**	**(121,495)**	**70,233**	**(51,262)**	**-**	**(78,518)**
Employer's contributions		-	(543)	(543)	-	(65,623)	(65,623)	-	(66,166)
Exchange differences		-	-	-	(2,571)	1,921	(650)	-	(650)
Benefit payments		(543)	543	-	(19,475)	19,475	-	-	-
At 31 December 2022		**37,452**	**-**	**37,452**	**414,236**	**(396,325)**	**17,911**	**-**	**55,363**

		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		-	-	-	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**

The weighted average duration of the defined benefit obligations is 12.6 years (2021: 16.9 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 2023 are €34,791,000.

The cumulative actuarial loss recognised in other comprehensive income as at 31 December 2022 was €13,089,000 (2021: €91,607,000).

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	(10.9%)	12.6%
Salary increase rate	9.4%	(9.4%)
Inflation rate	6.4%	(6.4%)
Medical trend rate	1.8%	(1.5%)

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	2022	2021
Amount credited/(charged) through equity	XII	19,322	(12,177)
Amount credited/(charged) through the income statement	XII	8,583	773
Exchange differences		176	(44)
Increase/(decrease) in deferred tax asset		**28,081**	**(11,447)**

XXIII. Share-based payments

The plan grants certain eligible members of management of Euroclear SA/NV certificates (which represent shares of Euroclear Holding SA/NV) as part of their remuneration. The purpose of the plan is to align the interests of the beneficiaries with the long-term interests of the shareholders of Euroclear Holding SA/NV.

In the year 2022, Euroclear SA/NV has acquired Euroclear Holding SA/NV shares which have been transferred to STAK Euroclear, a foundation established as an administration office under application of the Certification law. In exchange for the transferred Euroclear Holding SA/NV Shares, STAK Euroclear has issued certificates, each certificate representing one Euroclear Holding S.A. share.

Fixed remuneration

On top of the fixed cash remuneration, Euroclear may grant additional fixed remuneration in the form of certificates, which are earned and awarded on a quarterly basis. Since the share-based payment plan has no vesting conditions, each award vests immediately after each quarter-end. Each award happens at the actual fair value of the certificates at the end of each respective quarter.

Where fixed cash is actually paid every month, fixed certificates earned on a quarterly basis are blocked for a period of 3 years as from the quarter in which they were earned. After the 3-year restriction period, beneficiaries can either sell the vested certificates, either retain them for future sale.

The plan rules foresee a liquidity mechanism whereby it is agreed that the beneficiaries can only sell to Euroclear SA/NV which is committed to buy back the certificates from the beneficiaries according to a transparent pricing mechanism, once such certificates are mature to sell or at any later moment upon the discretion of the beneficiary within the limits of the plan.

The sale price of certificates shall correspond to their actual fair market value. Upon acquisition of the certificates, Euroclear SA/NV will retain them for future share-based remuneration.

Any dividend paid by Euroclear Holding SA/NV in relation to Euroclear Holding SA/NV shares represented by certificates are paid to STAK Euroclear and transferred to the certificate holders within a pre-determined period. The dividends are locked up for a period of equal to the (remaining) lock-up period of the underlying certificates held by the beneficiaries

Variable remuneration

In line with the EBA Guidelines on sound remuneration, variable remuneration is paid in cash or instruments and subject to deferral rules as per regulation. The deferral period is at least 4 years (5 years for MC members) and the deferred portion is at least 40% (60% if bonuses exceed €200,000).

The actual payment of any deferred compensation, no matter whether it qualifies as upfront instruments or deferred cash/instruments, is subject to the malus & claw-back provisions included in the deferred compensation plan. The value of outstanding variable remuneration can be adjusted either discretionarily upon decision of the Board of Directors within a 20% limit in plus or in minus, either on the basis of the evolution of the underlying share price over the reference period. For ESA MC members, as from performance year 2021, the instruments related portion of variable compensation will be settled in certificates upon the award date at the fair market value of the underlying share at the end of the performance year which proceeds the award date.

As at 31 December 2022, the expense recognised for employee services received during the year amounts to €480,000 for fixed remuneration (2021: €0) and €923,750 for variable remuneration (2021: €0) (see note IX). 84 shares have been released for fixed remuneration for a total amount of €208,000. The outstanding liability for fixed remuneration amounts to €104,000 (2021: €0) and €923,750 for variable remuneration (2021: €0) (included in Other liabilities).

XXIV. Share capital and share premium

		(€'000)		
Issued, allotted and fully paid share capital	**Number of ordinary shares**	**Share Capital**	**Share Premium**	**Total**
At 1 January 2022	**3,147,463**	**3,147**	**943,441**	**946,588**
Movements	-	-	-	-
At 31 December 2022	**3,147,463**	**3,147**	**943,441**	**946,588**

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

XXV. Treasury shares

€'000	Number of shares	Total
At 1 January 2022	**-**	**-**
Acquisition of shares	6,000	12,441
Employee share scheme issue	(84)	(174)
At 31 December 2022	**5,916**	**12,267**

Treasury shares are own equity instruments that have been purchased by Euroclear SA/NV from shareholders in April 2022 (6,000 shares acquired for a total amount of €12,441,000). These shares are held by STAK Euroclear who has issued units in exchange of the shares. The units will be used for a share-based payment program for the benefit of senior management of Euroclear SA/NV (see note XXIII).

XXVI. 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 2022		**250,359**	**10,517**	**(5,341)**	**18,238**	**(30,409)**	**115,869**	**359,233**
Fair value adjustments	XIII, XV	(94,680)	(240,904)	(64,851)	-	-	-	(400,435)
Deferred tax on fair value adjustments	XII, XV	3,774	59,731	16,213	-	-	-	79,718
Foreign currency translation differences		-	-	-	-	(29,858)	-	(29,858)
Transfer to legal reserve		-	-	-	-	-	7,669	7,669
At 31 December 2022		**159,453**	**(170,656)**	**(53,979)**	**18,238**	**(60,267)**	**123,538**	**16,327**

(€'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**

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.

XXVII. Dividends paid

€ per share	2022	2021
Equity paid	**88.50**	**164.80**
(€'000)		
Equity paid	**278,550**	**518,702**

Euroclear Holding SA/NV paid a, interim dividend of €278,550,000 (€88.50 per share) in October 2022 (2021: €518,702,000).

XXVIII. Contingent liabilities and commitments

(€'000)	2022	2021
At 31 December		
Collateral pledged, of which:	3,855,119	4,151,843
- Own assets	279,077	630,347
- Re-use of collateral received	3,576,042	3,521,496
Financial guarantees	11,507,515	11,031,321
Loan commitments	2,088	2,526

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 €249,803,000 (2021: €601,261,000) and the reuse of securities received as collateral for reverse repurchase agreements from participants with a market value of €3,576,042,000 (2021: €3,521,496,000); There was no exposure at 31 December 2022 (2021: €0);
- a bank deposit of €4,074,000 pledged by Euroclear SA/NV to a landlord (2021: €3,887,000) ; and
- Other operational pledged deposits for a total amount of €25,200,000 (2021: €25,200,000).

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).

XXIX. Lease commitments

	2022			2021		
(€'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:	**53,244**	**134**	**228**	**36,611**	**113**	**3**
- up to one year	15,506	134	228	13,163	104	1
- later than one year and not later than five years	37,738	-	-	23,185	9	2
- over five years	-	-	-	263	-	-

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

(€'000)	Notes	2022	2021
Net interest income	VI		
Interest expenses on lease liabilities		356	463
Administrative expenses			
Depreciation expenses		20,352	18,006
Expenses from low-value assets		1,074	542
Expenses from sotware leases		24,278	19,952
Expenses from car leases (including non-lease components)		10,533	9,388

XXX. 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.

	2022			2021		
(€'000)	Other group companies	Joint ventures and Associates	Total	Other group companies	Joint ventures and Associates	Total
Assets						
Loans and advances at amortised cost	3,382	-	3,382	917	-	917
Non-trading financial assets mandatorily at FVPL	5,039	-	5,039	4,335	513	4,848
Other assets	20	-	20	17	-	17
Investments in subsidaries and joint ventures	-	18,781	18,781	-	-	-
Total assets	**8,441**	**18,781**	**27,222**	**5,269**	**513**	**5,782**
Other liabilities	-	3,821	3,821	-	-	-
Income statement						
Interest income	303	26	329	155	13	168
Other operating income/expense	235	-	235	206	-	206
Impairment	(6,994)	-	(6,994)	(2)	(800)	(802)
Total income statement	**(6,456)**	**26**	**(6,430)**	**359**	**(787)**	**(428)**
Off-balance sheet						
Liquidity facility given	(1,127)	-	(1,127)	(1,190)	-	(1,190)
Total off-balance sheet	**(1,127)**	**-**	**(1,127)**	**(1,190)**	**-**	**(1,190)**

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

XXX.1.a. Administrative support

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

XXX.1.b. Loans and liquidity facilities provided

In 2022, Euroclear SA/NV has granted additional loans of GBP 3,000,000 to Quantessence Ltd, bringing the total amount of loans with Quantessence Ltd to GBP 7,350,000, of which GBP 4,400,000 are convertible.

XXX.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)	2022	2021
Short-term employee benefits	30,908	28,509
Share-based payments	375	-
Post-employment benefits	3,259	3,105
Other long-term benefits	3,860	2,796
Termination benefits	-	370
Total compensation of key management	38,402	34,780
Emoluments of non-executive directors	5,078	5,295
Total compensation of key management and directors	**43,481**	**40,075**

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 amounting to €59,350 (2021: €74,000).

XXXI.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 ended 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 valuation and purchase price allocation exercises were initiated last year (provisional figures) and finalised in 2022, explaining the increase of the goodwill from €440,007,000 to €464,070,000.

(€'000)					
Total purchase consideration paid		**-**			**513,234**
	Notes	**Acquiree's carrying value**	**Fair value Preliminary 31/12/2021**	**Variance**	**Fair value Final 31/12/2022**
Assets					
Loans and advances at amortised cost	IV	117,836	117,836	-	117,836
Non-trading financial assets mandatorily at FVPL		311	311	79	390
Current income tax assets		155	155	-	155
Deferred income tax assets	XII	1,850	1,850	7,690	9,540
Other assets	XVI	182,109	182,109	(7,605)	174,504
Pre-payments and accrued income		11,877	11,877	(300)	11,577
Property, plant and equipment	XVII	1,393	1,393	3,481	4,874
Intangible assets	XVIII	29,530	29,530	(20,018)	9,512
Total assets		**345,061**	**345,061**	**(16,673)**	**328,388**
Liabilities					
Debt securities issued and funds borrowed	XX	(14,920)	(14,920)	-	(14,920)
Lease liabilities		(91)	(91)	(1,678)	(1,769)
Other liabilities	XIX	(250,334)	(250,334)	(1,533)	(251,867)
Accruals and deferred income		(7,280)	(7,280)	(3,242)	(10,522)
Current income tax liabilities		1,163	1,163	-	1,163
Provisions for liabilities and charges	XXI	(230)	(230)	(938)	(1,168)
Pension deficit	XXII	(141)	(141)	-	(141)
Total liabilities		**(271,833)**	**(271,833)**	**(7,391)**	**(279,224)**
Fair value of assets and liabilities acquired		**-**	**73,228**	**-**	**49,164**
Goodwill, representing residual amount of purchase consideration		**-**	**440,007**	**24,063**	**464,070**
Cash consideration		-	513,234		513,234
Total		**-**	**513,234**		**513,234**
Cash outflow on acquisition		-	(513,234)		(513,234)
Less: Cash and cash equivalents in subsidiaries acquired		-	117,836		117,836
Net cash outflow		**-**	**(395,398)**		**(395,398)**

The goodwill comprises the future profitability of the funds business, including expected synergies arising from the acquisition.

Acquisition-related costs of €16,889,000 are included in administrative expenses in the statement of profit or loss and in operating cash flows in the statement of cash flows as at 31 December 2021.

XXXII. 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. 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).

The sales transaction is expected to close in the first half of 2023, subject to customary closing conditions and regulatory approvals.

Fondab has contributed €844,000 of pre-tax profit in 2022 (2021: €115,000).

(€'000)	2022	2021
Non-current assets classifed as held for sale		
Tangible assets	448	371
Intangible ssets	916	729
Assets of disposal group classifed as held for sale		
Current income tax assets	322	187
Other assets	160	248
Pre-payments and accrued income	978	1,112
Total assets	**5,012**	**6,652**
Liabilities of disposal group classifed as held for sale		
Lease liabilities	79	190
Other liabilities	2,465	2,998
Accruals and deferred income	317	318
Current income tax liabilities	306	423
Total liabilities	**3,166**	**3,929**

XXXIII. Events after the balance sheet date

Euroclear continues to closely monitor the invasion of Ukraine by Russia, and to implement the various sanctions. 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. Future earnings linked to the sanctions will continue to depend on the prevailing interest rate environment and the evolution of the sanctions. The Board expects interest income to continue to grow materially as blocked payments and redemptions continue to accumulate in a rising interest rate environment, albeit at a slower pace in 2023.

In order to contain risks for its participants, Euroclear Bank informed them early February 2023 of the closure of its cash correspondent account in Russia and the withdrawal of rouble as a settlement currency. This means that money transfer instructions in rouble or any incoming rouble payments, including income and redemption events are consequently no longer processed through the account.

Statutory auditors' report

to the general shareholders’ meeting on the consolidated financial statements for the year ended 31 December 2022

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 5 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 2022, 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 127 638 985 (000) EUR and the consolidated statement of comprehensive income shows a profit for the year then ended of 1 200 001 (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 2022 and of its consolidated results and 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.

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: 31-mrt-2023 | 16:26 CEST
C: BE
Issuer: Citizen CA
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Deloitte Bedrijfsrevisoren/Réviseurs d'Entreprises BV/SRL
Represented by Yves Dehogne