

The Integrated Firm-Level Database (IFLD): a new microdata infrastructure for analysing Austrian firms

Structure and first empirical insights for 2021

The Integrated Firm-Level Database (IFLD) combines administrative and supervisory data on Austrian firms into a unified microdata infrastructure. Its key innovation is that it links previously fragmented information on firm characteristics, financial statements, bank lending, ownership and insolvencies within clearly defined firm populations. The IFLD reveals that the Austrian economy is dominated in number by small firms, while economic activity and financing are highly concentrated among relatively few firms. Ownership is often concentrated among a small number of owners, predominantly natural persons.

Authors

Helmut Elsinger, Pirmin Fessler,
Aleksandra Riedl, Philipp Roderweis,
Stefan Trapp
Oesterreichische Nationalbank
Research

Laura Fehring, Bernhard Fuchs,
Reinhard Iser, Thomas Kemetmüller,
Barbara Riedrich, Lukas Simhandl, Stefan
Wiesinger
Oesterreichische Nationalbank
Statistics Department

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Corresponding authors

pirmin.fessler@oenb.at
aleksandra.riedl@oenb.at

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Small firms dominate by number

The majority of Austrian non-financial firms are very small. Among firms subject to disclosure requirements for which information is available, the median firm has two employees, an annual turnover of around EUR 369,000 and total assets of around EUR 547,000. A comparatively small number of large firms account for much of economic activity.



Direct bank financing is limited

Only around 36% of Austrian non-financial firms have a loan from an Austrian credit institution. Also, bank lending is highly concentrated, with a small share of borrowers accounting for the bulk of outstanding credit.



Ownership patterns differ sharply by firms' economic weight

In 62% of limited liability companies, the majority shareholder is a single natural person. At the same time, firms majority-owned by a single legal person account for 79% of total assets. This shows that corporate ownership dominates among economically important firms.

1 Why we need the Integrated Firm-Level Database

Firm-level data play a central role in understanding the structure, resilience and financing of an economy (Bartelsman and Doms, 2000; Ahn, 2001). Contemporary empirical analysis, whether in the context of monetary policy, financial stability or structural economic research, depends on granular, well-defined and internally consistent microdata. Yet, in practice, information on Austrian firms is fragmented across multiple sources that differ in scope, quality, legal mandate and population coverage.

Why existing firm-level datasets are problematic

Privately available firm datasets are often subject to a fundamental limitation: the population they are drawn from or represent cannot be clearly determined, nor is it necessarily possible to assess whether that population is fully covered (Bajgar et al., 2020). Units missing from these datasets are not identifiable, and in most cases it is impossible to know how many firms are absent. Even for firms that are included, many data items are missing. These omissions are not random. They stem from legal, administrative, commercial or size-based selection mechanisms and therefore introduce systematic bias that cannot be corrected with the information typically contained in such datasets. Instead of defining and justifying a target population, researchers often merely state that they use a “large sample of firms”. A large sample does not necessarily constitute a representative population. When selection into the sample is systematic, estimates may be precise but biased and therefore not representative of the underlying population (Heckman, 1979; Kish, 1965). This concern is particularly relevant for commercial firm-level databases, which often suffer from substantial coverage and representativeness limitations. Researchers should therefore carefully assess and transparently document the implications for representativeness and inference, as systematic selection may yield estimates that are precise but systematically biased. When selection occurs at both the unit level (which firms are included at all) and the item level (which variables are reported and why others might be missing), external validity cannot be assessed, and any inference about the broader economy remains speculative or requires strong assumptions.

Why clearly defined target populations matter

A clearly defined and consistently applied target population is therefore not a technical detail but a prerequisite for meaningful firm-level analysis. Without knowing which firms are included, which are excluded and why, even highly granular datasets cannot provide reliable evidence about the structure of the corporate sector or the effects of economic policy. Defining transparent populations is particularly important when combining multiple administrative and supervisory data sources, as even small inconsistencies in population definitions can substantially affect empirical results as many distributions in this area are extremely skewed and firms are very heterogeneous.

The OeNB's comparative data advantage

The Oesterreichische Nationalbank (OeNB) has access to a combination of administrative, supervisory and statistical data sources that can be integrated for analytical purposes. It holds a uniquely broad and reliable set of firm-related information that can be combined with the Austrian Commercial Register (Firmenbuch) to define clear and economically meaningful target populations. This includes, for example, the universe of financial sector firms, the complete set of non-financial firms subject to disclosure requirements or all limited liability companies. Because these populations are fully observable, legally

defined and extensively documented, they provide a transparent and reproducible foundation for empirical work. The OeNB's Integrated Firm-Level Database (IFLD) combines these sources into a unified and harmonised dataset that defines explicit firm populations and provides consistent identifiers and variables across data sources.

The data the OeNB can integrate for clearly defined target populations are unique in several respects. Not only do they include firm demography and publicly available financial statements (elements also found in private datasets), they also cover all firms within the target population for which such information is not publicly available, ensuring complete population coverage. Beyond this, the OeNB can incorporate additional financial statement information collected both from banks and through regulatory channels and in-house research, as well as legally binding insolvency records and detailed ownership and corporate-governance relations.

The OeNB's most significant advantage, however, lies in its access to granular loan-level information. Under the supervisory reporting regime, the OeNB collects highly detailed information on the credit exposures of Austrian banks, including loan amounts, maturities, collateral and financing conditions. These data cover all firms that borrow from Austrian credit institutions. The combination of population coverage, ownership information and granular credit data makes the IFLD a uniquely comprehensive data infrastructure for analysing Austrian firms. This credit information is essential for understanding firms' financing structures, risk exposures, and the transmission of financial conditions to the real economy. In addition, detailed ownership and corporate-control networks allow us to identify economic groups and ultimate owners, which is crucial for analysing risk concentration, intra-group financing and the propagation of shocks across legally distinct but economically connected firms.

Why the integration of our data is challenging

The underlying sources on which the IFLD builds were never designed to function as a unified analytical system. They were created for different purposes, at different points in time and under different legal mandates. Most importantly, they were designed to capture information about individual entities, not to support the analysis of the entire underlying populations. As a consequence, they employ incompatible identifiers, heterogeneous variable names, divergent temporal structures and refer to different and often implicit or undefined target populations. In this fragmented environment, analysts could not combine these sources without substantial, error-prone preprocessing. Even minor inconsistencies can lead to different results. Such inconsistencies may refer to, e.g., how firms are matched across datasets, how missing values are handled, how legal forms are coded or which population filters are applied. The resulting discrepancies reduce reproducibility, impede comparison across studies and, ultimately, weaken the credibility of empirical findings (Becker et al., 2006).

What the IFLD changes

The IFLD is designed to provide a common framework for the use of multiple firm-related data sources. By providing a single, consistent and well-documented dataset with a clearly defined population and harmonised variables, it becomes possible for users from different areas within the OeNB to work from the same analytical foundation. This includes economists analysing firm financing or productivity, financial stability experts studying credit risk and insolvency dynamics, statisticians working on structural business statistics, supervisors assessing exposures of Austrian banks and managers requiring accessible and timely overview statistics.

Early empirical insights from the IFLD

Early empirical applications have already demonstrated the analytical value of the IFLD. Studies on the distribution of bank loans across Austrian non-financial firms and on insolvency dynamics have shown how a fully specified and transparent firm universe provides, for the first time, a comprehensive basis for rigorously addressing fundamental questions, such as the share of firms with bank loans at Austrian banks or the insolvency rate within a clearly defined population. In several cases, these analyses have uncovered empirical patterns that differ from common perceptions and merit further investigation (Elsinger et al., 2025; Hirsch et al., 2025). These examples illustrate the potential of the IFLD to inform economic research, financial stability analysis and policy discussions as the dataset continues to evolve.

Many of these early findings can be summarised in a small number of stylised facts about the Austrian corporate sector that become visible only through the integrated structure of the IFLD. Taken together, they highlight the importance of combining transparent firm populations with detailed information on financing structures, ownership networks and insolvency outcomes.

1. Austrian non-financial firms subject to disclosure requirements are predominantly very small: among the firms about which information is available, median employment is two workers, median annual turnover amounts to around EUR 369,000, median assets equal around EUR 547,000 and median return on assets is 3% (section 4.1).
2. Only around 36% of Austrian non-financial firms have a bank loan from an Austrian credit institution at the reporting reference date (sections 4.2, 5.4).
3. Non-revolving credit accounts for 82.5% of the outstanding nominal amount of loans to non-financial firms, consistent with a dominant role of longer-term financing (sections 4.2, 5.3).
4. In the full loans dataset, 80% of borrowers account for only around 5% of total outstanding nominal amounts, while a small fraction of borrowers account for the overwhelming majority. This population includes financial institutions, the central bank, foreign counterparties and other legal entities (section 4.2).
5. Vienna is home to nearly one third of Austrian non-financial firms, which account for 33.9% of their total firm-level effective liabilities even though only 24.4% of Viennese non-financial firms have loans (sections 3.3, 5.4).
6. Among non-financial firms subject to disclosure requirements for which the relevant information is available, around 18% report negative equity and 33% report losses (section 4.1).
7. Annual firm insolvency rates in Austria have remained low at roughly 1% of firms in recent years (sections 4.4, 5.1; Elsinger et al., 2025).
8. Austrian firms are overwhelmingly closely held: 57% have a single owner, and 94% have three or fewer owners (sections 4.3, 5.2).
9. Although a single natural person is the majority shareholder in 62% of limited liability companies, companies majority-owned by a single legal person account for 79% of total assets (sections 4.3 and 5.2).
10. The Austrian corporate sector forms a highly interconnected ownership and governance network comprising more than 780,000 relationships between stakeholders and firms (sections 4.3, 5.2).

Implications for policy analysis and research

These stylised facts illustrate that the Austrian corporate sector consists of a very large number of mostly small firms, while economic activity, financing and ownership are concentrated among a comparatively small number of economically important firms. They show, for example, that many legally registered firms appear economically small when measured by employment, assets, turnover or bank borrowing, that bank lending and corporate ownership are highly concentrated, and that simple firm counts can therefore provide a misleading picture of economic relevance. This is particularly important for the interpretation of indicators such as insolvency rates, where the number of affected firms may differ substantially from the amount of employment, assets or bank credit involved. They also demonstrate that many economically relevant relationships become visible only once firms can be consistently linked across data sources. The IFLD therefore provides a new empirical resource and foundation for policy analysis, financial stability monitoring, credit risk assessment and applied economic research.

Long-term vision and remaining challenges

Our long-term vision is to build an integrated data infrastructure that supports policy analysis, internal decision-making, aggregate statistics and academic research within a single coherent framework. By providing consistent and clearly defined firm-level information, it will also strengthen micro-macro consistency and serve as high-quality input into the production of macroeconomic statistics (Van de Ven, 2017). Achieving this requires a framework that is transparent, methodologically rigorous and fully aligned with the standards expected of an official statistical institution as well as academic research.

The current version of the IFLD is only a first step. Substantial work still lies ahead, in particular as regards missing-value treatment, weighting schemes, longitudinal extensions, modules on different additional topics and comprehensive documentation. An important by-product of this effort is that it reveals errors and structural weaknesses in the underlying register data and makes transparent which information cannot be reliably inferred under current data collection practices. By exposing these gaps, the IFLD may also contribute to more harmonised and coherent data-gathering processes in the institutions that serve as the ultimate sources of many inputs.

In this report, we therefore present the basic setup for one reference year, outlining the conceptual foundations and the structure of the four core data modules. Our aim is not only to document the current state but also to encourage feedback from the communities that produce and analyse such data. In doing so, we hope to contribute to greater transparency along the entire chain: from the original recording of information in administrative registers to its final use in empirical analysis. This dialogue will help ensure that the IFLD evolves in a way that maximises its analytical usefulness, adaptability and long-term sustainability.

The remainder of this report is structured as follows. Section 2 sets out the architecture of the IFLD, offering a concise overview of its underlying data sources, the four core data frames, their structure, coverage, mergeability, documentation and time coverage, as well as the firm populations represented in the database. Section 3 examines the demographic structure of Austrian firms and defines the analytically relevant populations used throughout the report. Section 4 summarises key descriptive patterns across the four data frames. Section 5 illustrates the analytical potential of combining these data sources. Section 6 provides an outlook on the further development of the IFLD, and section 7 concludes.

2 The IFLD at a glance

2.1 Project overview

The IFLD is a joint initiative of the Statistics and Economic Analysis and Research Departments of the OeNB. Its objective is to compile a well structured, well documented and directly usable firm-level dataset that supports internal analytical work and academic research. The IFLD does not generate new data; it integrates and harmonises existing sources available to the OeNB into a consistent, accessible and analytically versatile framework. The resulting database covers firm demography, financial statements, granular bank lending, ownership networks and insolvency proceedings. Particular emphasis is placed on high data quality through careful variable selection from the most reliable sources, transparent documentation and precise matching across datasets.

2.2 Key variables and data frames

The IFLD is a microlevel database currently comprising four main data frames, each with a different unit of observation. Together, these frames provide a comprehensive and interlinked view of Austrian firms and their financial, structural and ownership characteristics.

Firms – This frame forms the core of the IFLD and contains firm-level information such as legal form, address, industry (NACE classification¹), institutional sector (ESA 2010 classification²), number of employees and balance sheet variables. Firm demography and financial statement information primarily originate from the public Austrian Commercial Register (“Firmenbuch”, maintained by the competent Commercial Register court), based on data extracts maintained by the OeNB. We complement missing or supplementary financial statement information using the SABINA annual financial statement database (Bureau van Dijk, a Moody’s company). Additional firm characteristics are compiled from multiple data sources, with information from different sources combined where appropriate to maximise coverage³.

Loans – The loan-level dataset contains detailed information on credit relationships between Austrian banks and domestic firms (including banks). The unit of observation is the loan-debtor level, with data originating from the national granular credit register maintained by the OeNB⁴. It provides confidential information on loans granted by Austrian credit institutions to legal entities, including amounts, maturities and other loan characteristics.

Networks – This frame captures both ownership and governance relationships between firms and connected parties. The unit of observation is a single link, covering ownership relations between firms and their shareholders (natural or legal persons) as well as governance relations with executive bodies such as managing directors, general partners and limited partners. The information is derived from OeNB-maintained data extracts from the Austrian Commercial Register. It enables the identification of direct and indirect ownership structures, corporate groups, cross holdings and governance arrangements. The network information is available for nearly all limited liability companies (Gesellschaft mit beschränkter

¹ Regulation (EC) No 1893/2006.

² ESA Regulation (EU) Nr. 549/2013.

³ For example, the NACE classification is obtained from Statistics Austria. Variables such as turnover and the number of employees are compiled from multiple sources, including the Austrian Commercial Register, Statistics Austria, bank reporting data, balance-of-payments statistics and SABINA.

⁴ [Granular credit data - Oesterreichische Nationalbank \(OeNB\)](#).

Haftung – GmbHs), which constitute the largest and economically most relevant group of firms covered by the IFLD.

Insolvencies – This frame records firm insolvency events. The unit of observation is the insolvency case. The information is obtained from the Austrian legal notices database (Ediktsdatei⁵), which publishes official court notices on insolvency proceedings. It covers bankruptcies, restructuring proceedings and cases where proceedings were rejected due to insufficient assets. These data allow users to track firms' exit dynamics and link insolvency events to firm and financial characteristics.

Together, these four data frames constitute the foundation of the IFLD. Their consistent structure and shared firm identifiers allow us to merge them seamlessly, facilitating multi-dimensional analyses that combine firm characteristics, financing relationships, ownership networks and insolvency outcomes. Their modular design also allows us to integrate additional data frames as new analytical needs arise. At the moment, we are planning modules for bank balance sheets, risk profiles of firms and municipalities as well as modules that serve the production of certain macroeconomic statistics.

2.3 Merging

All data frames within the IFLD are mutually mergeable, even though their units of observation differ across frames. Each dataset contains a consistent firm identifier that allows users to link loans, ownership relations or insolvency events to the corresponding firm in the firms frame. The IFLD's modular structure also facilitates future extensions, as additional datasets on firm characteristics can be seamlessly integrated using the same linking framework.

2.4 Codebook

A central feature of the IFLD is its standardised variable structure. All variables follow consistent naming conventions; they are accompanied by detailed descriptions and are fully documented in a comprehensive codebook that maps variable definitions across data frames. This standardisation ensures that users can work on a common, well prepared and easily accessible foundation, allowing results to be produced in a methodologically consistent and comparable manner. The codebook is detailed enough to be informative without being overly technical and transparently includes links to the original sources, allowing users to gather additional information if needed.

2.5 Time coverage

The IFLD is designed to provide annual coverage for most data frames. At present, the dataset includes one complete reference year – 2021 – which serves as the basis for the analyses presented in this report. The database will be gradually extended to include additional years, both preceding and following 2021. For the years to come, users should be aware that the most recent reference year will become available with a time lag. The integration of financial statement data – an integral component of the firms frame – depends on their publication in the Commercial Register, a timing that varies across firms. To ensure that the greatest possible number of financial statements is included, the IFLD typically applies a cut-off date approximately 1.5 years after the end of the reference period.⁶

⁵ [Ediktsdatei](#).

⁶ Pursuant to § 277(1) – (2) Austrian Commercial Code (UGB), annual financial statements must generally be disclosed within nine months after the balance sheet date. Exceptions may apply in certain cases.

2.6 Firm population

The IFLD covers entities that (1) are classified to the corporate sectors S.11 (non-financial corporations) or S.12 (financial corporations) under the European System of Accounts (ESA 2010); (2) were registered in Austria's Commercial Register at some point during the reference year; and (3) are legally independent entities with their registered seat in Austria. By relying on the ESA 2010 sector classification, the dataset ensures conceptual consistency with national accounts definitions.

Within the non-financial sector, a further methodological distinction is made between all non-financial firms and those subject to disclosure requirements under Austrian law. The latter group forms the relevant population for analyses based on financial statements. This structure provides full transparency regarding population boundaries and coverage and enables a systematic assessment of missingness at both the unit and item level, an essential prerequisite for understanding selection mechanisms, evaluating data quality and ensuring the robustness of empirical results. The composition and characteristics of these firm populations are described in detail in section 3.

3 Firm demography

A defining feature of the IFLD is its careful delineation of firm populations, which ensures that analyses are based on clearly defined and economically meaningful units. Establishing such target populations makes explicit which parts of Austria's corporate landscape are covered by the database and provides the foundation for interpreting empirical results within the correct economic context. Maintaining a consistent population over time is equally important: Only if the underlying definition of the population remains stable can changes in financial indicators or firm behaviour be attributed to genuine economic developments rather than to shifts in coverage. Clear population definitions also enhance the comparability of the IFLD with other statistical sources, such as the national accounts or structural business statistics (see box 1).

Within this framework, the firms data frame serves as the core reference layer of the IFLD. It defines the universe of firms included in the database and provides the linking point for all other data frames through unique firm identifiers. Each observation corresponds to a single legal entity, allowing us to consistently link information from other sources – such as loans, ownership links or insolvencies – to the same firm. The well documented and transparent population structure also enables users to identify relevant subpopulations for specific analytical purposes, such as focusing on non-financial firms or on entities subject to disclosure requirements.

Box 1: Firms in the IFLD and statistics provided by Statistics Austria¹

The IFLD uses a legally defined population of firms derived from the Austrian Commercial Register. In line with national accounts conventions, the dataset focuses on the corporate sectors S.11 (non-financial corporations) and S.12 (financial corporations) and excludes sole proprietorships, which belong to the household sector (S.14). Firms in the IFLD are therefore legally constituted entities such as corporations and partnerships with legal capacity and clearly defined legal boundaries. This definition has the advantage that, within the corporate sector, the population of firms is determined exclusively by legal criteria. The establishment and dissolution of firms are explicitly regulated through registration in, and deletion from, the Commercial Register. Consequently, all firms in the IFLD were registered in the Commercial Register at any point during the reference year. The definition of the population is therefore independent of whether a firm is economically active in a given year. Questions regarding economic relevance, size or activity can subsequently be addressed through transparent analytical filters applied to the data. Statistics Austria publishes several firm statistics based on the statistical business register (SBR), most prominently the [structural business statistics](#) and the [business demography](#). These statistics typically focus on so-called active enterprises, defined as enterprises that generated turnover during the reporting year and/or employed at least one employee (Freundl, Zach and Mayr-Birklbauer, 2024). This definition is well suited for many analytical and policy-oriented applications, as it concentrates on economically active units in a narrow operational sense. In practice, limited liability structures are frequently used for non-commercial purposes such as tax optimization, intergenerational wealth transfer or shielding personal assets from claims in divorce or litigation cases. This is especially relevant in jurisdictions like Austria, where private foundations and limited liability companies serve as legally sanctioned asset protection tools (Schwank, 2013; Alexander and Klemmer, 2009). The statistical unit underlying these statistics therefore differs conceptually from the legal entity used in the IFLD. Since the implementation of the European Business Statistics (EBS) framework, Statistics Austria's business statistics are based on the statistical enterprise (see [Standarddokumentation](#), section 2.1.2), defined as the smallest combination of legal entities with a sufficient degree of decision-making autonomy. Several legal entities may therefore be combined into a single statistical enterprise if they do not operate autonomously. Conversely, the registration of a new legal entity does not necessarily correspond to the birth of a new enterprise. While annually published firm statistics typically refer to these active statistical enterprises, Statistics Austria maintains the full underlying statistical business register (SBR) of legal units, which we used for a comparison. The results show a very high degree of overlap between the two populations. Of the 258,871 firms in the IFLD population, 254,749 are also present in the Statistics Austria register, which corresponds to a match rate of 98.4% (see table B1). Also, these differences are largely explained by differences in timing conventions. While the Statistics Austria counts are based on the most recent status in 2021, the IFLD includes all firms that were present in the register at any point during the year. Firms that were created and dissolved within the same year may therefore appear in the IFLD but not in the Statistics Austria counts. Only 197 firms and therefore less than 0.08% are present in the database of Statistics Austria but not in the IFLD. Overall, the comparison confirms that the IFLD population closely corresponds to the underlying firm population recorded by Statistics Austria. At the same time, the IFLD's legally based population definition ensures that the dataset captures the full universe of corporate legal entities, independent of their current level of economic activity.

Table B1

Comparison of IFLD firm population with Statistics Austria's statistical business register (SBR)

Legal form	IFLD	Statistics Austria	Present in IFLD but not in Statistics Austria	Present in Statistics Austria but not in IFLD	Share matched in %
Cooperative (Erwerbs- und Wirtschaftsgenossenschaft)	1,752	1,734	18	0	99.0
Stock corporation (AG)	988	977	15	4	98.5
European Company (Europäische Gesellschaft (SE))	19	17	2	0	89.5
European Cooperative Society (Europäische Genossenschaft (SCE))	3	2	1	0	66.7
European Economic Interest Grouping (Europ. Wirtschaftliche Interessensvereinigung)	28	25	3	0	89.3
General partnership (OG)	23,358	22,868	570	80	97.6
Limited liability company (GmbH)	183,663	181,097	2,637	71	98.6
Limited partnership (KG)	46,006	45,188	856	38	98.1
Mutual insurance corporation (Versicherungsverein auf Gegenseitigkeit)	10	10	0	0	100.0
Mutual savings bank (Sparkasse)	22	22	0	0	100.0
Other legal entity (Sonstige)	9	8	2	1	77.8
Private foundation (Privatstiftung)	3,013	2,998	18	3	99.4
All	258,871	254,946	4,122	197	98.4

Note: "Limited partnership" (KG) includes GmbH & Co KG, and "general partnership" (OG) includes GmbH & Co OG, as these legal forms cannot be distinguished in the register. For comparison, Statistics Austria applied the IFLD population definition to its register (ESA 2010 sectors S.11 and S.12, registered in the Commercial Register in 2021, and legally independent entities resident in Austria), using the most recent status in 2021. In contrast, the IFLD counts all firms that were present in the register at any point during 2021, which explains why some firms appear in the IFLD but not in the Statistics Austria counts.

Source: IFLD 2021, OeNB, Statistics Austria.

1 We are very grateful to Sabine Zach, Hanna Freundl, Valerie Mayr-Birklbauer, Florian Sternat and Thomas Stockinger-Glatz (all Statistics Austria) for their generous support and very helpful cooperation in preparing this box and compiling the statistics reported in table B1.

3.1 Definition of firm populations in the IFLD

Defining what constitutes a "firm" is not straightforward, as the term carries different meanings depending on the institutional and legal context. In company law, accounting regulation and national accounts, the boundaries of economic entities are drawn according to different criteria. For the purposes of the IFLD, the target population is defined as legally independent resident enterprises that produce goods and/or services for the market. The database is deliberately designed to provide the broadest possible coverage of the corporate sector within these boundaries, allowing researchers to subsequently apply additional filters depending on the analytical perspective.

This definition is operationalised using a small set of transparent and observable criteria. Firms in the IFLD are identified as entities that

- (1) are classified to the corporate sectors (S.11, S.12) under the European System of Accounts (ESA 2010),
- (2) were registered in the Austrian Commercial Register⁷ at any point during the reference year, and
- (3) have their registered seat in Austria and thus qualify as resident entities.

In line with ESA 2010, sectors S.11 and S.12 comprise market-producing institutional units whose principal activity is the production of goods and non-financial services (S.11) or the provision of financial services (S.12). This sectoral scope delineates the IFLD firm population from the government sector (S.13), households (S.14) and non-profit institutions serving households (S.15).

⁷The Austrian Commercial Register (Firmenbuch) is regulated by the Austrian Commercial Code (Unternehmensgesetzbuch – UGB). The UGB defines which entities must register (§ 8 among others) and regulates public access to register entries (§ 9), while the Commercial Register Act (Firmenbuchgesetz – FBG) specifies who is entitled to register and what information must be recorded in the register.

Almost all entities classified to ESA sectors S.11 and S.12 possess a Commercial Register number and thus fall within the scope of the IFLD.⁸ For the IFLD 2021, the dataset includes all entities that were recorded as valid entries in the Commercial Register at any point during the reference year 2021. This also covers firms that entered insolvency proceedings or were dissolved during the year.

The IFLD only covers entities whose registered seat⁹ is in Austria. This has important implications for entries in the Austrian Commercial Register that relate to foreign entities. Foreign legal entities may appear in the Register and receive an Austrian Commercial Register number if they establish a branch in Austria. However, such entities are excluded from the IFLD because their registered seat remains outside Austria and they therefore do not qualify as resident entities. The same applies to branches of foreign firms because the seat of the registered legal entity is abroad. More generally, the IFLD does not include legally dependent entities, even if they appear in the Commercial Register.

In total, the IFLD covers 258,871 firms for the 2021 reference year, of which the overwhelming majority (250,590 firms) belong to the non-financial sector. The dataset includes all corporate legal forms common in Austria, such as corporations (stock corporations, limited liability companies, European Companies) and partnerships (general partnerships and limited partnerships), see table 1.

Table 1

Number of firms covered in the IFLD by legal form and ESA sector (S.11 and S.12)

Legal form	German term	Non-financial (S.11)	Financial (S.12)	Total
Cooperative	Erwerbs- und Wirtschaftsgenossenschaft	1,374	378	1,752
European Company	Europäische Gesellschaft (SE)	19	1	20
European Cooperative Society	Europäische Genossenschaft (SCE)	3	0	3
European Economic Interest Grouping	Europ. wirtschaftliche Interessenvereinigung	28	0	28
General partnership	Offene Gesellschaft (OG)	22,665	278	22,943
General partnership with limited liability	GmbH & Co OG	409	6	415
Limited liability company	Gesellschaft mit beschränkter Haftung (GmbH)	180,108	3,558	183,666
Limited partnership	Kommanditgesellschaft (KG)	33,417	545	33,962
Limited partnership with limited liability	GmbH & Co KG	11,811	233	12,044
Mutual insurance corporation	Versicherungsverein auf Gegenseitigkeit	0	10	10
Mutual savings bank	Sparkasse	0	22	22
Other legal entity	Sonstige	7	2	9
Private foundation	Privatstiftung	1	3,012	3,013
Stock corporation	Aktiengesellschaft (AG)	748	236	984
Total		250,590	8,281	258,871

Source: IFLD 2021, OeNB.

Sole proprietorships (Einzelunternehmen) are not part of the IFLD. While they may appear in small numbers in the Commercial Register – either because they exceed mandatory registration thresholds¹⁰ or register voluntarily –, sole proprietors are generally classified under the household sector (S.14) in national accounts rather than under the corporate sectors S.11 and S.12. This reflects the fact that sole proprietorships do not constitute separate legal entities: the business and its owner are legally identical,

⁸ The number of units classified to S.11 or S.12 that are not registered in the Austrian Commercial Register is estimated to be small. These units form a heterogeneous group, including quasi-corporations without separate legal personality (e.g. certain public market producers), associations (e.g. certain Sportvereine, Tourismusvereine), public law entities (e.g. certain Abwasserverbände), small mutual insurance associations (e.g. certain Versicherungsvereine) as well as investment and securities funds.

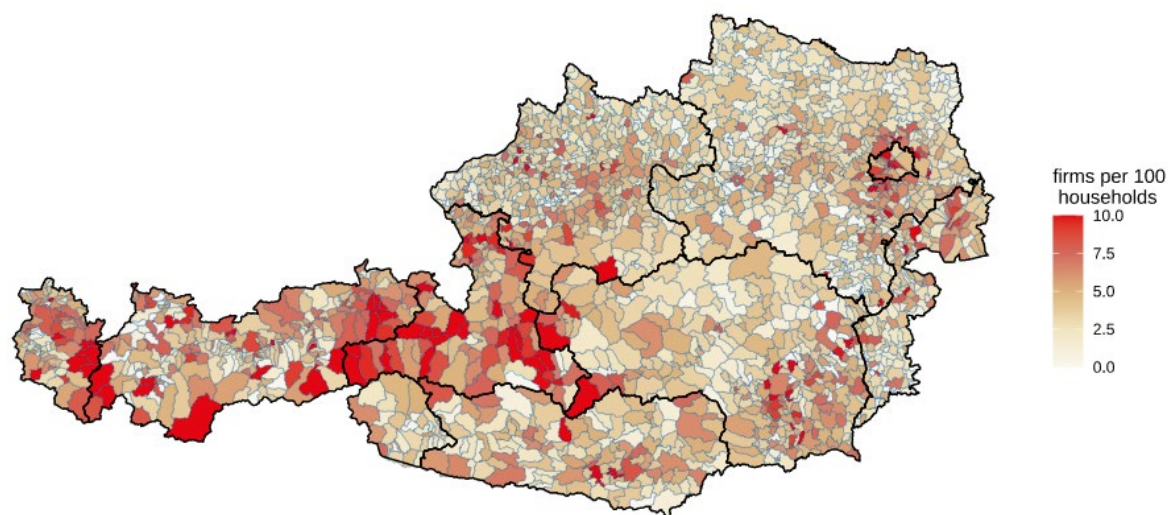
⁹ "Seat" refers to the municipality in which the legal entity has the centre of its operations or conducts its administration. Pursuant to § 3(1)(4) FBG, the seat must be recorded in the Austrian Commercial Register separately from the business address, which is the address relevant for service of documents.

¹⁰ See § 189 UGB for further details.

in the sense that assets and liabilities are held by the owner rather than by a distinct legal entity. The IFLD focuses on the corporate sector and excludes sole proprietorships by construction.

Figure 1

Firm density in Austria



Note: Value capped at 10 (92 municipality-values >10). Firm density over 100: 1. District of Vienna:191, Tweng: 113.

Source: OeNB (IFLD 2021), Statistics Austria (households per municipality).

The firm population described above is geographically distributed across Austria as shown in figure 1. The map displays firm density at the municipal level, measured as the number of firms per 100 households. Firm density is higher in the western part of the country, particularly in Salzburg, and lower in more rural areas in the east. High firm density is also observed in Vienna and along the corridor between southern Vienna and Graz.

3.2 Financial firms

The IFLD allows researchers to focus on specific subsets of firms that form a meaningful target population for distinct analytical questions. A useful subpopulation are financial firms. For certain research questions, such as the analysis of the domestic interbank market or the structure of financial intermediation, it is essential to focus exclusively on the financial sector, as is common practice in the literature (e.g. Iori et al., 2008; Boss et al., 2006).

Table 2 presents the number of financial sector firms in the IFLD for Austria, broken down by legal form and by ESA¹¹ sector classification. It reveals that banks (or, more generally, deposit-taking corporations), though present, constitute only a minority of the entities. Instead, the largest groups are financial auxiliaries and captive financial institutions, followed by other financial intermediaries and a small number of funds and insurance corporations. This distribution is consistent with the institutional structure of Austria's financial system, which is characterised not only by traditional banking institutions but also by

¹¹ [European system of accounts - ESA 2010 - Products Manuals and Guidelines - Eurostat.](#)

a large number of auxiliary and captive financial entities. In particular, the prominent role of private foundations within the captive financial institutions subsector reflects the importance of foundation-based ownership and asset-holding structures in Austria. At the same time, the high number of financial auxiliaries illustrates the relevance of specialised service providers supporting financial intermediation, corporate group structures and asset management activities.

Table 2

Number of financial firms by legal form and institutional sub-sector (ESA)

Legal form	Deposit-taking corporations	Investment funds (non-MMF)	Other financial intermediaries	Financial auxiliaries	Captive financial institutions	Insurance corporations	Pension funds	Total
Cooperative	350	0	6	15	7	0	0	378
European Company	1	0	0	0	0	0	0	1
General partnership	0	0	2	276	0	0	0	278
General partnership with limited liability	0	1	3	2	0	0	0	6
Limited liability company	9	6	566	2,494	483	0	0	3,558
Limited partnership	0	1	9	533	2	0	0	545
Limited partnership with limited liability	0	27	17	185	4	0	0	233
Mutual insurance corporation	0	0	0	0	4	6	0	10
Mutual savings bank	14	0	0	0	8	0	0	22
Other legal entity	0	0	1	0	1	0	0	2
Private foundation	0	0	0	0	3,012	0	0	3,012
Stock corporation	94	10	33	49	14	28	8	236
Total	468	45	637	3,554	3,535	34	8	8,281

Note: Financial sub-sectors are defined according to the ESA 2010 institutional sector classification system: 1220A–B (deposit-taking corporations, excl. central bank); 1240C–E (non-MMF investment funds); 1250B, C, E, H–K, Z (other financial intermediaries); 1260A–B (financial auxiliaries); 1270A–C, E (captive financial institutions); 1280A–D (insurance corporations); 1290 (pension funds).

Source: IFLD 2021, OeNB.

Since the vast majority of firms in the IFLD are non-financial (250,590 out of 258,871), and given their central role in the real economy, most descriptive analyses presented in this report will primarily concentrate on the non-financial sector.

3.3 Non-financial firms

The non-financial sector is typically analysed separately from the financial sector because its firms perform fundamentally different economic functions. Non-financial firms produce goods and non-financial services and are the primary source of investment and employment in the real economy, whereas financial institutions act as intermediaries of capital and risk. Their balance sheet structures, regulatory environments and macroeconomic transmission channels therefore differ substantially. At the same time, legal entities classified as non-financial firms do not necessarily correspond to operational firms in this narrow sense: as discussed in box 1, limited liability structures may also be used for holding, transferring or protecting assets and for other non-commercial purposes. By integrating firm characteristics with ownership and governance networks, the IFLD makes it possible to identify and analyse such structures. Thus, the IFLD does not equate legally registered non-financial firms with operational firms, neither does it exclude economically important ownership and asset-holding structures by restricting the population to operationally active firms. For most applications, it is therefore essential both to treat the non-financial sector as a distinct population and to distinguish between its legal definition and the economic activities and organisational functions of the entities it contains.

Table 3 provides an overview of the non-financial firm population in the IFLD, broken down by federal province and industry. The highest concentration is found in Vienna, which accounts for nearly one third of all firms, followed by Lower Austria, Upper Austria and Styria. Sectorally, most firms operate in business and professional services or trade, which underlines the central role of market-related services

in Austria's corporate landscape. Construction represents another key segment, consistent with its strong contribution to employment and capital formation in the real economy. In contrast, manufacturing, agriculture and mining comprise relatively few firms – a pattern typical for more capital-intensive industries with larger average firm size.

Table 3

Number of non-financial firms by federal province and industry

	Burgenland	Carinthia	Lower Austria	Upper Austria	Salzburg	Styria	Tyrol	Vorarlberg	Vienna	Total
Manufacturing (incl. agriculture and mining)	660	1,322	3,678	3,706	1,338	2,910	1,511	1,095	2,182	18,402
Utilities and energy	133	313	678	538	268	765	227	123	283	3,328
Construction	874	1,744	4,012	3,469	1,986	3,535	2,579	1,011	7,351	26,561
Trade	1,194	2,627	7,405	6,318	3,508	5,046	3,699	1,893	13,194	44,884
Transport and storage	228	483	1,301	974	714	1,168	832	347	3,368	9,415
Information and communication	230	524	1,647	1,548	760	1,495	766	341	6,050	13,361
Business and professional services	1,154	3,036	7,094	7,269	4,071	6,492	4,499	2,163	21,764	57,542
Real estate	723	2,181	4,521	4,478	2,945	5,525	3,314	2,129	14,988	40,804
Accommodation	516	1,584	2,129	1,885	2,521	2,330	3,321	1,009	7,055	22,350
Public, education, health and other services	363	855	2,102	1,537	1,002	1,812	1,007	436	4,265	13,379
NACE information missing	14	23	61	64	19	82	46	15	240	564
Total	6,089	14,692	34,628	31,786	19,132	31,160	21,801	10,562	80,740	250,590

Note: Firms are assigned to a federal province according to their business address. Industries are grouped according to a 10-sector classification based on OeNACE 2008 (NACE Rev. 2). The aggregation is defined as follows: manufacturing, agriculture and mining (A–B–C); utilities and energy (D–E); construction (F); trade (G); transport and storage (H); information and communication (I); business and professional services (M–N); real estate (L); accommodation (J); and public, education, health and other services (K–O–P–Q–R–S–T–U). Firms without valid NACE information are reported separately.

Source: IFLD 2021, OeNB.

Although detailed balance sheet information is not available for all non-financial firms (since many are not subject to disclosure requirements), the IFLD provides a core set of variables for which data coverage is nearly complete across the population, with only very limited item-level missingness. These include firm characteristics such as age, precise spatial identifiers, industry, legal form, sector, ownership links and bank-loan relationships. Based on these variables, the data can be used to study funding structures across industries and regions, to analyse regional economic patterns (such as spatial concentration, sectoral specialisation and insolvency rates) and to explore ownership relations (including group structures and the concentration of control and corporate networks). Once the IFLD is extended to provide a panel, it will also permit the analysis of firm dynamics, such as business entry, exit and survival over time. As shown in the following subsection, a smaller subpopulation of firms with public financial statements can then be used for more detailed financial analyses.

3.4 Non-financial firms subject to disclosure requirements

A useful subset of the IFLD for the purpose of analysing firms' financial situation are non-financial firms that are required to disclose their annual financial statements in the Austrian Commercial Register. The full population of 250,590 non-financial firms may be appropriate for analyses that do not require financial statement information. However, many firms – especially partnerships such as KGs or OGs – are not subject to an accounting obligation. Among those that are subject to an accounting obligation, not all are subject to a disclosure obligation, which requires firms to submit their annual financial statements to the competent Commercial Register court. It is therefore reasonable to focus on firms with a disclosure obligation when carrying out financial statement-based analyses and clearly identify them as the target population the analyses refer to.

This subset of firms is defined on the basis of firms' legal form as recorded in the Commercial Register. It includes all corporations (stock corporations, limited liability companies, European Companies) as well as certain partnerships that, due to their liability structure, are legally treated in the same way as

corporations. These include limited and general partnerships with limited liability (GmbH & Co KGs and GmbH & Co OGs, § 277 and § 221(5) UGB)¹². Strictly speaking, these companies are not separate legal forms, since they are registered simply as KGs or OGs. However, in the IFLD, they are reported separately to enable researchers to delineate the disclosure-relevant population. Their identification relies on information from the ownership network dataset, which allows partnerships to be filtered by liability rules. Specifically, we can identify those in which the general partner itself is a limited liability company (typically a GmbH), so that no natural person bears unlimited personal liability¹³. Owing to this liability arrangement, such entities are commonly referred to as capitalistic partnerships (“kapitalistische Personengesellschaften”), as they combine the legal form of a partnership with the limited liability structure typical of corporations and are therefore subject to the same disclosure requirements.¹⁴

Excluded from this target population are cooperatives. Although cooperatives form part of the non-financial sector and may occasionally submit annual financial statements to the Commercial Register court, they are not systematically included in the disclosure-based population. Under Austrian law, cooperatives are generally not subject to a disclosure obligation unless they exceed specific revenue thresholds (§22(6) Cooperatives Act (GenG))¹⁵. Due to data limitations, it is not feasible to consistently identify cooperatives that meet these criteria. To avoid potential misclassification and ensure a clearly delineated target population, cooperatives are excluded from the disclosure-based subset.

With this final subpopulation, which comprises corporations as well as capitalistic partnerships, the IFLD provides coverage of 193,095 non-financial firms that are subject to disclosure obligations, i.e. those most significant in economic terms. This is because companies with limited liability typically operate on a larger scale and carry greater economic weight, whereas partnerships with unlimited liability tend to be much smaller, e.g. in terms of employment. According to Statistics Austria’s 2021 census of local units of employment, partnerships (OGs and KGs, including those with limited liability) account for approximately 20% of all partnerships and corporations recorded in the census, yet represent only 12% of total employment within this group. Measured by workforce size, the disclosure-based subpopulation therefore captures the economically dominant share of firms.

Summing up, the IFLD enables researchers to filter non-financial firms by legal form and to identify those subject to disclosure obligations, thereby delineating a well-defined target population for financial statement analysis. Nevertheless, unit-level missingness remains within this subset: for a non-negligible number of firms, no balance sheet information is available at all. In 2021, financial statement data are missing for almost 18,000 firms – approximately 9.3% of the disclosure-based population (see table 4).

¹² <https://www.jusline.at/gesetz/ugb>.

¹³ For special forms of limited partnerships (KGs), see also Rieder and Huemer (2024; pp. 201 ff).

¹⁴ Disclosure requirements are imposed precisely on companies with limited liability, since their owners are shielded from personal liability; this obligation is intended to ensure transparency for investors, creditors, customers and other stakeholders.

¹⁵ [Genossenschaftsgesetz \(GenG\) - Gesamt - JUSLINE Österreich](#).

Table 4

Missingness of balance sheet information among non-financial firms with disclosure obligation by legal form

	Firms with disclosure obligation (total)	Missing balance sheet information	
		Legally active firms	Firms dissolved during 2021
European Company	19	3	1
General partnership with limited liability	409	43	9
Limited liability company	180,108	12,066	4,653
Limited partnership with limited liability	11,811	966	20
Stock corporation	748	107	28
Total	193,095	13,185	4,711

Note: Missing refers to firms for which no balance sheet item is available in the dataset. "Active firms" were legally registered at year-end 2021; "dissolved firms" ceased to exist during the reference year.

Source: IFLD 2021, OeNB.

The absence of annual financial statements may be attributable to a variety of reasons. For instance, the IFLD includes firms that entered insolvency proceedings, were dissolved or otherwise ceased operations during the reference year. While the legal obligation to prepare financial statements formally continues, firms that no longer conduct business or are in the process of being liquidated may, in practice, not prepare annual financial statements. In other cases, firms may fail to comply with their disclosure obligation despite having prepared annual financial statements. Throughout the report, we explicitly document and account for this missingness whenever financial statistics are presented.

4 Descriptives of key variables in the four data frames

This section describes in more detail the four data frames currently covered in the IFLD and provides descriptive statistics for key variables.

4.1 Firms: financial structure

The unit of observation in the firms data frame is the firm. In total, the dataset covers 258,871 firms in Austria in 2021 across the financial and non-financial sectors. Besides information such as legal form, geographical location, year of foundation and NACE industry classification, the core component of the firms data frame consists of financial statement information for non-financial firms that are subject to disclosure obligations.

The granularity of financial statement data – that is, the number of individual balance sheet variables firms are required to disclose – depends on firm size. Under the Austrian Commercial Code (UGB), the level of detail required for disclosure varies according to three criteria: number of employees, balance sheet total and annual turnover, in line with the EU Accounting Directive (2013/34/EU). Larger firms must publish a more detailed set of balance sheet items, whereas smaller firms are allowed to disclose a reduced version ¹⁶.

Within the IFLD, the minimum set of balance sheet items that must be disclosed by all non-financial firms subject to a disclosure obligation can be identified. The UGB defines 22 items that must be disclosed regardless of firm size. These items are listed in table 5. For each item, the table reports the number and

¹⁶See § 221 and § 277–281 UGB for further details ([Unternehmensgesetzbuch \(UGB\) - JUSLINE Österreich](#)).

share of firms with non-missing observations, along with the distribution of the reported values. The distinction between missing observations and reported zero values is essential: we calculate distributional statistics for firms with non-missing information while retaining genuine zeros as economically meaningful observations. For future aggregate statistics and population-level estimates, missingness will need to be addressed more systematically through model-based imputation methods and, where available, complementary information from other data sources.

Including these mandatory items, the firms data frame currently contains almost 50 balance sheet variables. Thus, it captures part of the broader set of items that certain firms are required to disclose. However, coverage for the additional items is much lower, as only a small share of Austrian firms falls into the relevant size categories so that they are required to disclose them. Since the size criteria that determine reporting obligations (number of employees, balance sheet total, turnover) are not yet fully available in the IFLD for all firms, it is currently not possible to identify which firms should be disclosing these additional items. As a result, we cannot make definitive statements about data availability among the subset of firms that are legally obliged to disclose more detailed information. This limitation reflects the present state of the dataset and may be addressed as coverage of the relevant variables improves over time.

Table 5

Availability and descriptive statistics of mandatory balance sheet items required for all non-financial firms with disclosure obligation (N=193,095) regardless of size, 2021

Balance sheet positions	Non-missing observations		Mean	P1	P25	P50	P75	P99
	Number	%	EUR thousand					
Balance sheet total	175,188	91	7,230	1	132	547	2,003	87,274
Fixed assets	173,480	90	4,569	0	4	79	710	52,872
Intangible assets	168,654	87	193	0	0	0	1	653
Tangible assets	172,130	89	1,814	0	0	30	406	24,139
Financial assets	168,257	87	2,661	0	0	0	16	25,047
Current assets	175,131	91	2,641	0	58	241	875	33,376
Inventories	168,843	87	535	0	0	0	59	8,321
Receivables and other assets	174,552	90	1,580	0	16	90	369	20,397
Securities of current assets	161,258	84	55	0	0	0	0	97
Cash on hand etc	173,862	90	502	0	4	34	173	5,920
Accrued income	169,596	88	32	0	0	0	4	265
Deferred tax assets*	5,271	3	1,053	0	41	136	439	17,071
Total liability	175,167	91	7,192	1	132	547	2,003	86,285
Equity capital	175,188	91	3,515	-1,398	11	122	608	43,971
Subscribed capital	164,009	85	237	5	18	35	36	2,250
Capital reserves	167,252	87	1,551	0	0	0	3	18,410
Retained earnings	166,225	86	426	0	0	0	0	1,841
Net income/loss	174,464	90	1,371	-3,303	-17	49	372	19,519
Profit/loss carried forward	172,241	89	878	-2,915	-10	8	219	13,344
Provisions	174,063	90	428	0	2	8	69	5,585
Liabilities	174,565	90	3,178	0	31	203	939	35,644
Passive deferred income	164,112	85	64	0	0	0	0	447

Note: The underlying administrative data occasionally contain information on specific balance-sheet items even when the corresponding aggregate item is not available. The table therefore reports the availability of each variable as delivered in the source data and no additional consistency adjustments were imposed.

*Most firms do not have to capitalize deferred tax assets. Consequently, this item is often absent from their balance sheets; however if recognized, it must be disclosed.

Source: IFLD 2021, OeNB.

Table 5 shows that coverage among mandatory items is not fully complete; potential explanations are discussed in section 3.4. Nevertheless, reporting rates remain high across all mandatory balance sheet items, ranging between 84% and 91%. The distributional statistics reveal substantial heterogeneity across firms. For many balance sheet items, the median is zero or close to zero, while the upper percentiles display very large values. In the case of total assets (i.e. balance sheet total), the mean exceeds the median by a factor of more than 13, highlighting the pronounced right-skewness of the firm size distribution in Austria.

Table 6 summarises key financial and structural indicators contained in the firms data frame. While table 5 documented the availability and distribution of mandatory balance sheet items, table 6 builds on these data to capture firms' capital structure and profitability, complemented by selected structural firm characteristics.

Table 6

Key figures of Austrian non-financial firms with disclosure obligation (N=193,095), 2021

Key figures	Non-missing observations	Negative values		Distributional measures						
	%*	%**		Mean	P1	P25	P50	P75	P99	
Equity ratio	173,890	90%	18%	52%	0%	24%	52%	80%	100%	
Return on assets (ROA)	170,964	89%	33%	-5%	-323%	-2%	3%	14%	95%	
Return on equity (ROE)	138,408	72%	24%	9%	-475%	0%	13%	38%	300%	
Age (years)	193,095	100%	0%	13	0	3	9	18	50	
Number of employees	151,374	78%	0%	15	0	0	2	8	209	
Turnover (EUR thousand)	145,864	76%	0%	5,726	0	79	369	1,461	75,196	

Note: Distributional measures (mean and percentiles) refer to the full sample of available observations. In the case of the equity ratio, they are reported only for non-negative values. *In % of all non-financial firms with disclosure obligation (193,095 observations). ** In % of all non-missing observations. The equity ratio is defined as equity over total assets (i.e., balance sheet total) ($\times 100$) and is computed only for firms with strictly positive total assets and non-missing values. Return on assets (ROA) is calculated as approximated current-year profit (net income minus profit carried forward) divided by total assets ($\times 100$) and is likewise defined only for strictly positive total assets and non-missing values. In 1,322 observations, total assets are zero or negative; consequently, neither the equity ratio nor ROA is reported for these firms. Return on equity (ROE) is defined as approximated current-year profit divided by equity ($\times 100$) and is computed only for firms with strictly positive equity and non-missing values. In 34,676 observations, equity is zero or negative, so no ROE is reported.

Source: IFLD 2021, OeNB.

The central indicator of a firm's capital structure is the equity ratio, which measures the share of assets financed by equity. As shown in table 6, the equity ratio is observed for around 90% of firms. The median equity ratio amounts to 52% (for firms with non-negative equity), indicating that half of firms finance at least half of their assets with equity. At the same time, approximately 18% of firms report negative equity. This observation is not merely an accounting feature but also carries legal implications under Austrian insolvency law. Under § 67 of the Austrian Insolvency Act, negative equity constitutes one of the two conditions¹⁷ relevant for establishing overindebtedness as an insolvency criterion. However, negative equity alone does not trigger insolvency proceedings. A firm must additionally exhibit a negative going-concern prognosis for the legal requirement of overindebtedness to be fulfilled. Moreover, negative book equity does not always mean that a firm is distressed. Cumulative depreciation and amortisation, for instance, can erode book equity over time without necessarily indicating weak underlying economic performance. Negative equity should therefore not be equated with insolvency. Nevertheless, its prevalence points to a meaningful lower tail in the capital structure distribution and highlights the presence of a non-negligible fraction of firms with limited equity buffers. The remaining firm characteristics reported in table 6 – employment, turnover and age – further illustrate the structure of the Austrian corporate sector. Employment and turnover figures reaffirm the dominance of small firms: the median firm employs only two employees and reports an annual turnover of EUR 369,000, whereas the mean turnover exceeds EUR 5.7 million, underscoring the pronounced right-skewness of the size

¹⁷ The other one is insolvency due to illiquidity.

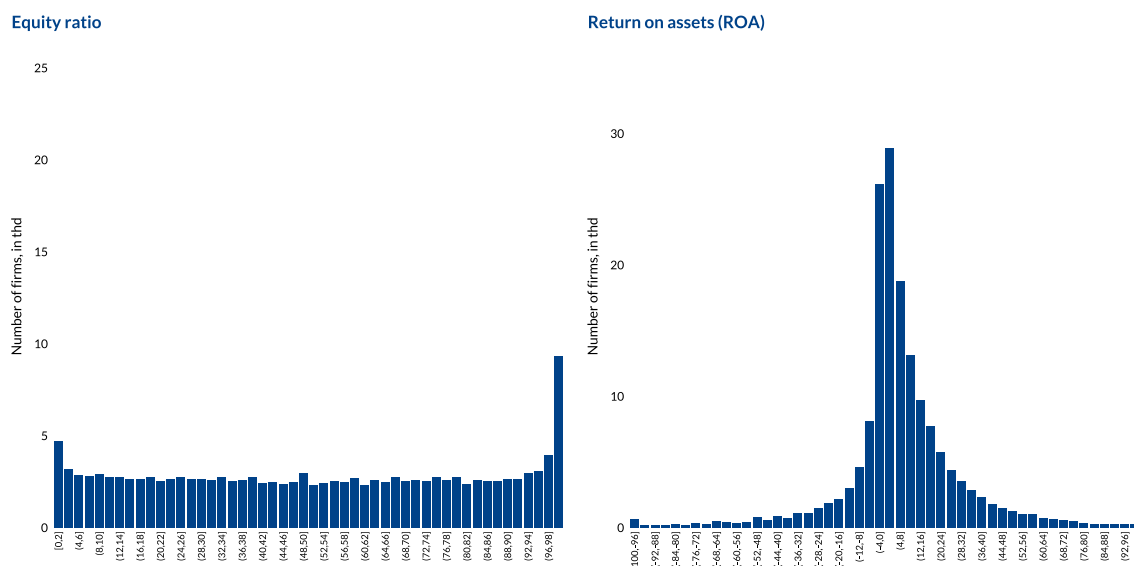
distribution. Firm age is less dispersed by comparison, with a median of nine years, indicating a mix of young and more established firms within the population.

Interestingly, the distribution of equity ratios across the economically interpretable range from 0% to 100% appears remarkably flat, with no pronounced concentration around a particular leverage level, as shown in chart 1 (left panel). If firms systematically targeted a common optimal capital structure, we would expect a visible mode in the distribution. Instead, equity ratios are spread rather evenly across the interval. Two notable clusters emerge, however: one at 100% and another just above 0%. The peak at 100% likely reflects the prevalence of corporate group structures in the dataset, where wholly-owned subsidiaries operate without external debt. The concentration close to 0% may reflect firms that remain marginally above negative equity, potentially to avoid the financial, contractual or legal implications associated with falling into negative book equity.

Turning to profitability, return on assets (ROA) measures how efficiently firms use their asset base to generate profits. It relates profits to total assets and therefore reflects returns generated by both equity- and debt-financed capital. ROA is available for 89% of firms. The median ROA amounts to 3%, indicating that the typical non-financial firm generates a modest positive return on its asset base. At the same time, 33% of firms report negative profits, implying that roughly one third of firms operated at a loss in the reporting year 2021. The distribution is highly dispersed: the lower tail is substantial, with large losses relative to assets in a small number of firms, while the upper tail shows that some firms achieve exceptionally high returns. As illustrated in the histogram (right panel of chart 1), the distribution of ROA is markedly different from that of the equity ratio. While equity ratios appear relatively evenly spread across their admissible range, ROA exhibits a pronounced concentration around zero profitability with the highest mass of observations in the interval between 0% and 4% and somewhat fewer firms in the adjacent negative and positive intervals. The substantial dispersion and heavy tails are consistent with considerable heterogeneity across firms in terms of business models, cost structures, financing patterns and exposure to shocks.

Chart 1

Capital structure and profitability of non-financial firms with disclosure obligation



Note: The equity ratio is defined as equity over total assets (i.e. balance sheet total) ($\times 100$) and is computed only for firms with strictly positive total assets and non-missing values. Return on assets (ROA) is calculated as approximated current-year profit (net income minus profit carried forward) divided by total assets ($\times 100$) and is likewise defined only for strictly positive total assets and non-missing values. In 1,322 observations, total assets are zero or negative; consequently, neither ratio is reported. For graphical presentation, the equity ratio is restricted to the interval $[0,100]$, the economically interpretable range of capital structure ($N = 141,771$). ROA is restricted to the interval $[-100,100]$, within which 95% of observations lie ($N = 164,415$), as extreme values would otherwise compress the distribution and obscure the main mass of observations.

Source: IFLD 2021, OeNB.

In contrast to ROA, return on equity (ROE) measures profits relative to equity capital only and thus captures the return earned on the owners' invested capital. ROE follows a similar overall pattern but displays even stronger dispersion. Because equity is comparatively small for many firms, measuring profits relative to equity mechanically amplifies variation in returns. As a result, both very large positive and very large negative values occur more frequently for ROE than for ROA.

Table 7 examines capital structure and profitability across industries and reveals substantial heterogeneity. The share of firms with negative equity varies markedly across sectors, ranging from 13% in business and professional services to 28% in accommodation and 23% in real estate. At the same time, the median equity ratio among firms with positive equity also differs considerably: it is comparatively high in business and professional services (65%) and information and communication (60%), but substantially lower in utilities and energy (37%), real estate (43%) and accommodation (43%). These patterns are consistent with structural differences in asset intensity across sectors. Capital-intensive industries – such as real estate, utilities or manufacturing – typically rely heavily on tangible assets, including buildings, infrastructure or machinery. Such assets are costly to acquire but also serve as collateral, facilitating debt financing. As a result, firms in these sectors tend to operate with comparatively higher leverage. In contrast, less asset-intensive and more service-oriented sectors rely more strongly on human capital and intangible inputs, which may limit collateral-based borrowing and lead to higher equity ratios on average.

Profitability also differs systematically across industries. Median ROA ranges from 0% in real estate and 2% in utilities and energy to 6% in information and communication and 5% in manufacturing and trade. The share of firms reporting negative ROA varies between 25% in manufacturing and 44% in real estate. These differences highlight that profitability conditions are not uniform across sectors. They likely reflect a combination of sector-specific production technologies, capital intensity, regulatory environments and competitive conditions. Overall, the industry breakdown underscores that both capital structure and performance are closely linked to structural characteristics of the respective industries.

Table 7

Capital structure and profitability of non-financial firms with disclosure obligation by industry, 2021

Industry	Equity ratio			Return on assets (ROA)		
	Number of firms	Negative values in %*	Median [0,∞) in %	Number of firms	Negative values in %*	Median (-∞,∞) in %
Manufacturing (incl. agriculture and mining)	13,555	14.5	47.9	13,232	24.9	4.5
Utilities and energy	2,458	17.3	37.4	2,340	32.2	2.1
Construction	19,623	19.0	44.5	19,427	31.8	3.8
Trade	30,180	18.3	49.5	29,709	27.7	5.1
Transport and storage	5,146	17.9	43.1	5,010	29.0	4.0
Information and communication	9,978	19.2	59.8	9,818	32.4	6.2
Business and professional services	44,084	12.7	64.7	43,392	31.0	4.5
Real estate	31,386	23.3	42.6	30,854	44.3	0.3
Accommodation	10,650	27.5	43.4	10,499	33.2	3.3
Public, education, health and other services	6,694	23.4	51.3	6,551	34.0	3.0
NACE information missing	136	24.3	69.2	132	67.4	-9.2
Total	173,890	18.4	51.7	170,964	32.8	3.1

Note: *In % of all non-missing observations (N). The equity ratio is defined as equity over total assets (i.e., balance sheet total) ($\times 100$) and is computed only for firms with strictly positive total assets and non-missing values. Return on assets (ROA) is calculated as approximated current-year profit (net income minus profit carried forward) divided by total assets ($\times 100$) and is likewise defined only for strictly positive total assets and non-missing values. In 1,322 observations, total assets are zero or negative; consequently, neither the equity ratio nor ROA is reported for these firms. Industries are grouped according to a 10-sector classification based on OeNACE 2008 (NACE Rev. 2). The aggregation is defined as follows: manufacturing, agriculture and Mining (A–B–C); utilities and energy (D–E); construction (F); trade (G); transport and storage (H); information and communication (J); business and professional services (M–N); real estate (L); accommodation (I); and public, education, health and other services (K–O–P–Q–R–S–T–U). Firms without valid NACE information are reported separately. Source: IFLD 2021, OeNB.

4.2 Loans: credit exposure

The unit of observation in the loans data frame is the individual loan-debtor relationship. The data originate from the OeNB's national granular credit register, which encompasses reporting under Regulation ECB/2016/867 (AnaCredit Regulation).¹⁸ The dataset covers all credit relationships between Austrian credit institutions (including the central bank) and their borrowers (including other credit institutions, i.e. inter-bank loans) that are subject to these reporting requirements and includes detailed information on loan amounts, interest rates, maturities and other loan characteristics. As such, the loans data frame does not only comprise loans vis-à-vis Austrian firms but all debtors that are legal entities irrespective of residency. A reporting obligation exists for credit instruments where the debtor's total commitment amount vis-à-vis a given creditor is equal to, or greater than, EUR 25,000 on any reporting reference date within the reference period.¹⁹ The IFLD explicitly excludes natural persons as borrowers. In the case of the IFLD, the dataset captures all loans outstanding as of the 2021 reporting reference

¹⁸ See Regulation (EU) 2016/867 of the European Central Bank of 18 May 2016 on the collection of granular credit and risk data (ECB/2016/13; [Regulation - 2016/867 - EN - EUR-Lex](#)).

¹⁹ The total commitment amount is defined as the sum of the data attributes "outstanding nominal amount" and "off-balance sheet amount" of all loans and as such does not only include outstanding amounts but also unused credit lines.

dates (and not only loans originated during 2021). The dataset thus represents a stock of active loans and active credit lines at a given point in time, including loans originated in prior years that have not been fully repaid in 2021. The reference date used in this IFLD version is 31 December 2021.

For joint liability loans, the IFLD records the full loan amount for each borrower as outstanding. Joint liability is observed in approximately 5% of all borrower–lender relationships (26,638 cases). However, only in 2,512 cases do multiple firms in the dataset share liability for the same loan. In the remaining cases, co-liable borrowers are entities outside the dataset, for example natural persons. Aggregating outstanding amounts at the borrower–lender level without adjusting for these cases would therefore overstate total outstanding volumes.

However, in cases of joint liability, the dataset also records the amount for which each borrower is legally liable. Consider a loan with an outstanding nominal amount of 10 that is associated with two borrowers, A and B. The liability can be distributed in different ways. Borrower A and B may each be liable for 5, but it is also possible that borrower A is liable for the full amount of 10 while borrower B has no direct liability, or that both borrowers are jointly liable for the full amount of 10.

Recording borrower-specific liability amounts makes it possible to derive the effective liability of each borrower. At the same time, this information allows the lending institution the calculation of the effective credit exposure associated with each borrower. This distinction is particularly relevant in these cases of joint liability where the outstanding loan amount alone does not reflect how credit risk is distributed among borrowers.

Table 8 shows descriptive statistics for the population of credit instruments ²⁰contained in the IFLD loans database. To avoid multiple counting in cases of joint liability, only one observation per unique credit instrument is retained. Each instrument and its outstanding nominal amount therefore enter the table only once. The same applies to the interest rate, which is recorded at the instrument level and does not vary across jointly liable debtors. The statistics do not represent loan-debtor relationships or borrower-specific effective liabilities. The table still includes exposures involving institutions such as the central bank, interbank lending and loans to firms abroad and is provided primarily to illustrate the content of the data. For economically more meaningful statistics on bank–firm relationships, see sections 5.3 and 5.4.

²⁰ The population of credit instruments consists of unique credit instruments after excluding interoffice loans. Interoffice loans are loans granted by a bank to a branch of the same bank.

Table 8

Outstanding loan amount and interest rate by loan category

Loan category	Outstanding nominal amount Number of loans	Interest rate						
		Total	Mean	Median	Number of loans	Mean	Median	
		EUR million	EUR thousand			%		
Non-revolving	300,423	282,055.58	938.9	133.5	294,355	1.73	1.53	
Other loans (including one-time loans)	191,779	162,375.56	846.7	110.8	187,767	1.74	1.66	
Credit lines without revolving loans	106,431	119,646.24	1,124.2	190.0	104,375	1.68	1.50	
Finance leases	2,213	33.78	15.3	14.2	2,213	3.92	3.77	
Revolving	172,244	51,649.02	299.9	0.4	167,845	2.69	2.04	
Revolving loans	104,726	42,087.86	401.9	4.3	101,542	2.82	2.40	
Overdrafts	34,352	9,529.98	277.4	3.5	33,137	4.73	3.29	
Credit card loans	33,166	31.17	0.9	0.0	33,166	0.00	0.00	
Other	60,330	289,304.40	4,795.4	72.8	49,396	0.57	0.05	
Deposits at other institutions	29,785	269,601.52	9,051.6	600.0	21,512	0.46	0.01	
Accounts receivable	29,200	5,422.24	185.7	26.2	27,479	0.70	0.20	
Reverse repurchase agreements	1,345	14,280.64	10,617.6	3,091.5	405	-0.64	-0.48	
Total	532,997	623,008.99	1,168.9	61.6	511,596	1.94	1.56	

Note: Observations refer to unique credit instruments after excluding interoffice loans. In cases of joint liability, each instrument and its outstanding nominal amount enter the table only once.

The statistics therefore do not represent loan-debtor relationships or borrower-specific effective liabilities.

Source: IFLD 2021, OeNB.

Box 2: Bank loans in Austria – an overview

This box provides an overview of the loan universe covered by the OeNB's national granular credit data and illustrates what share of these exposures relates to non-financial firms. Loan volumes are measured as the sum of outstanding nominal amounts. We analyse all loans granted by Austrian reporting financial institutions (predominantly deposit-taking corporations, see table 2). A loan amount for which multiple borrowers are jointly liable is counted only once. Loans granted to branches are attributed to the parent institution. Loans extended by financial institutions to their own branches are excluded.

The total amount of outstanding loans reported by Austrian banks in the granular credit register amounted to EUR 623.0 billion in 2021. This corresponded to 99.7% of the total outstanding nominal amount reported in the BSI dataset, a harmonised Eurosystem dataset providing aggregate balance sheet information for monetary financial institutions.. The BSI dataset includes the total outstanding nominal amount of all Austrian banks. The remaining difference of 0.3% is attributable to the reporting threshold of EUR 25,000 in the granular loan-level data.

Table B2 breaks down this aggregate amount by debtor categories (rows) and also distinguishes by debtor domicile (seat) (column). It shows that a substantial share of lending occurs within the financial system. Taken together, exposures to financial institutions and the central bank amount to EUR 335.6 billion or 53.9% of total outstanding nominal amounts.

Table B2

Overall volume of Austrian bank loans, 2021

Debtor	Total outstanding loan amounts			
	Debtor in Austria		Debtor abroad	
	EUR billion	% of total amount	EUR billion	% of total amount
Central bank	125.3		20.1	4.5
Financial system	133.0		21.3	73.0
Public sector	25.7		4.1	2.8
NPOs	2.0		0.3	0.1
Other	1.5		0.2	0.1
Non-financial firms	183.6		29.5	71.8
Sum	471.0		75.6	152.1
Total (across debtors in Austria and abroad)				623.0
				100.0

Note: The category "central bank" primarily reflects deposits of commercial banks held at the central bank. These arise, for example, from monetary policy operations such as refinancing transactions, where banks obtain liquidity from the central bank, as well as from open market operations, including central bank purchases of securities from banks.

Source: IFLD 2021 and internal borrower-level information, OeNB.

Loans to non-financial firms resident in Austria account for EUR 183.5 billion (29.5%). This amount is slightly higher (by approximately EUR 1 billion) than the total outstanding loan amount observed for non-financial firms in the IFLD firms dataset. This reflects the fact that the credit register also includes borrowers that are not part of the Austrian Commercial Register and are therefore not included in the IFLD firm population.

The debtor breakdown shown in the table cannot be derived from the IFLD alone. Therefore, we linked IFLD to additional firm-level information available at the OeNB, which allows us to identify different debtor types. The category "central bank" refers to commercial banks' deposits with the central bank. It comprises balances on minimum reserve accounts, other current account holdings and recourse to the deposit facility. This amount can be interpreted as the reserve component of base money (M0), i.e. base money excluding banknotes in circulation. For Austria, however, such a measure is of limited stand-alone relevance, given that Austria is part of the Eurosystem, where monetary aggregates and banknote issuance are defined at the euro area level. The same figure is reported on the liabilities side of the OeNB Financial Statements 2021.

Overall, the population of loans represented in table 8 contains 532,997 unique loans (credit instruments) with a total outstanding nominal amount of about EUR 623 billion. Non-revolving credit dominates both in number and volume, accounting for more than 300,000 instruments and around EUR 282 billion in outstanding amounts, primarily driven by lump-sum loans and credit lines without revolving features. Revolving instruments such as overdrafts and revolving loans are smaller on average, as reflected in their very low median amounts. Across most loan categories, the mean substantially exceeds the median, indicating a highly skewed distribution with a small number of very large exposures. This pattern is not surprising, as the dataset covers the full universe of loans reported by Austrian banks, including interbank lending, exposures to the central bank and loans to foreign counterparties (see box 2). Interest rates also differ systematically across instruments. Revolving credit generally carries higher rates than non-revolving loans, reflecting its shorter maturity and greater flexibility, as borrowers can repeatedly draw and repay funds within a predefined limit. Instruments such as overdrafts therefore tend to be priced at

a premium relative to standard investment loans. By contrast, interbank-related instruments, such as deposits at other institutions, carry comparatively low interest rates, as they are typically short-term placements between financial institutions and closely linked to prevailing money market conditions.

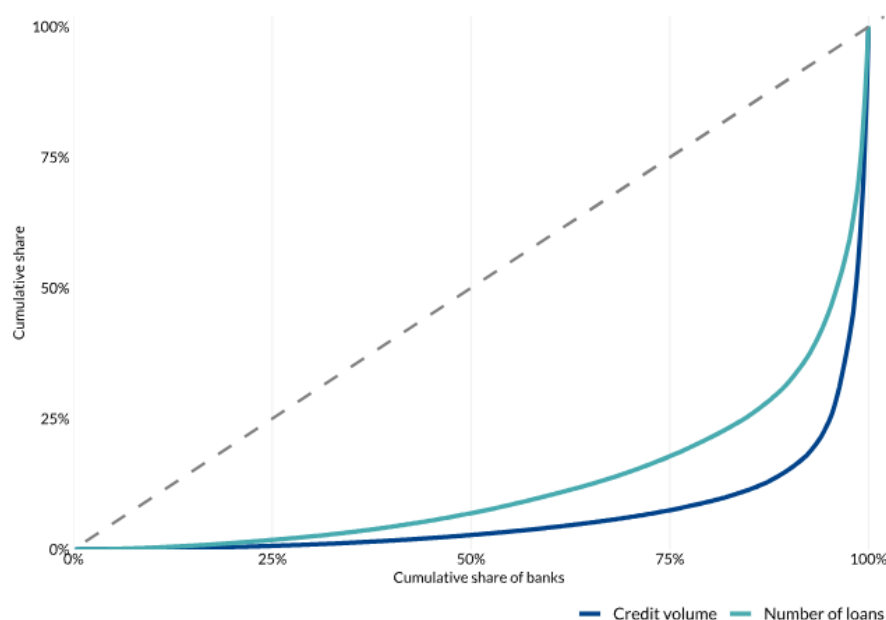
Charts 2 and 3 present Lorenz curves illustrating the distribution of loans across banks and across borrowers. In both cases, the curves show a pronounced deviation from the 45-degree line of perfect equality, indicating a highly concentrated distribution of credit.

Chart 2 shows the distribution across banks. A relatively small number of banks account for a large share of total lending, reflecting the concentration of credit provision in the Austrian banking system. About 80% of banks extend loans that account for around 21% of the number of loans, but less than 10% of the amount of loans. Chart 3 shows the distribution across borrowers and reveals an even stronger degree of concentration. A large share of borrowers accounts for only a very small fraction of total credit volumes, while a small number of borrowers receive the majority of bank credit. About 30% of borrowers account for 75% of the number of loans and more than 90% of the loan volume, while 80% of borrowers receive around 34% of the number of loans and only 5% of the total loan amount.

Note again that these numbers also include inter-bank loans as well as the central bank and counterparties abroad and only reflect loans above the reporting threshold. For the calculation of credit volumes in the Lorenz curves, each loan is counted only once using its outstanding nominal amount, thereby avoiding double counting in cases of joint liability.

Chart 2

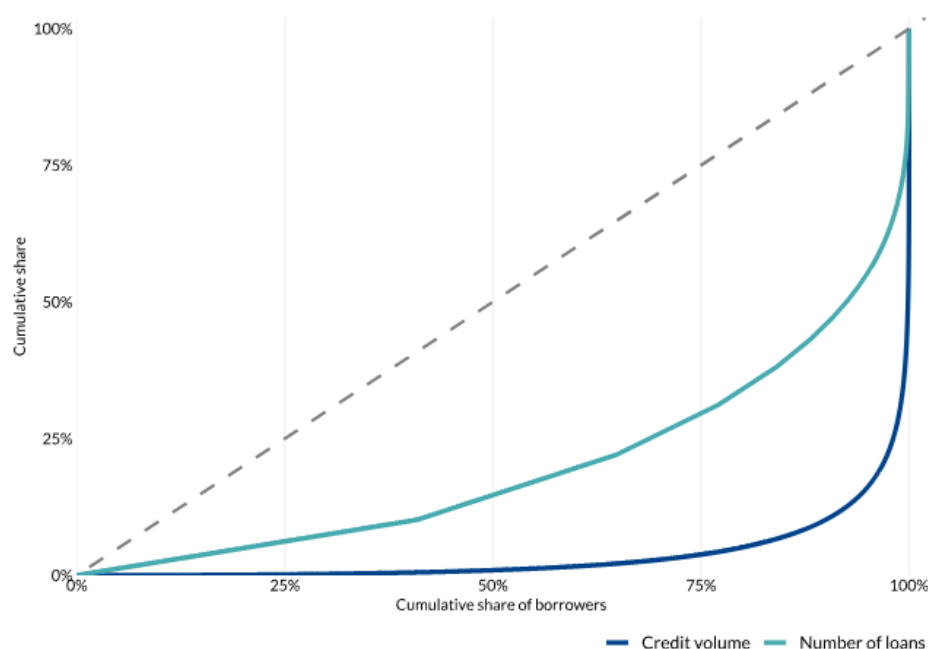
Lorenz curve: distribution of credit across banks



Source: IFLD 2021, OeNB.

Chart 3

Lorenz curve: distribution of credit across borrowers



Source: IFLD 2021, OeNB.

4.3 Networks: ownership and governance

The unit of observation in the network dataset is a relationship between a firm and a connected stakeholder. The dataset distinguishes two broad types of relationships: ownership links between firms and their owners, and governance links between firms and individuals or entities performing management, supervisory, partnership, liquidation or insolvency-related functions.

The dataset covers relationships that existed at any point during the reference year 2021. Each observation contains an identifier each for the stakeholder, the firm – hereafter referred to as the target firm – the type of relationship and its start and end dates. The stakeholder information includes the stakeholder's name, address, institutional sector, legal form and status as either a natural person or a legal person. For natural persons, the date of birth is also recorded. Ownership relationships additionally contain the amount of registered capital held by the owner and the target firm's total registered capital.

These data support a wide range of structural analyses. They can be used, for example, to examine the number and composition of firms' shareholders, the domestic or foreign origin of owners and the relative importance of natural persons and legal persons in firm ownership. The data also provide information on firms' governance structures, including the number and type of executive and supervisory bodies and the extent to which individual managers hold positions in several firms. Because relationships can be linked across firms and stakeholders, the dataset also facilitates the analysis of firm groups, indirect ownership and ultimate beneficial ownership.

In total, the dataset contains 782,948 relationships. Of these, 399,746 are ownership relationships, involving 223,857 distinct firms, while 383,202 are governance relationships, involving 251,199 firms. Note that general partners of partnerships are classified as governance actors rather than owners. Accordingly, they are represented as governance links and are not included as ownership relationships.

The descriptive analysis in this report uses 31 December 2021 as the reference date. Restricting the dataset to relationships active on that date reduces the number of observations to 780,897, comprising 399,397 ownership relationships and 381,500 governance relationships.

Table 9 reports the number of relationships and the number of distinct target firms for each individual relationship category. The categories can be grouped into four substantive classes: ownership relationships as well as management-, supervisory- and insolvency-related relationships.

Table 9

Number of relationships at Austrian firms by relationship category

Relationship type	Relationship	Number of observations	Number of firms
Owner			
Shareholder relationship	Partner (Gesellschafter)	317,944	178,378
Organ relationship	General partner (unbeschränkt haftender Gesellschafter)	96,507	66,393
Shareholder relationship	Limited partner (Kommanditist)	78,511	44,463
Shareholder relationship	Cooperative member (Genossenschafter)	1,888	288
Shareholder relationship	Shareholder (Aktionär)	719	142
Shareholder relationship	Sole shareholder (Alleinaktionär)	335	335
Management			
Organ relationship	Managing director (Geschäftsführer)	237,167	174,627
Organ relationship	General partner (unbeschränkt haftender Gesellschafter)	96,507	66,393
Organ relationship	Board member (Vorstandsmitglied)	12,061	5,438
Organ relationship	Chair of the board (Vorstandsvorsitzender)	2,895	2,895
Organ relationship	Deputy chair of the board (Stellvertretender Vorstand)	2,515	2,439
Organ relationship	Managing director (Geschäftsleiter)	763	336
Organ relationship	Managing director (Geschäftsführender Direktor)	23	9
Organ relationship	Board of directors member (Verwaltungsratsmitglied)	17	9
Organ relationship	Chair of the board of directors (Verwaltungsratsvorsitzender)	9	9
Organ relationship	Vice chair of the board of directors (Verwaltungsrat, Stellvertreter des Vorsitzenden)	7	7
Supervisory			
Organ relationship	Supervisory board member (Aufsichtsratsmitglied)	13,113	3,029
Organ relationship	Deputy supervisory board chair (Stellv. Aufsichtsratsvorsitzender)	3,347	2,919
Organ relationship	Supervisory board chair (Aufsichtsratsvorsitzender)	3,020	3,020
Organ relationship	Vice chair (Obmann Stellvertreter)	1,549	1,328
Organ relationship	Chair (Obmann)	1,360	1,360
Organ relationship	Employee representative on the supervisory board (Aufsichtsrat der Arbeitnehmervertreter)	240	92
Insolvencies			
Organ relationship	Liquidator (Liquidator/Abwickler)	4,374	3,847
Organ relationship	Bankruptcy administrator (Masseverwalter)	2,458	1,916
Organ relationship	Trustee (Treuhänder)	51	44
Organ relationship	Restructuring administrator (Sanierungsverwalter)	20	16
Organ relationship	Reorganisation administrator (Ausgleichsverwalter)	2	2
Organ relationship	Restructuring supervisor (Sachwalter)	2	2

Note: A general partner (unbeschränkt haftender Gesellschafter) is both an owner of a company and a member of its governing structure. General partners may therefore appear in both the "Owner" and "Management" tabs.

Source: IFLD 2021, OeNB.

The largest ownership category consists of ordinary shareholders in limited liability companies (Gesellschafter): the dataset contains 317,944 such relationships, covering 178,378 firms. In addition, it records 719 shareholder relationships for stock corporations, 335 sole-shareholder relationships, 1,888 cooperative memberships, and 78,511 limited-partner relationships.

Management and governance relationships are dominated by managing directors of limited liability companies. The dataset contains 237,167 managing director relationships, covering 174,627 firms. It also includes 96,507 general partner relationships, covering 66,393 firms, as well as information on members and chairpersons of management boards and the governing bodies of cooperatives.

For limited liability companies, information on at least one shareholder and at least one managing director is available for 174,584 firms. The partnership data comprise 78,511 limited partners in 44,463 firms and 96,507 general partners in 66,393 firms. For 44,445 firms, both limited and general partners are observed. A further 21,948 firms have general partners but no limited partners. Conversely, 18 firms have recorded limited partners but no recorded general partner, suggesting that information on the general partner is missing in these cases.

The number of supervisory and insolvency-related relationships is substantially smaller. The dataset nevertheless contains detailed information on supervisory-board members and their functions, including chairpersons, deputy chairpersons and employee representatives. It also covers liquidators and several types of court-appointed insolvency and restructuring administrators. The comparatively small number of insolvency-related observations is consistent with the relatively infrequent nature of insolvency proceedings.

Detailed shareholding information is primarily meaningful for limited liability companies and stock corporations. We therefore combine these two legal forms when assessing the completeness of the ownership data. The dataset contains ownership information for 178,855 limited liability companies and stock corporations. Ownership information is complete for 178,658 firms, or 99.9% of the total, meaning that all shareholders of these firms are identified. Information is incomplete for 106 firms – 19 limited liability companies and 87 stock corporations. For a further 91 limited liability companies, the reported ownership shares sum to more than 100%, indicating inconsistencies in the underlying data. For the subsequent analysis, the shares reported for these firms are proportionally rescaled so that they sum to 100%.

After excluding firms with incomplete ownership information, the analytical sample used in table 10 comprises 178,749 firms.

Table 10

Number and composition of shareholders

Number of share- holders per firm	Number of natural persons among shareholders per firm													Total
	0	1	2	3	4	5	6	7	8	9	10	>10		
1	35,909	65,497												101,406
2	8,372	8,074	34,148											50,594
3	1,581	1,055	2,885	9,764										15,285
4	447	244	439	983	4,427									6,540
5	169	89	115	185	402	1,148								2,108
6	70	27	46	89	107	176	454							969
7	48	15	15	39	45	67	85	150						464
8	33	12	12	19	23	27	42	42	97					307
9	29	4	3	4	9	26	25	18	27	61				206
10	16	4	8	5	14	8	8	13	19	24	40			159
>10	86	10	11	10	26	20	18	25	25	32	52	396		711
Total	46,760	75,031	37,682	11,098	5,053	1,472	632	248	168	117	92	396		178,749

Note: The number of natural persons among shareholders per firm must be equal to or smaller than the number of shareholders per firm.

Source: IFLD 2021, OeNB.

Table 10 describes the number and composition of shareholders among firms with complete ownership information. The rows indicate the total number of shareholders per firm, while the columns report how many of these shareholders are natural persons. The difference between the two figures therefore represents the number of shareholders that are legal persons.

A total of 101,406 firms have a single shareholder. Of these, 35,909 are owned by a legal person, while 65,497 are owned by a natural person. Across all 178,749 firms, 46,760 are owned exclusively by legal

persons, 115,919 are owned exclusively by natural persons, and 16,070 have a mixed ownership structure involving both natural and legal persons. The dataset contains 274,879 unique natural persons holding ownership interests in firms. This figure includes limited partners and corresponds to approximately 3.1% of the total Austrian population.

A corporation with a single natural-person shareholder is economically similar in several respects to a sole proprietorship. The crucial legal distinction is that the corporation constitutes a separate legal entity and generally limits the owner's personal liability. The concept of the single-shareholder corporation contrasts with the traditional rationale for incorporation, namely the pooling of resources by several individuals pursuing a common economic objective. Contemporary company law literature nevertheless continues to identify this joint pursuit of economic interests as an important reason for establishing a corporation (Rieder and Huemer, 2024, p. 42).

Two principal findings emerge from table 10. First, ownership structures are highly concentrated. 167,285 firms, or 93.6% of the sample, have no more than three shareholders. Moreover, 101,406 firms, or 56.7%, have only one shareholder. Thus, although corporations were traditionally conceived as associations of several participants, single-owner and small-owner structures dominate in practice.

Second, the results qualify the common perception of the typical Austrian corporation as a small or medium-sized enterprise owned exclusively by natural persons. Among the 167,285 firms with no more than three shareholders, 45,862 firms, or 27.4%, are owned exclusively by legal persons. By contrast, 109,409 firms, or 65.4%, are owned exclusively by natural persons. The remaining 12,014 firms, or 7.2%, have both natural and legal persons among their shareholders.

Ownership is highly concentrated: In 141,859 of the 178,749 firms (79%), one shareholder holds more than 50% of the registered capital. Thus, in almost four out of five firms, a single direct shareholder has a controlling interest.

In approximately 91% of the 178,749 firms, the largest direct shareholder is Austrian. In 47,209 cases, this shareholder is a legal person, in 114,797 cases it is a natural person. Among the remaining 9% of firms where the largest shareholder is non-Austrian, 10,773 firms have a legal person and 5,970 firms have a natural person as their largest shareholder.

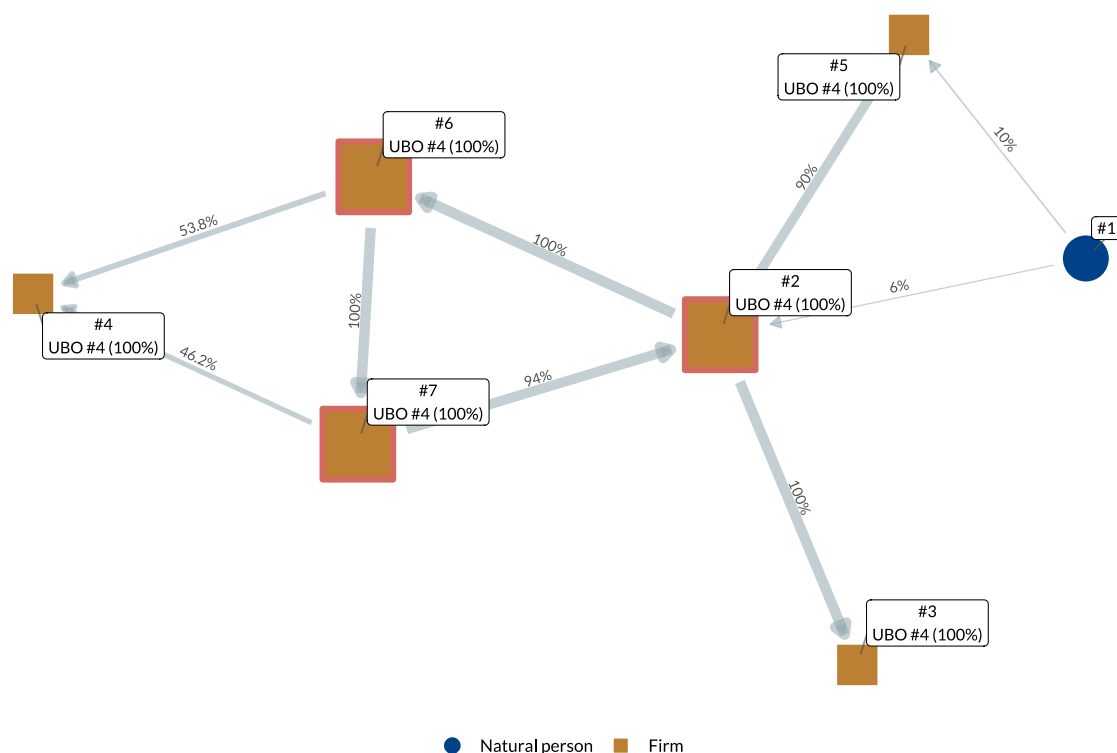
Identifying direct shareholders, however, does not necessarily reveal who ultimately owns or controls a firm. A firm's largest direct shareholder may itself be owned by another firm, which may in turn be held through further intermediate entities. The high degree of completeness of the ownership information for limited liability companies and stock corporations makes it possible to trace such ownership chains and identify ultimate beneficial owners (UBOs). This requires considering direct and indirect holdings jointly and, in particular, resolving circular ownership structures.²¹

²¹ A detailed description of how we calculate ultimate beneficial owners is available upon request.

Figure 2

Ownership network

7 nodes · 9 edges · all connected nodes included (no cap)



Note: Ultimate beneficial ownership in a circular ownership structure. The three companies #2, #6, and #7 form an ownership subgroup. Squares represent firms, the circle represents a natural person, arrows run from shareholders to the firms in which they hold shares, and edge labels indicate direct ownership percentages. Although natural person #1 directly holds only 6% of firm #2, this is the only external ownership interest in the closed subgroup. After the circular holdings are consolidated, the natural person is identified as the sole ultimate beneficial owner (UBO) of the subgroup and its downstream holdings. Firm and person identifiers are anonymised.

Source: Authors' calculations based on IFLD 2021, OeNB.

Figure 2 shows an anonymised example from the dataset to illustrate how complex ownership chains may be. Squares represent companies, the circle represents a natural person, and arrows point from the shareholder to the firm in which the shares are held. The percentages shown next to the arrows indicate direct ownership shares. The three companies #2, #6 and #7 form an ownership cycle. Firm #2 owns 100% of firm #6, firm #6 owns 100% of firm #7, and firm #7, in turn, owns 94% of firm #2. The remaining 6% of firm #2 are held directly by natural person #1.

A method that considers only the largest direct shareholder would identify firm #7 as the controlling shareholder of firm #2 and might stop there. Natural person #1 would appear to hold only a small minority interest of 6%. Following the ownership links further does not immediately answer the question of actual ownership and control, because the ownership path leads through firms #7, #6 and #2 and then returns to its starting point.

The interpretation changes once the circular holdings are consolidated. The 94% share held by firm #7 is internal to the subgroup: firm #7 is wholly owned by firm #6, which is itself wholly owned by firm #2. The 6% held by natural person #1 is therefore the only ownership interest in the subgroup originating

outside the cycle. After the cross-holdings among the three firms are unwound, natural person #1 is identified as the sole ultimate beneficial owner of the three-firm subgroup.

The same reasoning extends to the firms held by members of the subgroup. Firm #2 owns 90% of firm #5, while natural person #1 directly owns the remaining 10%. Firm #2 also owns 100% of firm #3. Finally, firms #6 and #7 jointly own firm #4, with stakes of 53.8% and 46.2%, respectively. Because the ownership of the three firms in the cycle ultimately leads to natural person #1, their downstream holdings can also be attributed to the same ultimate beneficial owner.

The example demonstrates why the largest direct shareholder and the ultimate beneficial owner are conceptually distinct. A natural person may hold only a small direct share in one of the firms in a firm group but nevertheless be the group's sole ultimate owner once internal and circular firm holdings are consolidated. An analysis restricted to direct ownership would therefore overstate the role of intermediate legal persons and understate the importance of natural persons as the ultimate owners of Austrian firms.

This distinction is not only important for identifying ultimate ownership but also for understanding how financing and risk are distributed within firm groups. Once intermediate legal persons and circular holdings are consolidated, it may become obvious that firms that appear to be separate borrowers form part of the same economic unit. This also has implications for monetary policy and financial stability. Analysing credit only for firms that have directly received bank loans may provide a seriously incomplete picture, as funding, guarantees and balance sheet pressures may be systematically misattributed when economically connected firms are treated as independent entities. Governance links may matter as well: overlapping directors or managers can connect firms beyond formal ownership ties and may influence access to credit, lending relationships and borrowing costs, especially where ownership and governance networks reinforce one another.

4.4 Insolvencies: firm exit through legal proceedings

The unit of observation in the insolvency data is an insolvency event. Insolvency events are identified using judicial records from the public Austrian legal notices database (Ediktsdatei), including bankruptcies, formal restructuring procedures and cases where proceedings were rejected due to insufficient assets. Multiple insolvency events for the same firm are only counted as separate events if they are more than 90 days apart.

The insolvency data are sourced from a combination of internal OeNB and external systems. The OeNB Statistics Department obtains data on insolvency events from the legal notices database on a daily basis. They are automatically extracted via a scheduled process and subsequently prepared for integration into the IFLD. The data cover insolvency events from 2021 onwards.

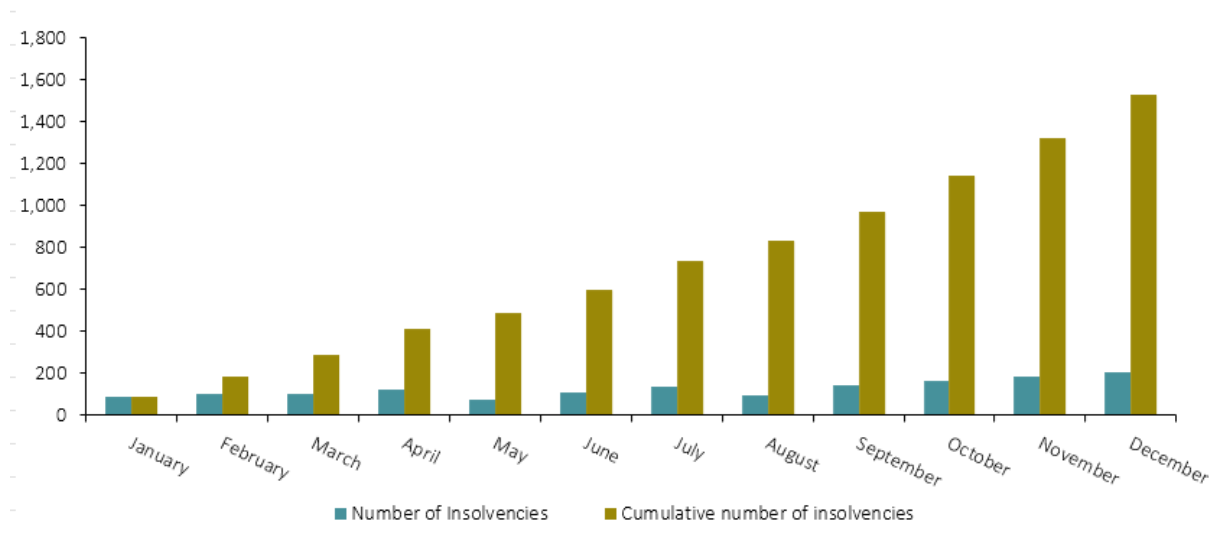
The legal notices database distinguishes nine different types of insolvency proceedings and also records changes in the status of ongoing proceedings as insolvency events. Within the IFLD, these events are grouped into three main categories: restructuring proceedings (all variants), the opening of bankruptcy proceedings and cases in which insolvency proceedings are rejected due to insufficient assets.

Chart 4 reports the monthly number of insolvency events in 2021 for non-financial and financial firms, together with the corresponding cumulative series. The chart illustrates the raw number of insolvency events recorded in the IFLD and serves as an example of the information contained in the insolvency data frame.

Section 5 provides more detailed analyses of insolvency dynamics, including their relationship with firm characteristics and financing conditions (see also Elsinger et al., 2025, and Elsinger et al., 2021).

Chart 4

Number of insolvencies in 2021



Note: The chart shows the number of insolvency events per month and the cumulative number of insolvencies over the year for all firms. Insolvency events include bankruptcies, restructuring proceedings and cases rejected due to insufficient assets. Multiple events for the same firm are counted separately only if they occur more than 90 days apart.

Source: IFLD 2021, OeNB.

5 Illustrative analyses linking the four IFLD data frames

A defining feature of the IFLD is that its four core data frames (firms, loans, networks and insolvencies) can be consistently linked at the firm level. This integration allows us to analyse firms not only as isolated statistical units but as economic entities embedded simultaneously in financial relationships, ownership networks and legal insolvency processes.

The purpose of this section is to illustrate the analytical possibilities that arise from this integrated structure. The examples presented in the following subsections demonstrate how linking the different data frames can generate insights that would not be accessible when analysing each dataset in isolation. The analyses are deliberately descriptive and should be understood as illustrative applications of the current cross-sectional version of the IFLD rather than as an exhaustive exploration of the dataset's potential.

The first example compares insolvent and non-insolvent firms and examines how the demographic and structural characteristics of these firms vary across sectors and regions, which requires linking firm-level information with insolvency records. The second example analyses ownership structures and their economic relevance by combining ownership networks with firm-level balance sheet information to compare the distribution of firms and economic activity across different types of owners. The third example studies the structure and pricing of bank lending, using loan-level data together with firm identifiers to analyse how credit volumes and interest rates differ across credit instruments and borrower types. The fourth example investigates firm financing patterns by linking loan data with firm

characteristics such as legal form, sector and size to examine which firms access bank financing and how borrowing differs across firm types.

We expect the analytical scope of the IFLD to broaden considerably in the future, in particular through extensions along the time dimension. A longitudinal version of the IFLD will enable panel-based analyses of firm dynamics, allow researchers to exploit within-firm variation over time and support more rigorous empirical strategies aimed at identifying relationships between financing conditions, ownership structures and firm performance.

5.1 Firm characteristics and insolvency outcomes

To illustrate the power of combining the different IFLD data frames, we refer to work published in 2025, where firm-level information from the 2021 IFLD was linked to insolvency outcomes observed in 2023.

Table 11 provides a first example of the insights that can be obtained from such integration. It compares key financial and structural characteristics of all firms in the reference population with those of firms that subsequently became insolvent. To ensure comparability, financial ratios are computed only for firms with non-negative equity. The comparison reveals clear and economically meaningful differences. Insolvent firms are smaller in terms of assets, exhibit weaker capital structures with lower equity ratios and higher leverage, and are less likely large employers. At the same time, not all insolvent firms belong to the group of smallest entities, as they show slightly higher median employment. These patterns highlight that insolvencies are not randomly distributed across firms, but are systematically related to firm characteristics observable prior to failure.

Table 11

Descriptive information for relevant statistics

		P1	P20	Median	Mean	P80	P99
Total assets	All firms	1.0	90.0	548.0	7,269.0	2,784.0	87,642.6
	Insolvent firms	0.0	54.0	249.5	4,989.8	1,088.0	21,952.4
Equity capital	All firms	-1,398.7	1.0	123.0	3,531.2	896.0	43,975.4
	Insolvent firms	-3,277.7	-154.0	2.5	3,188.9	110.0	4,492.5
Total liabilities	All firms	0	18.0	203.0	3,188.1	1,356.0	36,032.0
	Insolvent firms	0.0	55.0	270.0	1,636.3	1,057.4	17,665.3
Outstanding bank liabilities	All firms	0.0	0.0	0.0	865.3	285.2	12,698.9
	Insolvent firms	0.0	0.0	0.0	363.8	208.2	6,474.7
Equity ratio (excl. neg. equity)	All firms	0.002	0.189	0.517	0.521	0.852	1.000
	Insolvent firms	0.000	0.081	0.244	0.324	0.559	1.000
Liability ratio	All firms	0.000	0.095	0.477	3.361	0.956	11.601
	Insolvent firms	0.000	0.517	0.926	2.910	1.646	27.056
Number of employees	All firms	0	0	2	15	11	203
	Insolvent firms	0	0	4	13	12	122

Notes: Firm statistics from the year 2021; insolvency in the year 2023; total assets, outstanding bank liabilities, equity capital, total liabilities and equity as well as liabilities in EUR thousand; number of all firms is 193,178; number of insolvent firms is 1,977.

Source: Elsinger et al. (2025).

More broadly, this example demonstrates the value of linking firm characteristics with insolvency outcomes within a single dataset. It allows researchers to identify risk profiles of firms, relate financial structure to failure probabilities and move beyond simple counts of insolvencies towards measures that reflect their economic significance. This becomes even more apparent when extending the analysis across sectors and weighting insolvency rates by firm size, employment or credit exposure, as shown in the following chart.

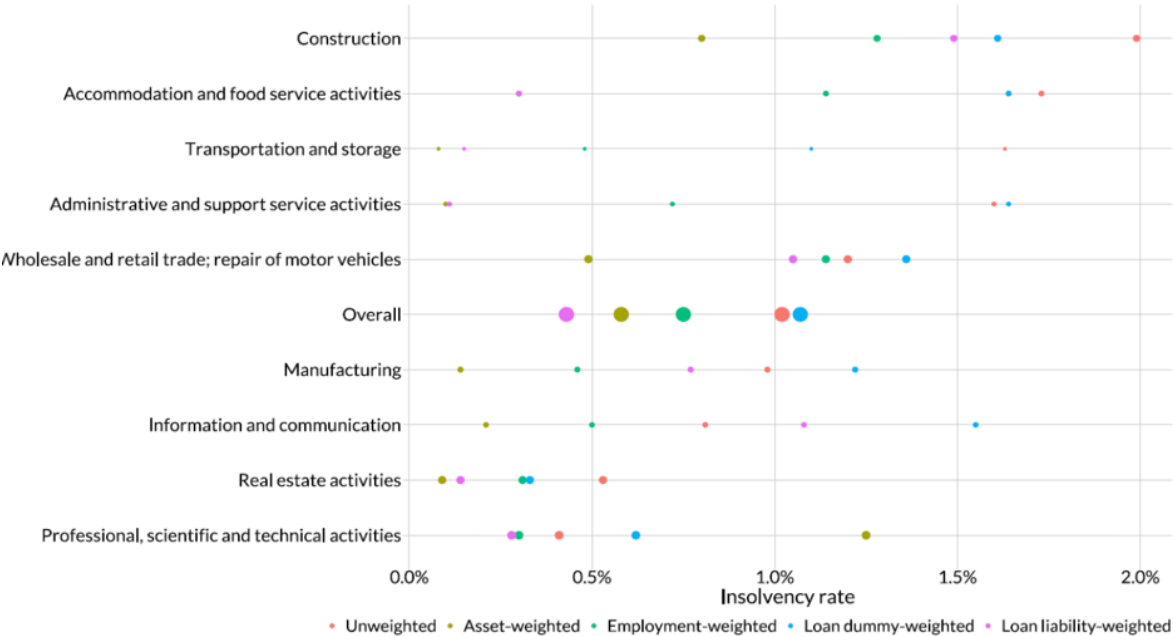
Chart 5 builds on this by examining insolvency rates across sectors using different weighting schemes. While unweighted rates capture the frequency of firm exits, weighting by assets, employment or bank lending provides a measure of their economic relevance. The results reveal substantial heterogeneity across sectors. For example, construction exhibits high insolvency rates across several measures, while sectors such as professional services show low unweighted rates but higher asset-weighted rates, indicating that fewer but larger firms are affected. In contrast, sectors such as real estate and transportation display low asset- and loan-weighted insolvency rates, suggesting that insolvencies predominantly occur among smaller firms and have limited economic and financial impact.

Overall, the comparison highlights that unweighted insolvency rates alone provide an incomplete picture. Incorporating firm-level information from the IFLD makes it possible to weight insolvency measures by economically meaningful characteristics, thereby distinguishing between the frequency of firm exits and their broader implications for employment, financial stability and the real economy.

Chart 5

Insolvency rates by NACE sector (full available sample)

Comparison of unweighted and weighted rates



Source: Elsinger at al. (2025).

5.2 Firm ownership networks and control

Chart 6 provides a simple example of the additional insights that can be gained by linking the network data frame to the firms data frame. Combining ownership relationships with firm-level characteristics makes it possible to go beyond identifying shareholders and to assess the economic relevance of different ownership structures in Austria.

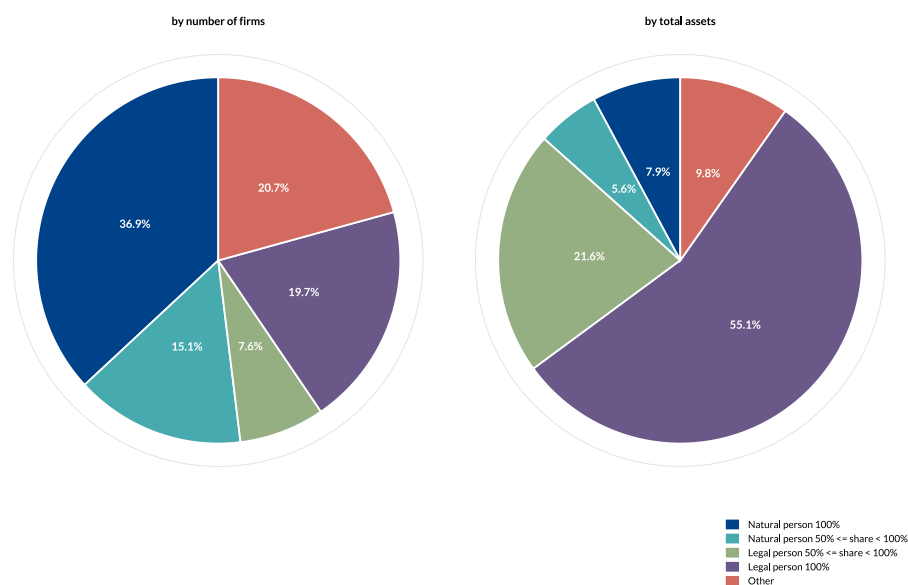
This analysis focuses on limited liability companies. The charts compare the ownership structures of Austrian limited liability companies according to the type of shareholder and the ownership interest held by a single shareholder. Accordingly, the category “natural person 50% ≤ share < 100%” comprises companies in which a single natural person holds at least 50% but less than 100% of the shares. It does not include companies in which several natural persons jointly hold an ownership interest within this range. The same interpretation applies to legal persons: the relevant category refers to the ownership interest held by a single legal person.

Measured by the number of firms, natural persons are the most common controlling shareholders. A single natural person owns 100% of the shares in 36.9% of limited liability companies, while in a further 24.6%, a single natural person holds at least 50% but less than 100% of the shares. Taken together, in 61.5% of firms, a single natural person holds at least 50% of the shares.

The distribution changes markedly when firms are weighted by total assets. Limited liability companies wholly owned by a single legal person account for 55.1% of total assets, and those in which a single legal person holds at least 50% but less than 100% account for a further 23.8%. Taken together, limited liability companies in which a single legal person holds at least 50% of the shares represent 78.9% of total assets.

Chart 6

Ownership structure of Austrian limited liability companies (GmbH) by legal form of majority shareholder



Note: The sample is restricted to limited liability companies (GmbHs). The left panel shows the distribution of firms by the legal form of the majority shareholder (N= 177.450). The right panel shows the distribution weighted by total assets (N=166.331).

Source: IFLD 2021, OeNB.

By contrast, firms with a single natural person as majority shareholder, despite being numerous, account for a comparatively small share of total assets. Limited liability companies wholly owned by one natural person account for 7.9% of firms' total assets, and those in which one natural person holds between 50% and 100% account for 7.8%. This indicates that limited liability companies controlled by an individual natural person tend to be much smaller in asset terms than those controlled by an individual legal person.

Overall, the comparison reveals a clear distinction between number and economic weight. Individual natural persons are the majority shareholders in most limited liability companies, whereas individual legal persons dominate when ownership structures are weighted by total assets. This pattern is consistent with larger limited liability companies frequently being wholly owned or majority-controlled by another company, for example as part of a firm group. The "Other" category remains comparatively small under both measures, accounting for 8.5% of firms and 5.4% of total assets. This indicates that in more than 9 out of 10 Austrian limited liability companies, a single natural person or legal person holds a controlling interest of at least 50%.

Taken together, these results indicate that private-individual ownership is concentrated among smaller firms, while the largest and economically most significant companies in Austria tend to be owned by other firms. Importantly, however, every ownership chain ultimately ends with one or more natural persons, pension funds or private foundations. IFLD data allow us to follow these ownership chains upward and identify ultimate owners, enabling further analyses of control, concentration and firm group structures.²²

5.3 Firm loan structure and credit allocation

Table 12 provides a breakdown of outstanding loan volumes by counterparty type. When computed at the individual unique instrument level to avoid double counting, the total outstanding loan volume recorded in the loan dataset amounts to EUR 623.0 billion.²³ Loans to financial firms (as defined in section 3.1) account for EUR 132.4 billion²⁴ across 31,933 unique instruments, with the mean exposure amounting to EUR 4.1 million. This category comprises primarily loans to monetary financial institutions (MFIs), insurance companies and pension funds. The high outstanding amounts are largely attributable to interbank lending. The 365,021 loans to non-financial firms total EUR 181.3 billion²⁵ and have a mean exposure of EUR 496,800. Together, financial and non-financial firms in Austria account for an exposure of EUR 313.7 billion, or 50.4% of the total loan amount. The remainder is classified as loans to other counterparties, comprises domestic lending to the public sector, non-profit institutions and other entities as well as loans from Austrian banks to foreign institutions and totals around EUR 309.3 billion. Box 2 provides a comprehensive breakdown of loan volumes across all counterparty categories, extending beyond the population of firms defined in the IFLD.

²² In cases where ownership structures extend abroad, the final controlling unit cannot be fully identified in the data.

²³ As the reporting threshold of EUR 25,000 is triggered not only by outstanding amounts but also by unused credit lines, an economically meaningful number of all unique instruments (13.5%) has an outstanding amount of zero.

²⁴ The difference between the amount reported in box 2 (EUR 132,947.3 million) and the amount reported here (EUR 132,386.1 million) is EUR 561.2 million, or 0.42%. This difference is attributable to loans from Austrian financial institutions to Austrian financial firms that are not included in our IFLD firms base population.

²⁵ The difference between the amount reported in box 2 (EUR 183 560.2 million) and the amount reported here (EUR 181,347.2 million) is EUR 2,213.0 million, or 1.2%. This difference is attributable to loans from Austrian financial institutions to Austrian non-financial firms that are not included in our IFLD firms base population.

Table 12

Outstanding loan amount by counterparty

Counterparty	Number of loans	Total outstanding nominal amount	Mean	P1	P25	P50	P75	P99
		EUR million	EUR thousand					
Financial firms	31,933	132,386.1	4,145.7	0.0	65.0	500.0	2,000.0	53,137.0
Non-financial firms	365,021	181,347.2	496.8	0.0	1.7	49.1	280.3	6,878.4
Other counterparties	136,043	309,275.7	2,273.4	0.0	12.1	71.0	320.5	25,000.0
Total counterparties in loans data frame	532,997	623,009.0	1,168.9	0.0	4.3	61.6	340.1	14,043.6

Note: Outstanding loan amounts are reported at the individual unique instrument level. Interoffice loans are excluded from the analysis. Financial and non-financial firms are defined as in section 3.

Source: IFLD 2021, OeNB.

The combined analysis of loan amounts focuses on non-financial firms only. Table 13 provides a breakdown of the EUR 181.3 billion in outstanding loans to non-financial firms by loan category. The distinction between loan types matters as different credit instruments serve different financing purposes and exhibit distinct risk characteristics. Revolving credit allows borrowers to draw upon, repay and re-borrow up to a specified limit, offering firms flexible access to short-term liquidity, typically to cover working capital needs. In contrast, non-revolving credit, such as lump-sum loans and finance leases, are used for long-term investment and are disbursed as a single payout. The IFLD allows for the categorisation of credit instruments into specific loan types (compare Hirsch et al., 2025): (1) non-revolving credit, encompassing all lump-sum loans (in the IFLD: other loans including one-time loans), finance leases and credit lines without revolving loans; (2) revolving credit, comprising overdrafts, credit card loans and revolving credit other than overdraft and credit card debt; and (3) a residual “other credit” category containing accounts receivable, reverse repurchase agreements and, in principle, deposits at other institutions, though the latter category is not applicable to the non-financial firms sector.

For central banks, the composition of firm credit is relevant because different instruments transmit changes in policy rates and bank lending conditions differently. Distinguishing between short-term liquidity facilities and longer-term financing therefore helps assess monetary policy transmission, firms’ refinancing risks and potential vulnerabilities in the banking system.

Table 13

Outstanding loan amount of non-financial firms by loan category

Loan category	Number of loans	Total outstanding nominal amount	Mean	P1	P25	P50	P75	P99
		EUR million	EUR thousand					
Non-revolving	216,575	149,447.0	690.0	0.0	30.6	129.4	475.2	8,998.7
Other loans (including one-time loans)	143,709	86,173.6	599.6	0.1	25.9	99.9	397.4	7,993.4
Credit lines without revolving loans	70,751	63,243.0	893.9	0.0	60.6	213.4	657.3	10,297.9
Finance leases	2,115	30.3	14.3	1.0	9.4	14.2	18.9	31.1
Revolving	139,635	30,151.4	215.9	0.0	0.0	0.5	52.0	3,742.7
Revolving loans	84,023	24,861.2	295.9	0.0	0.0	4.5	107.7	4,800.0
Overdrafts	25,920	5,261.3	203.0	0.0	0.0	6.3	61.4	3,018.2
Credit card loans	29,692	28.9	1.0	0.0	0.0	0.0	0.6	13.2
Other	8,811	1,748.8	198.5	0.0	3.8	24.6	41.7	1,716.9
Accounts receivable	8,804	1,282.7	145.7	0.0	3.8	24.6	41.6	1,669.7
Reverse repurchase agreements	7	-	-	-	-	-	-	-
Total	365,021	181,347.2	496.8	0.0	1.7	49.1	280.3	6,878.4

Note: Table shows outstanding loans amounts of non-financial firms as defined in section 3, reported at the individual unique instrument level. Interoffice loans are excluded from the analysis. Statistics based on less than 10 observations are not reported.

Source: IFLD 2021, OeNB.

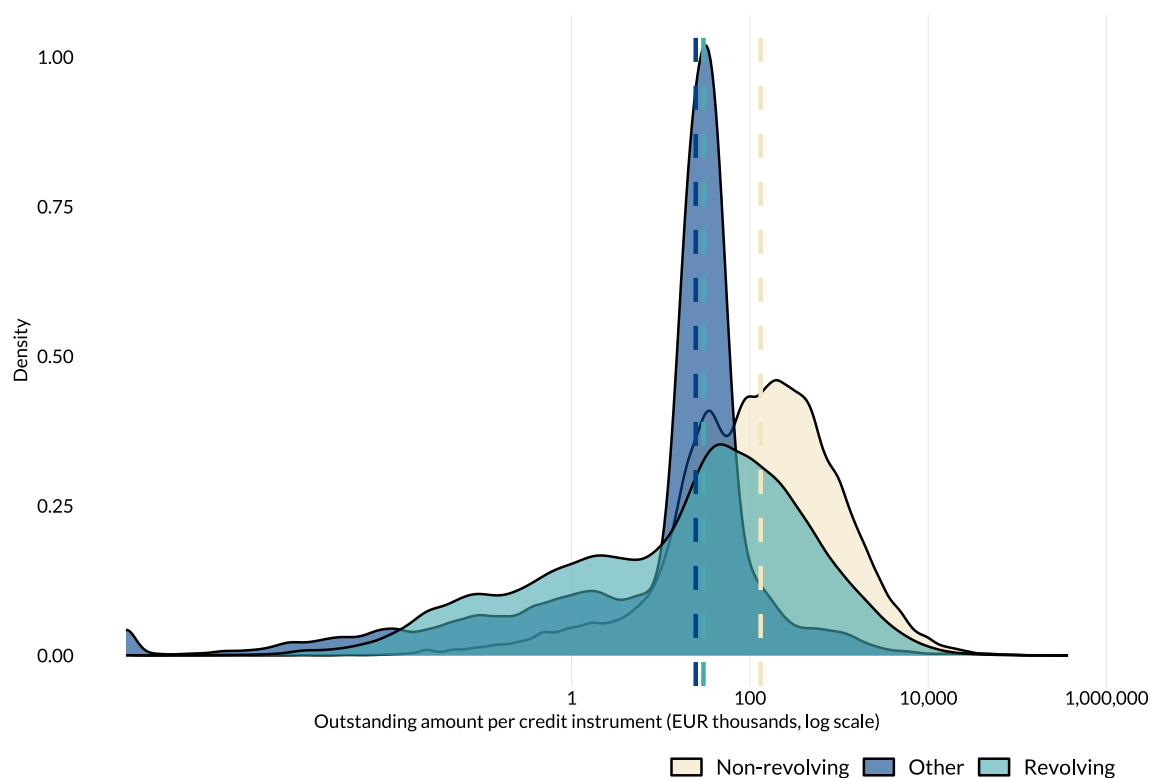
Non-revolving credit dominates in the dataset, with 216,575 loans totalling EUR 149.4 billion (82.5% of the total loan amount to non-financial firms). The largest component is lump-sum loans at EUR 86.5 billion, followed by credit lines without revolving loans (EUR 63.2 billion). Revolving credit accounts for EUR 30.2 billion across 139,635 instruments, primarily revolving loans (EUR 24.9 billion) and overdrafts (EUR 5.3 billion). Credit card debt, which includes convenience credit (the short-term, interest-free grace period balance from purchase until the statement due date), despite its high frequency (29,692 loans), represents only EUR 28.9 million. “Other credit” plays a negligible role for non-financial firms, accounting for just EUR 1.7 billion across 8,811 instruments (2.4%).

Chart 7 complements the aggregate breakdown in table 13 by showing kernel density distributions of positive outstanding nominal amounts for loans to non-financial firms by loan category. The “other credit” category exhibits a pronounced peak at around EUR 10,000, indicating a high concentration of similarly sized instruments. Revolving credit is concentrated at lower amounts than non-revolving credit, consistent with the typically smaller scale of overdrafts, credit card loans and revolving loans. Non-revolving credit displays greater dispersion and is shifted to the right, with the highest median and a long upper tail extending beyond EUR 100 million, consistent with its role in meeting larger and longer-term funding needs.

A key advantage of the IFLD loans data is that it records not only loan volumes but also the price of credit, measured by the annualised agreed rate at the individual-instrument level. Linked with debtor and firm characteristics, this information enables researchers to analyse borrowing costs across credit categories and firm types. The following interest rate analysis is restricted to euro-denominated instruments. Although outstanding nominal amounts are converted into euro at the reporting reference date irrespective of the original currency, interest rates are influenced by currency-specific reference rates and monetary conditions and are therefore only directly comparable within the same currency. Across all counterparties, 511,596 of the 532,997 credit instruments are euro-denominated, corresponding to 96.0% of all instruments. Among loans to non-financial firms, 362,818 of 365,021 instruments are euro-denominated. The interest rate figure below further restricts the sample to the 349,917 euro-denominated instruments with non-missing interest rate information.

Chart 7

Distribution of outstanding amounts for loans to non-financial firms by loan category



Note: Non-revolving credit comprises lump-sum loans, finance leases and credit lines without revolving features. Revolving credit comprises overdrafts, credit card loans and revolving loans. Other credit comprises accounts receivable and reverse repurchase agreements. Dashed vertical lines indicate category-specific medians. The chart includes 308,036 credit instruments to non-financial firms with positive outstanding nominal amounts.

Source: IFLD 2021, OeNB.

Table 14 reports interest rates on euro-denominated individual loans across the loans data frame by counterparty type as of the reference date 31 of December 2021. Loans to financial firms carry a mean interest rate of 0.76% (median: 0.20%), substantially lower than the 2.15% (median: 1.79%) observed for non-financial firms. For instance, interbank lending is typically priced at or near policy rates, which might explain the lower average rates for financial firms.

Table 14

Interest rate distribution by counterparty (euro-denominated loans)

Counterparty	Number of loans	Mean %	P1	P25	P50	P75	P99
Financial firms	25,515	0.76	-0.56	0.00	0.20	1.25	5.83
Non-financial firms	349,917	2.15	0.00	1.02	1.79	2.65	12.55
Other counterparties	114,023	1.55	0.00	0.28	0.95	2.02	9.17
Total counterparties in loans data frame	489,455	1.94	0.00	0.61	1.56	2.53	11.63

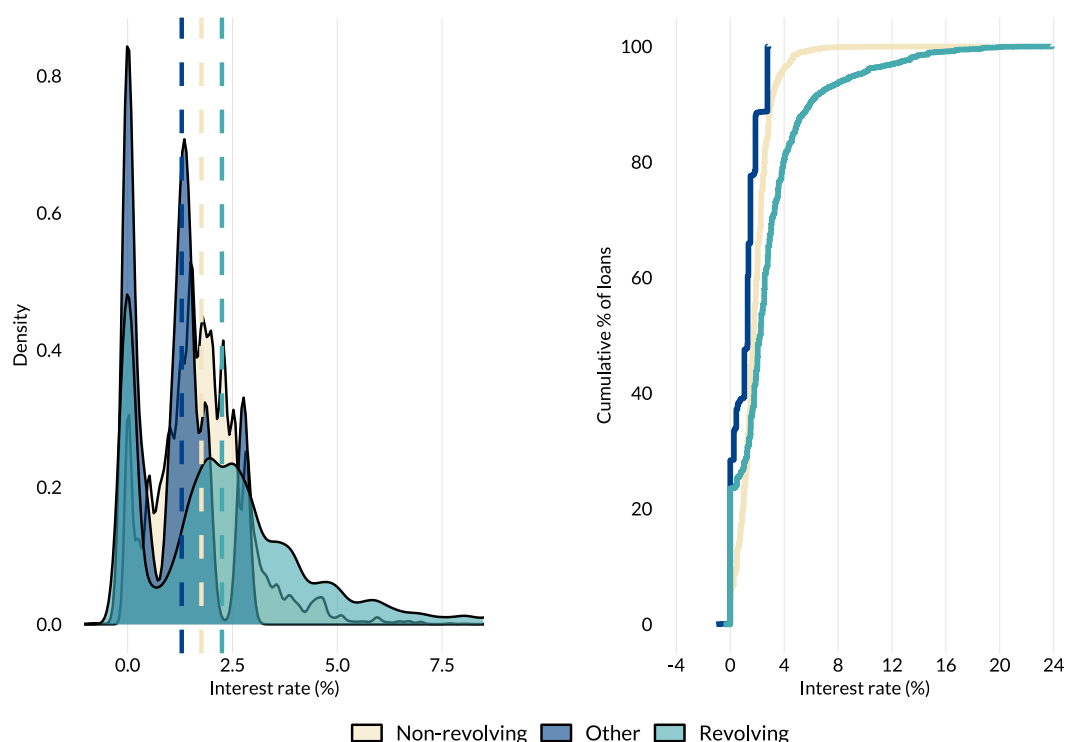
Note: Table reports descriptive statistics of the annualised agreed rate charged on euro-denominated individual loans. Interoffice loans are excluded from the analysis. Financial and non-financial firms are defined as in section 3.

Source: IFLD 2021, OeNB.

A further breakdown of loans to non-financial firms by loan category reveals additional variation. Revolving credit carries higher interest rates (mean: 2.79%) than non-revolving credit (mean: 1.81%), consistent with the greater flexibility and typically shorter maturity of revolving instruments. The left panel of chart 8 shows in more detail the density distribution of interest rates by loan category for loans to non-financial firms. All three credit categories exhibit some mass at or near 0%, although this is more pronounced for revolving and “other” credit. Beyond this, “other” credit is concentrated at around 1%, non-revolving credit peaks between 1.5% and 2%, while revolving credit is more dispersed and exhibits a longer right tail extending well beyond the displayed range. The right panel of chart 8 confirms this pattern: around 28% of “other” credit carries rates at or near 0%, and the curve reaches 100% by an interest rate of 3%. Revolving credit, by contrast, reaches the upper end of its distribution only at substantially higher rates, reflecting the wider dispersion in the pricing of short-term, more flexible credit.

Chart 8

Distribution of interest rates by loan type (euro-denominated loans only)



Note: The sample consists of 349,917 EUR-denominated credit instruments to non-financial firms with non-missing interest rate information. Non-revolving credit includes lump-sum loans, finance leases and credit lines without revolving features. Revolving credit comprises overdrafts, credit card loans and revolving loans. Other credit includes accounts receivable and reverse repurchase agreements. The left panel displays the density distribution of interest rates by loan category over the interval [-1%, 8%]; observations outside this range remain included in the underlying distribution. Dashed vertical lines indicate category-specific median interest rates. The right panel plots the corresponding cumulative distribution.

Source: IFLD 2021, OeNB.

5.4 Firm financing patterns

Table 15 presents the prevalence of bank loans and the distribution of firm-level effective liabilities among non-financial firms broken down by firms' legal form. This breakdown is informative as legal forms

are closely associated with key firm characteristics such as firm size and governance structures, and therefore with both the likelihood of having bank loans and the amount borrowed.

Among the 250,590 non-financial firms in the dataset, only 36.4% (91,258 firms) have outstanding loans from Austrian banks (table 15). A firm is considered to have a loan if it has either a positive outstanding loan amount or a positive unused credit line. This implies that a majority of firms have no loan from an Austrian credit institution at the reporting reference date. Limited liability companies represent the largest group (180,108 firms), also among all non-financial firms with loans (71,149 or 39.5%). Stock corporations and European Companies, while fewer in number (767), exhibit substantially higher average loan volumes (EUR 46.6 million) compared to limited liability companies (EUR 1.8 million), reflecting the substantially larger average size of stock corporations and European Companies.

There are several interesting findings. First, the large gap in firm-level effective liability between mean (EUR 2.0 million) and median (EUR 233,000) indicates a highly skewed distribution, with a small number of large borrowers driving the average. Second, cooperatives display high average effective liabilities (EUR 17.5 million) despite their relatively small number. Third, stock corporations and European Companies not only have higher average effective liabilities but also a higher share of firms with loans (50.5%) than limited liability companies (39.5%).

Table 15

Effective liability of non-financial firms by legal type

Legal type	Number of firms	Number of firms with loans		Effective liability						
				Mean	P1	P25	P50	P75	P99	
				% of all firms						
				EUR thousand						
Limited liability companies	180,108	71,149	39.5	1,825.3	0.0	47.8	252.1	1,006.1	22,637.2	
Partnerships	56,110	12,415	22.1	435.4	0.0	35.4	100.7	307.8	4,500.0	
Capitalistic partnerships	12,220	6,671	54.6	2,865.7	0.0	142.6	663.5	2,217.8	35,479.3	
Cooperatives	1,377	633	46.0	17,533.1	0.0	88.9	411.8	2,502.3	383,945.9	
Stock corporations & European Companies	767	387	50.5	46,580.0	0.0	419.4	5,875.7	31,317.9	601,256.3	
Others	8	3	37.5	-	-	-	-	-	-	
Total	250,590	91,258	36.4	2,011.0	0.0	46.9	233.3	956.9	25,230.5	

Note: Effective liability is the borrower-specific amount of a loan for which a firm is liable. At the firm level, it may be smaller than or equal to the instrument's total outstanding nominal amount, although the sum of effective liabilities across borrowers may exceed that amount. Interoffice loans are excluded from the analysis. Non-financial firms are defined as in section 3. Partnerships include European Economic Interest Groupings, general partnerships and limited partnerships. Capitalistic partnerships include general partnerships with limited liability and limited partnerships with limited liability. Cooperatives include Cooperative and European Cooperative Societies. "Others" includes other legal entities and private foundations. Statistics based on fewer than 10 firms with loans are not reported.

Source: IFLD 2021, OeNB.

Taken together, these patterns largely reflect the strong positive relationship between firm size and bank financing documented in Hirsch et al. (2025). Firms organised as stock corporations are, on average, substantially larger than limited liability companies and partnerships and are therefore both more likely to have bank loans and to borrow larger amounts. For example, stock corporations and European Companies report average total assets of about EUR 386 million, which is about 67 times the amount reported for limited liability companies (EUR 5.8 million). More generally, both the likelihood of having a bank loan and the amount borrowed increase strongly with firm size. At the same time, firm size itself is highly unevenly distributed, with many small firms and only a few very large ones (see section 4.1). Given the strong link between firm size and loan amounts, the distribution of bank loan volumes is similarly skewed. Overall, the differences observed across legal forms as well as the concentration of loan volumes largely reflect the underlying size distribution of Austrian firms.

Beyond legal form and the associated differences in firm size, financing patterns also vary systematically across industries, as shown in table 16. A key observation is the substantial heterogeneity in the prevalence of bank loans across sectors. The share of firms with bank loans ranges from around 21% in

the information and communication sector to about 50% in manufacturing, utilities and energy and real estate. A similarly pronounced pattern emerges for effective liabilities. In particular, firms in the real estate sector exhibit substantially higher average effective liabilities – around EUR 4 million compared with an overall average of EUR 2 million. Combined with their high prevalence of bank borrowing, real estate firms account for approximately 44% of non-financial firms' total effective liabilities.

This heterogeneity is closely linked to differences in capital intensity across sectors. Firms operating in more capital-intensive industries, such as manufacturing and real estate, tend to rely more heavily on bank financing. This reflects the fact that the acquisition of physical capital, including machinery, infrastructure or real estate, typically requires substantial external funding. At the same time, such assets can serve as collateral, thereby facilitating access to bank credit. This interpretation is consistent with the findings in Hirsch et al. (2025), who document a strong positive relationship between tangible assets and the likelihood of having bank loans. A look at sectoral balance sheet structures supports this view: firms in the real estate and utilities and energy sectors exhibit the highest shares of tangible assets – around 50% of total assets – compared to an average of roughly 25% across all sectors.

Table 16

Effective liability of non-financial firms by industry

NACE sector	Firms with loans	Mean	Median	Effective liability
	% of all firms	EUR thousand		% of total
Manufacturing (incl. agriculture and mining)	51.2	2,301.0	248.5	11.8
Utilities and energy	52.8	2,770.8	484.3	2.7
Construction	45.5	1,055.1	171.2	6.9
Trade	36.0	922.2	128.6	8.1
Transport and storage	34.8	1,680.6	137.6	3.0
Information and communication	20.5	425.1	62.0	0.6
Business and professional services	24.9	2,015.2	114.2	15.7
Real estate	48.1	4,085.4	856.9	43.7
Accommodation	37.5	1,153.9	243.3	5.3
Public, education, health and other services	26.2	1,136.6	109.8	2.2
NACE information missing	0.0			0.0
Total	36.4	2,011.0	233.3	100.0

Note: Effective liability is the borrower-specific amount of a loan for which a firm is liable. At the firm level, effective liability may range from zero to the instrument's full outstanding nominal amount, although the sum across borrowers may exceed that amount. Interoffice loans are excluded from the analysis. Non-financial firms are defined as in section 3. Industries are grouped according to a 10-sector classification based on OeNACE 2008 (NACE Rev. 2). The aggregation is defined as follows: manufacturing, agriculture and mining (A–B–C); utilities and energy (D–E); construction (F); trade (G); transport and storage (H); information and communication (I); business and professional services (M–N); real estate (L); accommodation (J); and public, education, health and other services (K–O–P–Q–R–S–T–U). Firms without valid NACE information are reported separately.

Source: IFLD 2021, OeNB.

Financing patterns also vary across federal provinces, as shown in table 17. The share of firms with bank loans is relatively similar across most regions, generally ranging from 38% to 47%, with Vienna standing out as a clear exception, accounting for 24.4%. At the same time, average firm-level effective liability among borrowers in Vienna are markedly higher than in other provinces. The combination of low prevalence and high average loan volumes suggests a stronger concentration of borrowing at the upper end of the firm size distribution, pointing to the presence of particularly large firms in Vienna.

Table 17

Effective liability of non-financial firms by federal province

Federal province	Firms with loans	Mean	Median	Effective liability	Loan-debtor records
	% of all firms	EUR thousand		% of total	
Burgenland	41.5	1,824.4	188.8	2.5	3.5
Carinthia	38.2	1,052.2	204.2	3.2	4.9
Lower Austria	38.6	1,650.7	182.0	12.0	16.2
Upper Austria	46.5	1,790.7	187.3	14.4	18.3
Salzburg	42.7	1,764.5	267.8	7.9	9.0
Styria	41.3	1,561.1	254.0	10.9	14.3
Tyrol	43.4	1,971.2	325.8	10.2	10.0
Vorarlberg	45.5	1,896.3	365.7	5.0	5.5
Vienna	24.4	3,162.5	244.4	33.9	18.4
Total	36.4	2,011.0	233.3	100.0	100.0

Note: Effective liability is the borrower-specific amount of a loan for which a firm is liable. At the firm level, effective liability may range from zero to the instrument's full outstanding nominal amount, although the sum across borrowers may exceed that amount. Firm-level effective liability is calculated as the sum across all non-interoffice loans of the firm. Means and medians are calculated among firms with loans. Loan-debtor records count each non-interoffice borrower-instrument relationship; an instrument with multiple jointly liable borrowers may therefore be counted more than once. Firms are assigned to federal states according to their business address.

Source: IFLD 2021, OeNB.

Despite its significantly lower share of firms with bank loans, Vienna accounts for the largest share of total effective liabilities (33.9%). This reflects both its higher average effective liability amounts and – as shown in section 3.3 (table 3) – its large firm base: almost one third of all Austrian non-financial firms are based in Vienna. In terms of effective liabilities, Upper Austria ranks second, consistent with its position as the second-largest federal province by number of firms and its comparatively high loan prevalence (46.5%). Burgenland, by contrast, accounts for the smallest share of total effective liability (2.5%), in line with its comparatively small number of firms and lower overall loan amounts.

6 Outlook

The IFLD is designed as a long-term data infrastructure whose analytical value will increase as it is being developed further and institutionalised. A central priority is the systematic treatment of missing data. This includes a transparent classification of missingness structures, the development of suitable imputation strategies and the construction of weighting schemes tailored to different, clearly defined target populations. Together, these elements are essential for ensuring representativity, assessing selection mechanisms and enabling robust inference. All procedures will be documented in detail to preserve transparency and reproducibility.

A second key development path is the extension of the IFLD into a longitudinal database. Expanding the time dimension will allow users to track firm dynamics over time, including entry, exit, growth, financing patterns and distress. The transition from a cross-sectional dataset to a panel will substantially broaden the analytical scope, enabling better inferential statistics and, in selected applications, more credible causal analysis. Decisions on time coverage, update cycles and reference periods will be guided by data availability, consistency requirements and the needs of internal users.

From a central bank perspective, the IFLD provides a powerful foundation for monetary policy analysis and financial stability monitoring. By linking firm balance sheets, granular credit information, ownership structures and insolvency outcomes, the database enables the detailed analysis of credit allocation, risk

concentration and the transmission of financial conditions to the real economy. At the same time, the IFLD is expected to become a stable and conceptually consistent base for the production of aggregate statistics, improving micro-macro consistency and reducing discrepancies between firm-level evidence and macroeconomic aggregates. In this sense, the database will increasingly serve as a backbone for macroeconomic statistics and related analytical products.

The IFLD also has broad policy relevance and research potential wherever firms matter. This includes applications in structural analysis, productivity and growth, ownership and control, regional development and firm resilience. The clear definition of target populations and the ability to explicitly analyse missingness at the unit and item level make the IFLD particularly well suited for rigorous empirical work and for collaboration with researchers working in related fields.

The modular design of the IFLD facilitates future extensions and interoperability with other data infrastructures. Planned and potential modules include bank balance sheet information, firm-level risk measures and links to data on municipalities and public entities. A key objective is also to enable systematic links with other data environments such as the AMDC (Austrian Microdata Center) of Statistics Austria. In the longer run, the (statistical) integration of firm- and household-level data is envisaged, which will open new avenues for analysing ownership, wealth, risk-sharing and the interaction between firms and households.

At the institutional level, the IFLD is intended to support a wide range of users within the OeNB. In addition to researchers working directly with microdata, the project aims to provide aggregated outputs through automated reports, dashboards and standardised indicators for users without direct microdata access. An important next step is to present the IFLD and its analytical possibilities to the wider research community, to collect feedback and to identify promising directions for future research and the further development of the database.

Finally, the sustainable development of the IFLD requires strong documentation and production processes. Ongoing work therefore includes building comprehensive documentation, maintaining a shared code base for data preparation and analysis and establishing clear procedures for error reporting, updates and version control. Continuous feedback from internal users, management and the research community will be actively sought to adapt the database in a timely manner and to ensure that it evolves into a flexible, reliable and widely useful infrastructure.

7 Conclusion

Credible empirical research and evidence-based policy depend on transparent and coherent processes from the point at which data are generated and collected, through their integration and analysis, to the interpretation and communication of results.

Meaningful empirical statements require context: a clearly defined population of interest, an explicit treatment of uncertainty and methods that meet established scientific standards. Data integration is therefore essential.

The IFLD is intended to provide a shared reference framework for combining information about financial and non-financial firms in Austria across sources to analyse them as economic actors embedded in financial, legal and ownership structures. It establishes a common basis for those who produce data, those who analyse them and those who use them for policy design. Such a shared foundation is equally important for scientific communication: transparent reporting of data, methods, assumptions and

limitations is a prerequisite for communicating results in a non-dogmatic manner, consistent with the open and provisional nature of scientific knowledge.

As a public institution, the OeNB has a responsibility to provide high-quality statistics as a public service. By developing the IFLD as an integrated, well-documented data infrastructure, we aim to strengthen empirical research, enhance policy relevance and support an informed exchange within the central bank, with the research community and with the broader public. We therefore explicitly invite researchers, data producers and users, including policymakers, to engage with the IFLD, to provide feedback and to contribute to its further development.

Glossary

IFLD glossary of Austrian legal and institutional terms

English term	German term	Abbreviation / explanation
Accounting obligation	Rechnungslegungspflicht	Obligation under the Austrian Commercial Code (UGB) to maintain double-entry accounts and prepare annual financial statements; distinct from disclosure obligation
Annual financial statements	Jahresabschluss	Comprises the balance sheet, income statement and, where applicable, other components
Austrian Commercial Register	Firmenbuch	Official public register maintained by the competent Commercial Register court
Austrian Insolvency Act	Insolvenzordnung	
Austrian legal notices database	Ediktsdatei	Official public database for court notices
Bankruptcy proceedings	Konkursverfahren	Type of insolvency proceeding
Branch	Zweigniederlassung	Legally dependent establishment
Business address	Geschäftsanschrift	Registered business address; distinct from the registered seat
Capitalistic partnership	kapitalistische Personengesellschaft	A partnership in which no natural person has unlimited liability
Commercial Register Act	Firmenbuchgesetz	
Commercial Register court	Firmenbuchgericht	Competent court maintaining the relevant Commercial Register entry
Commercial Register entry	Firmenbucheintragung	
Commercial Register extract	Firmenbuchauszug	Extract containing the registered information on an entity
Commercial Register number	Firmenbuchnummer	FN; unique identifier assigned to an entity registered in the Austrian Commercial Register
Cooperative	Erwerbs- und Wirtschaftsgenossenschaft	Gen
Corporation	Kapitalgesellschaft	
Disclosure obligation/disclosure requirement	Offenlegungspflicht	Obligation to submit/disclose annual financial statements.
European Company	Europäische Gesellschaft	SE (Societas Europaea)
European Cooperative Society	Europäische Genossenschaft	SCE (Societas Cooperativa Europaea)
European Economic Interest Grouping	Europäische wirtschaftliche Interessenvereinigung	EEIG / EWIV
Federal province	Bundesland	
General partner	Komplementär/unbeschränkt haftender Gesellschafter	
General partnership	Offene Gesellschaft	OG
General partnership with limited liability	GmbH & Co OG	
Going-concern prognosis	Fortbestehensprognose	
Insolvency proceedings	Insolvenzverfahren	
Legal entity	Rechtsträger	
Legal person	juristische Person	
Limited liability company	Gesellschaft mit beschränkter Haftung	GmbH
Limited partner	Kommanditist	
Limited partnership	Kommanditgesellschaft	KG
Limited partnership with limited liability	GmbH & Co KG	
Natural person	natürliche Person	
Private foundation	Privatstiftung	
Registered seat	Sitz	The municipality in which a firm's seat is located as recorded in the Austrian Commercial Register
Restructuring proceedings	Sanierungsverfahren	Type of insolvency proceeding
Mutual savings bank	Sparkasse	
Sole proprietorship	Einzelunternehmen	
Stock corporation	Aktiengesellschaft	AG

Source: Authors' compilation.

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Address: Otto-Wagner-Platz 3, 1090 Vienna

PO Box 61, 1011 Vienna, Austria

Website: www.oenb.at

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