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Firms, Jobs and economic Importance



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Summary of main results

This study is the first to provide representative estimates of the share of family firms in European economies, analysing their distribution and relative importance across sectors and firm size classes. The result is a database containing information on the distribution of 26.8 million private-sector firms. The weighted aggregate figures show that 97.7% are family-owned and account for 76.1% of employment. 92.1% are family-owned and family-managed. These firms account for 56.6% of employment.

Family firms are the backbone of Europe's private sector, accounting for 97.7% of all firms and employing over three-quarters of private-sector workers.

To obtain these estimates, we have developed a new multi-source, multi-method approach. We have compiled a set of definitions of family firms based on existing literature. Although these definitions are complex, they can be implemented in a reproducible and standardised way. Methodologically, we adopt a mixed-methods approach, using official employment and firm data provided by Eurostat as a basis. This information is publicly available at the country-industry-size bracket level. We then categorise each cell as either family or non-family firms using two datasets: a proprietary firm-level database and an internet archive. Finally, official information is used to compute representative averages.

We developed a twelve-step procedure for classifying firms as either non-family or family-owned businesses. The defining characteristics of family-owned firms are global ultimate ownership and the legal structure of the firm. Additionally, we employ a four-step process to identify family-owned and family-managed businesses. We use data science to implement these definitions. We combine sophisticated analyses of firm-level data with cutting-edge web scraping methods and other artificial intelligence tools to validate and enhance the results.

These estimates are higher than those in previous studies because multiple sources were used to mitigate the effects of bias from a single source method.

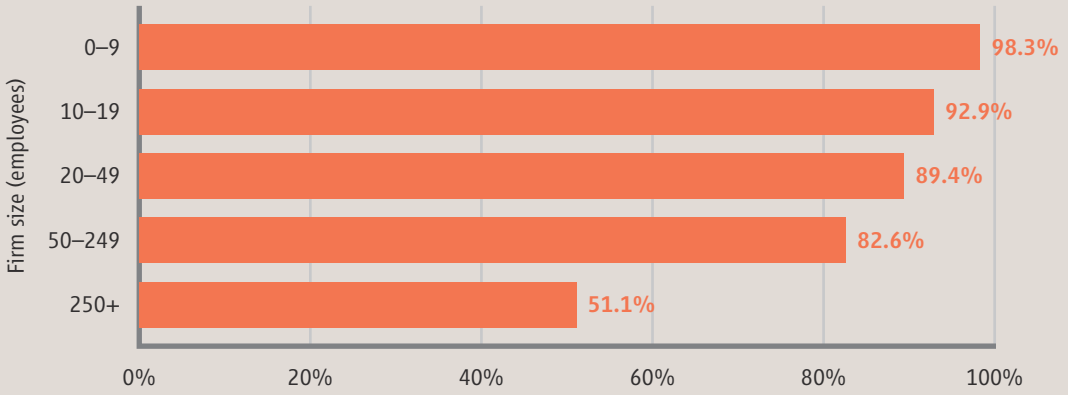
Our novel, multi-source approach mitigates the risk of underestimation bias in single-method studies. Compared with previous studies, it suggests that the proportion of family firms is slightly higher. This is primarily because the dataset has been enriched with additional information, reducing the bias from false negatives – i.e. family firms that would otherwise not have been identified as such.

The defining characteristic of family firms is family ownership and control. The literature suggests that small firms are mostly family firms, often due to a lack of alternative options. In contrast, larger firms can either remain family-run or relinquish control. Hence, family firms are expected to occur more likely among smaller businesses than among larger firms. When we break down the results into Eurostat's size brackets, the expected negative pattern becomes apparent. Family firms are indeed most prevalent among the smaller businesses. They account for almost all firms (98.3%) with 0–9 employees, but this figure drops sharply to around half of all firms with 250 or more employees (51.1% of the firms with 250+ employees are family

Family firms are found in all size classes, but are much more common among micro firms than large companies.

firms). The employment-weighted figures are comparable for the smallest bracket, which has 0–9 employees (98.1%), and are slightly lower for large firms with more than 250 employees (48.8%).

Figure: Share of family owned firms



Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Not all family-owned firms are family-managed. While most micro firms are family-managed, fewer than a quarter of large family firms are.

European ownership – defined as firms where the ultimate global owner is based in the EU, Switzerland or Norway – was explored from a geopolitical perspective and remains consistently high across all size groups, although it is lower among the largest firms.

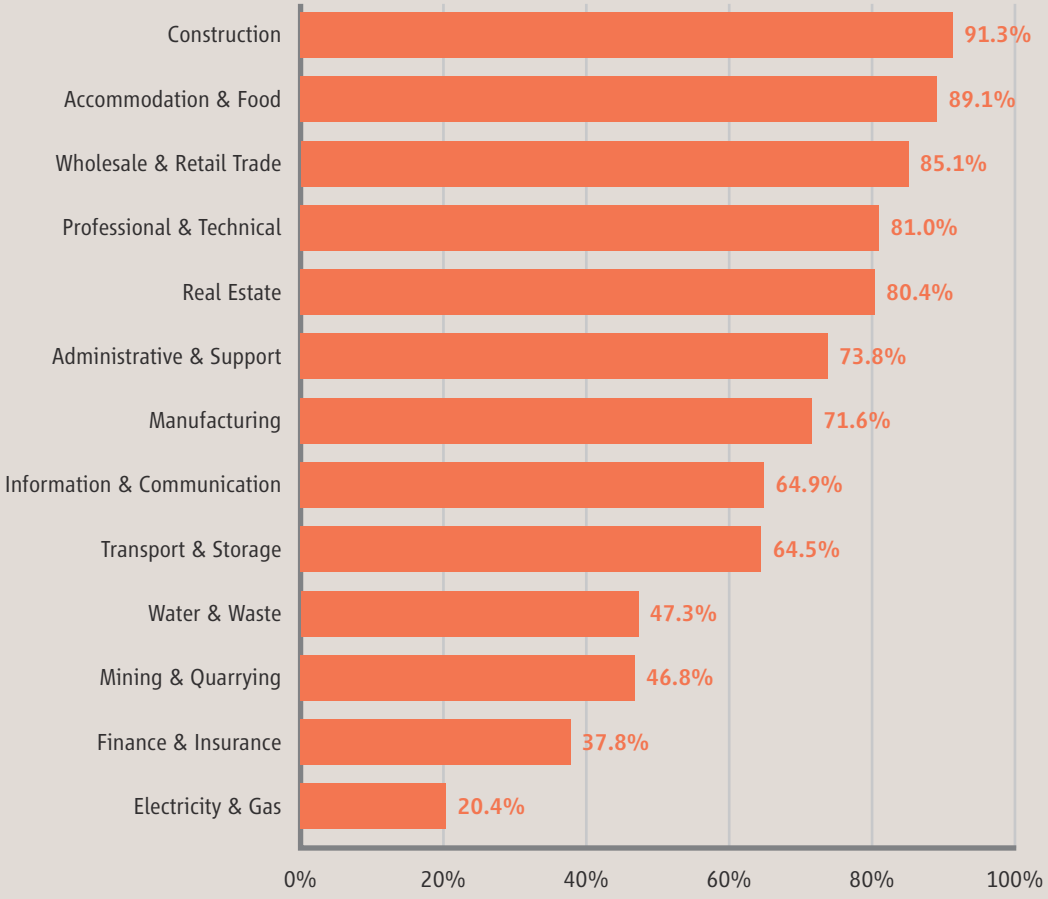
The European landscape is dominated by the sheer number of family-owned firms. However, not all of these are also under family management. While medium-sized and large firms remain a major source of employment across Europe, the day-to-day management of larger firms is often not in family hands. Of family-owned micro businesses with 0–9 employees, 93.4% are managed by family members, while this figure drops to just 23.5% for larger family-owned firms with over 250 employees. There are geographic differences: In particular, Western and Northern European economies demonstrate a clear distinction between ownership and management. This suggests that family firms in well-developed economies with well-established institutions tend to separate the two.

Family firms are more prevalent in labour-intensive service industries than in capital-intensive or heavily regulated ones.

These results highlight the prevalence of family firms in virtually every sector of the European enterprise landscape, albeit to varying degrees. While sectoral variation was modest in terms of firm count, it becomes far more pronounced in terms of employment. Family-owned firms account for around 20% of employment in capital-intensive industries such as electricity and gas, and up to almost 40% in strongly regulated industries such as Finance and Insurance. Employment shares are substantially higher in labour-intensive service industries. For instance, 91.3% of the European workforce in the construction-sector is employed in family-owned

firms. The ownership patterns of family-managed firms follow these trends, which become more pronounced when firms with at least 50 employees are considered.

Figure: European workforce – Share of employees of a sector working in family owned firms



Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Next, information on the employment in family firms was used to estimate their contribution to value added. These firms are important contributors to value added across Europe. The weighted mean contribution across all countries and size classes is 59.6%, meaning family firms generate well over half of Europe's private-sector value added – more than the rest of the economy combined. Among medium sized and large firms alone, they still contribute 42.1%. Their added value also shows considerable variation between countries, ranging from roughly 40% in the Netherlands to over 75% in some Eastern European Member States. All in all, family firms play a significant role in all industries in the private sector, but they are especially dominant among smaller firms and in service-oriented, labour-intensive industries.

Family firms contribute significantly to value added, with variation across countries. Especially in service-oriented, labour-intensive industries.

We conducted an analysis of variance to determine the extent to which differences can be attributed to size-class effects, sectoral differences, or country-specific effects. We find that the prevalence of family businesses is primarily influenced by the size of the firm. The results differ depending on whether ownership or management is measured. Sector effects are more important for ownership-based measures, while country effects are more important for management-based measures. With an explanatory power of around 70% of the total variance, the base model performs well. However, excluding micro and small firms reduces its explanatory power to around a third of the overall variance. Once firm size is excluded from the decomposition, sectoral effects emerge as the most important structural driver, particularly for ownership-based measures, while country-specific differences explain only a limited amount of variation. A large residual indicates substantial heterogeneity within countries and sectors.

The largest factor influencing the proportion of family firms is firm size, followed by sector- and country-specific effects.

We validate the generated data by linking the observed patterns to country-level institutional indicators. Our findings are consistent with the previous literature. We find that family firms are less prevalent in legal systems based on Scandinavian civil law than in systems based on German or French law. The reason may lie in the level of shareholder protection. Where the law provides strong safeguards for outside investors, founding families are more willing to sell shares and relinquish control. Where such safeguards are weaker, keeping ownership within the family is the safer option. This trend is more pronounced among larger firms and with regard to employment rather than to the number of firms. There is a weak negative correlation between the quality and effectiveness of public administration and the prevalence of family firms. This means that family firms tend to be less common in environments where public administration is more effective and efficient. Reliable administration and courts that enforce contracts facilitate business with external partners. In environments where public institutions are less effective, family ties may provide an alternative basis for trust.

Family firms are more prevalent in French civil law systems. They are less common in environments with robust economic institutions.

Overall, family firms are not a niche phenomenon; they represent the dominant ownership model across Europe. However, their prevalence varies by sector, country and size class. This report's data-scientific approach sheds light on these structural differences and provides a starting point for further research.

A. Introduction

A significant proportion of firms are founded, owned or controlled by families or individuals. Family firms can be found in all size categories, ranging from micro firms and SMEs to large, often multinational, enterprises. Their governance structures differ from those of non-family firms, suggesting behavioural and performance differences which have been extensively addressed in the business and economic literature. However, most studies focus on publicly listed firms or rely on a single identification method. This is because family ownership and control are rarely captured directly in official statistics, and no internationally consistent, standardised source of family firm data currently exists. As a result, existing estimates are fragmented, difficult to compare across countries, and prone to underestimation bias.

*For the first time this study proposes a **harmonised, representative database** that will* **enable the analysis of family firms** *across countries, industries and size classes.*

This study aims to solve this gap and will estimate the proportion of family firms in European economies and to reveal differences among sectors and firm size classes. To overcome the data limitations described above, the project proposes the creation of a novel database to analyse family businesses. To the best of our knowledge, this is the first attempt to combine multiple identification methods – ownership data, web-based validation and artificial intelligence tools – into a single, reproducible framework applied consistently across European countries. This requires an internationally harmonised dataset and a uniform definition of family businesses that can be applied consistently across different countries. Ultimately, we present a comprehensive overview using averages from the period 2021 to 2024, offering a level of cross-country comparability and methodological transparency that has not been achieved by previous single-method studies.

We propose a series of reproducible, standard definitions of family firms based on an extensive review of the literature in this field. Based on this literature, we implemented two definitions of family firms that align with the concept of 'closely held firms'. First, we define family-owned firms, distinguishing between different legal types of firms. We also differentiate ownership according to the owner's region of origin. Secondly, we define family-managed firms, senior management, executive boards und boards of directors. That means, family-managed firms are a subset of family-owned firms.

These definitions are then applied to the European context. Recent developments in data science and data access have made this analysis possible. Using a mixed-methods approach, we combine a sophisticated analysis of global ultimate ownership information from firm-level datasets with state-of-the-art web scraping methods and other artificial intelligence tools to validate the results. The datasets used to identify family firms comprise ORBIS and its global ownership information, provided by Moody's Analytics; Common Crawl, an internet archive provided by Amazon; company lists (e.g. Europe's Top 500 Family Businesses, provided by

Ernst & Young and the University of St Gallen). We use artificial intelligence platforms (e.g. Claude and ChatGPT) and manual web searches to validate and complete the data. This allows us to classify companies as either non-family or family businesses drawing on a wealth of information.

In striving for representativeness, the empirical strategy can be characterised as a three-dimensional cube consisting of: (i) countries, (ii) sectors, and (iii) groups based on firm size. We use Eurostat's employment-based firm size brackets, where the one-digit NACE Rev. 2 classification is used to describe sectors.[1] A cube contains Eurostat information in a given cell (at country-industry-size bracket level) on either the number of enterprises or total employment. Each cell is then divided into family businesses and non-family businesses. Information on family firms is then used to generate a twin cube containing the proportion of family firms at cell level, i.e. country-sector-size class level. These data is then used to generate weighted aggregates at the country, sector and firm-size level. The resulting dataset makes it possible to analyse the international distribution of family businesses.

The remainder of this report is structured as follows: **First**, a brief review of the literature discusses the various aspects of family firms. This justifies the definitions that we propose. **Secondly**, we present the methodological details of how we define family firms, create weights, and assess the reliability of the results. **Next**, the results section describes the findings at firm, country and sector levels. The results are **then** discussed in order to provide context, analyse variance to identify the broad determinants of family shares and link the variance of family firms to institutional indicators at the country level. **Finally**, the conclusion offers closing remarks and suggests avenues for future research.

1 NACE stands for 'Statistical Classification of Economic Activities in the European Community'.

B. Why study family firms

Family ownership is the most prevalent forms of corporate ownership for listed and unlisted firms worldwide (La Porta et al. 2000; Faccio and Lang 2000). Family firms have received attention in recent years. Family control is very specific form of governance that reduces and perhaps avoids possible agency problems between owners and managers.

While most small firms can be considered family businesses, family businesses are not the same as small and medium-sized enterprises (SMEs). The defining characteristic of family firms is family ownership and control. This not only addresses potential agency problems, as emphasised in the economic literature (Jarchow et al. 2023; Burkart et al. 2003; La Porta et al. 2000), but also likely affects business strategy and performance. The combination of family and business explains why family firms are often perceived as taking a longer-term approach to management to ensure the long-term survival of the firm and protect the reputation of the family. In contrast, the management of non-family firms and widely held corporations is often perceived as being defined by rather short-term financial market pressures to achieve economic targets. While family ownership is generally considered to promote firm resilience, it is also associated with risk-averse behaviour in terms of internationalisation, investment, and innovation. Whether, when and in which environments family firms outperform non-family firms remains an active and ongoing area of research.

Family firms are defined by **family ownership and control**. *They are governed and behave differently.*

In addition, the shares of family-owned businesses across countries has been widely studied. Key explanations for differences in the prevalence of family firms focus on the presence of legal and institutional frameworks. However, most of these studies focus on publicly listed firms. Consequently, little is known about the prevalence of family firms in different European economies. That is why we aim to close this gap by applying a novel, multi-method approach that captures family firms across the full firm size distribution – including micro, small and medium-sized enterprises that are typically absent from listed-firm samples. Hence, we provide a more complete picture of family firm prevalence across Europe.

I. Definitions of family firms in the literature

Family businesses are often equated with SMEs. However, the two are not the same as SMEs. Nevertheless, the two groups of course have considerable overlap. SMEs are defined by enterprise size, for example turnover or number of employees. Most small firms are family firms, where ownership tends to be highly concentrated, and the owner usually acts as both the CEO and manager of the firm. This is why family firms are often associated with SMEs.

Family firms are not automatically SME's, they also can be found throughout large firms.

Family firms, by contrast, are not uniformly defined. There are several definitions of what constitutes one. One of the defining differences between family firms and non-family firms is concentrated family ownership. This definition is closely related to closely held firms. It defines a family firm as one where one or more families hold the majority of voting rights or capital. Another definition focuses on the active management of firms, whereby the family exerts significant influence over the company through management activities in addition to ownership (family-managed firm). These definitions primarily focus on corporate governance and are closely associated with agency theory, based on the existence of a family that holds a significant stake in the company.

There are **multiple definitions** *of family firms. The definitions concentrate on factors such as ownership, control, continuity, identity, and the corporate culture.*

The literature on family firms also emphasises other aspects of family ownership that are generally associated with long-lived family enterprises and the presence of the founding family. As opposed to other block-holding owners, founding families come with additional characteristics and resources that can result in a distinctive corporate culture shaped by the family. The resource-based view of family firms (Habbershon and Williams 1999; Sirmon and Hitt 2003) emphasises this, arguing that the interplay between family and business enables family firms to develop unique resource bundles ('familiness'). Family firms have a special nature that goes beyond their governance structure and is defined by the existence of specific resources, such as human and social capital, as well as patient financial capital, which together create specific survivability capital (Sirmon and Hitt 2003; Heider et al. 2022).

According to the socio-emotional wealth theory (Gómez-Mejía et al. 2007), family firms are characterised by goals and motivations derived from emotional value placed on family control. According to this theory, family owners consider their firm not only as a source of income, but also as an extension of their family identity. This introduces non-economic goals into business decisions. This suggests that, if family values are reflected in the corporate culture, stability and more conservative entrepreneurial values are likely to prevail.

Some definitions are difficult to apply due to limitations in accessible data. In this study, we use definitions that emphasise ownership and control.

The definitions of family firms derived from the concepts of 'familiness' and socioemotional wealth tend to exclude small and new firms, as the development of distinctive resources, corporate culture, and family identification with the firm requires time. Such definitions are more difficult to apply to data, as information on the firms' histories is needed, and intangible defining criteria often become relevant. A variety of definitions of family firms is observed in the business literature (Amato and Patuelli 2023; Jarchow et al. 2023).

In the present study, the need to apply the definition to representative and official data led us to select definitions that emphasise family ownership and control.

II. Are family firms different?

A family firm is one that is both owned and controlled by a family. Family ownership can impact a firm's performance and valuation. It is often claimed that family ownership reduces agency conflicts arising from the separation of ownership and control thanks to the family's active involvement as shareholders and board members (Villalonga et al. 2015). Family ownership can also contribute characteristics such as in-depth knowledge of the firm, access to specific resources, and emotional and reputational involvement, as emphasised by the resource-based theory of family firms and socio-emotional wealth theory. However, family firms may face resource constraints due to their focus on protecting family control and influence over the firm, and their desire to strengthen family bonds through dynastic succession and foster closer relationships with stakeholders and the local community. Limiting factors may also arise due to inferior management and monitoring capabilities, which are primarily associated with a limited pool of human capital (Burkart et al. 2003).

Family firms approach principal-agent problems differently, which can have positive or negative effects on performance.

The literature on the performance of family firms suggests that family ownership can have a positive or negative impact, depending on the extent and nature of family involvement, and the ownership structure. Concentrated family ownership often means that more of the firm's capital is tied up, which can result in family firms being more conservative and risk-averse with regard to diversification, internationalisation, investment and innovation. For example, family firms are less likely than non-family firms to expand their businesses through mergers and acquisitions (Requejo et al. 2018) or to undertake international expansion (Debellis et al. 2021). Conversely, family firms' focus on long-term survival, personal reputation and maintaining family ownership may align owners' and creditors' interests (Anderson et al. 2003). This often provides family firms with better and more affordable access to credit (Villalonga et al. 2015). However, empirical evidence indicates that family firms tend to favour debt over new equity when seeking additional external financing. However, some studies show that family ownership is associated with lower leverage.

The inconclusive findings regarding the financing of family firms are reflected in the literature on family firm innovation. Available evidence suggests that family firms invest less in innovation than non-family firms. However, the findings regarding innovation output are mixed. While some studies find a negative correlation between family control and innovation output, others suggest that family firms are associated with relatively high levels of innovation and innovation output. In fact, some results even suggest that family firms are more efficient at converting innovation inputs into outputs, such as patents and new products. The long-term outlook of family firms can support the willingness to invest in innovation as they can be patient on the return of their innovation investment. A literature review shows that family firms are more inclined to pursue incremental than radical innovation (Genc 2024). However, it emphasises

Family firms tend to have a long-term outlook, which suggests that they are more conservative and less sensitive to short-term performance indicators.

that the innovativeness of family firms is more heterogeneous than that of non-family firms. This heterogeneity may be associated with differences in family-specific resources that serve as sources of innovation and competitive advantages, but which can also impede change (Heider et al. 2022). This heterogeneity makes generalisations about differences in economic performance between family and non-family firms difficult. Other elements include the heterogeneity of family firms in terms of firm size, family involvement, sectoral activity and the institutional environment – typically measured at the country level – in which they operate.

Family firms are often perceived as being more resilient than non-family firms during times of crisis. Multigenerational family firms, in particular, adopt a long-term management approach, prioritising long-term survival. This suggests that they are less sensitive to financial performance signals when changing their strategies, although family governance can enable them to make decisions quickly. Overall, the literature supports this view. Evidence from recent crises indicates that family firms performed better financially than non-family firms in Germany during the financial crisis (Jarchow et al. 2023) and on an international scale during the COVD-19 crisis (Miroshnychenko et al. 2024).

There is evidence that family businesses seek to protect their employees from the adverse effects of economic downturns (Heino et al. 2024; Amore et al. 2022). This lends weight to the idea that family businesses are more resilient. However, there is also contradictory evidence. For instance, during the 2008 financial crisis, family-owned firms reduced investment more than non-family firms to ensure survival (Lins et al. 2013). A literature review examining the performance of family firms over the business cycle and during crises found no evidence that family firms outperform during times of crisis (Hansen et al. 2020). However, the authors acknowledge that differences between countries and levels of family involvement affect the performance of family firms during a crisis. Other findings also support this, identifying differences in the financial performance of family and non-family firms and referring to these as 'resilience effects' (Miroshnychenko et al. 2024). Nevertheless, they acknowledge that the size of this effect varies across different types of family firms, sectors, and countries.

III. Differences in the prevalence of family firms across countries

Countries with civil law systems tend to have a higher proportion of family firms.

Research into comparative law and finance has investigated the elements that affect the extent of family ownership in various nations. Consequently, legal and institutional factors have been the most widely researched. In this body of work, family ownership is viewed as a response to inadequate legal systems and investor protection (Burkart et al. 2003), where concentrated ownership and trust among family members serve as a substitute for absent governance and investor protection. Studies show that countries with civil law systems, particularly those with weaker investor protection, tend to exhibit a higher prevalence of family-managed firms and

concentrated ownership structures (La Porta et al. 2000; Aminadav and Papaioannou 2020). Conversely, common-law countries with robust legal enforcement mechanisms and investor protection tend to transition to professionalised, non-family management and more dispersed ownership structures over time.

However, the relationship between legal and institutional factors and the prevalence of family firms is likely to be more complex. While family control is associated with a long-term orientation that fosters resilience, it can also lead to nepotism and succession difficulties. These issues may affect firm performance in later generations, thus impacting the longevity of family firms. Most existing evidence on the prevalence of family firms has been collected from listed firms. Less is known about non-listed private firms, which are likely to experience different national institutional characteristics (Ortiz 2025).

According to the law and finance literature, the prevalence of family firms is related to the type of financial system in place. Inactive markets for corporate control and shallow stock markets restrict external financing options, forcing companies to rely on internal family capital and bank-based finance. This fosters the prevalence and persistence of family control. There is a strong correlation between labour regulation and concentrated corporate control (Aminadav and Papaioannou 2020). This is consistent with political theories of corporate control that emphasise the interaction between welfare state policies and finance. In this context, labour laws influence the relationship between business ownership, workers and outside investors. Additionally, cultural values that prioritise family legacy, reputation, and the preservation of socio-emotional wealth over financial returns may influence the prevalence and longevity of family ownership across countries and institutional configurations.

Family-owned businesses are less common in economies where financial markets are less common in countries with highly developed financial markets and robust investor protection.

Overall, the literature suggests that differences in the prevalence and persistence of family firms are related to structural institutional factors affecting their performance (Bornhausen 2022). Family firms differ from non-family firms in many ways. While the sources of these differences are well understood, their consequences are not. Even in Europe, a comprehensive overview of the prevalence of family firms is lacking.

C. Methodology – A new approach

I. The estimation approach in a nutshell

Estimating the shares of family and family-managed firms in European countries consists of two stages.

First, we use information from ORBIS, a proprietary firm database, to identify family-owned and family-managed firms. We supplement and verify the ORBIS data using extensive web scraping and calculate values for missing information using a variety of methods. This includes information on the distribution of legal types of firms across countries and industries, as well as additional large-scale Google API searches. Based on this information, we calculate 'raw' family firm shares at country, sector, size bracket (Eurostat size classes) and legal-type-of-firm level.

In the second stage, we use this information to estimate the shares of family firms among all private firms in a cell using baseline firm population information from Eurostat. Consequently, we provide representative and comparable estimates of family firm shares that are directly related to Eurostat's published data. This procedure is based on statistical cells defined at the size-sector-country level. Results are aggregated using a stepwise procedure involving the construction of weights, which are then applied to multiple levels of aggregation. Unlike prior research, our figures are founded on official statistics, which are believed to deliver a more accurate aggregate perspective.

II. Data sources

The study estimates the proportion of the private economy accounted for by family firms. The baseline population of firms is obtained from Eurostat's *Structural Business Statistics* (SBS) database which contains information on firms active in industry (NACE sections B to E), construction (NACE section F), trade (NACE section G), and services (NACE sections H to N). To uncover structural relationships, the estimates are based on averages between 2021 and 2024. We use data for 29 European countries (the EU-27 plus Switzerland and Norway). However, we did not consider data from Luxembourg and Malta in the final analysis due to concerns about its quality.

The data are available for the following firm size classes: micro firms with fewer than ten employees; small firms with between ten and 49 employees; medium-sized firms with between 50 and 249 employees, and large firms with 250 and more employees.[2] A series of plausibility

2 See https://single-market-economy.ec.europa.eu/smes/sme-fundamentals/sme-definition_en (accessed on 3 August 2026).

checks on Eurostat data was implemented, which revealed several issues possibly biasing the results. For instance, some values were absent from the official data due to confidentiality regulations, while other entries were implausible (for example, the value of individual cells occasionally exceeded the total value of the corresponding country-industry-size group). We therefore implemented an imputation algorithm to calculate a comprehensive weighting matrix (see Annex). The resulting data correlates strongly (r: 0.99) with the SME Performance Review published by the European Commission, which can be interpreted as a reliable validation benchmark.[3]

In addition, we used the *Business Demography* (BD) database to obtain information about sole proprietorships. We implemented the same imputation procedure for these. Unfortunately, an alternative dataset that would allow us to benchmark the results is unavailable. Where total values were missing in the SBS, we used the BD database to supplement the data, and vice versa.

All data was obtained for the period 2021–2024 and for one-digit NACE Rev. 2 industries. To portray the medium-term structure of firm demography, we calculated the mean value for each variable over the given period. We focus on employment because, although revenue figures are also available for size brackets, they are more volatile and less frequently available in ORBIS data.

*We empirically define family firms using ownership and management data obtained from **ORBIS**, an international firm database, and **Common Crawl**, an internet archive.*

Next, each cell in the matrix representing the intersection of country, industry and size class is split into family and non-family firms. To achieve this, we use ownership and management information from the *ORBIS* database. With over 200 million entries in 2020, ORBIS is regarded as the largest international company database. The database is operated by Bureau van Dijk, a subsidiary of Moody's Analytics.[4] It contains company information from various countries, including employment and ownership data, as well as balance sheet and turnover figures. Here, it is primarily used for ownership-based definitions, as well as aspects of corporate governance, particularly manager-owner structures. ORBIS's coverage varies by country. While it can be considered representative in some countries, in others it may only cover a small fraction of companies.

The total number of observations reflects notable differences between ORBIS and SBS. In total, ORBIS provides information on 49.1 million firms in the analysed countries. The subsample of sections analysed in the next chapters (B–N) comprises around 36.8 million firms. This figure is higher than the number of enterprises found in the Eurostat data. This discrepancy is due

3 See https://single-market-economy.ec.europa.eu/smes/sme-strategy-and-sme-friendly-business-conditions/sme-performance-review_en (accessed on 3 August 2026).

4 See https://www.moodys.com/web/en/us/capabilities/company-reference-data/orbis.html (accessed on 3 August 2026).

to methodological differences. Eurostat's unit of observation is the enterprise, a statistical construct that may bundle several legal entities, whereas the ORBIS database records individual legal entities held in national commercial registers.[5] ORBIS also contains legal entities that Eurostat excludes because they are not market producers, such as property-holding civil companies, holding companies, and condominium and co-ownership entities. Conversely, unincorporated businesses are not fully recorded in the commercial registers of some countries, meaning that the overall surplus of legal units conceals a shortfall of sole proprietorships wherever these are not subject to registration. Despite these differences, ORBIS remains a valuable database for identifying the share of family firms.[6]

The approach we developed substantially reduces possible bias stemming from methodological differences. Much of the deviation originates from sole proprietorships, for which we use official Eurostat data rather than ORBIS. Additionally, our legal form filters largely exclude non-enterprise legal forms (see next section on the definition of family firms).

Extensive web scraping validated and complemented the ORBIS analysis. This work is based on data obtained from *Common Crawl*, a US-based non-profit organisation that crawls the web and provides its archives and datasets to the public free of charge.[7] The data is accessible free of charge on Amazon Web Services, though users may incur storage and computing costs. Since 2008, Common Crawl has collected petabytes of data for its web archive. Crawls are carried out approximately once a month. This open, reproducible dataset offers broad coverage of sources across regions, spans several years and contains multiple languages. Here, Common Crawl is used to capture aspects of ownership and corporate governance obtained from the firms' websites.

*A variety of state-of-the-art **data science tools** were used to validate the results and fill in missing firm-level.*

We used a variety of state-of-the-art data science tools to fill in missing information and validate the data. For example, the implemented definition required ownership information, which is why we created a stylised list of ownership types for all countries in the sample. This was done both manually and with the assistance of AI (ChatGPT) (see Annex). Similarly, the legal forms observed on the internet (Common Crawl) were converted into a standardised classification. In some countries, many family firms are owned by foundations, for which ownership information is sparsely available. To validate foundation ownership, we ran three *AI queries* using Gemma-4-31B-IT-NVFP4, defining a foundation as family-owned if all queries

5 See https://ec.europa.eu/eurostat/web/structural-business-statistics (accessed on 16 September 2026).

6 The literature discusses the data collection differences between ORBIS and SBS data and how to make ORBIS data representative (Kalemli-Ozcan et al. 2015). The literature does not address composition effects, which is important here.

7 See https://commoncrawl.org/ (accessed on 3 August 2026).

produced a positive result.[8] The aim was to minimise the likelihood of fake information generated by AI tools.

Missing information caused issues with the identification procedure in some countries. For firms for which we could not identify markers indicating that they are family firms, we used a *Google Search API* to explore ownership information (e.g. Wikipedia entries list the owners), which proved particularly useful for larger firms.[9]

*The database was completed using well-established **registers of family firms**. Small samples were validated manually.*

We also included well-established *registers of large family firms*. We use the list of Europe's top 500 family firms, as well as Germany's 1000 largest family firms, both of which were provided by the University of St. Gallen, Ernst and Young, and Die Deutsche Wirtschaft, respectively.[10] Finally, small samples of selected large firms or trusts were drawn *and manually validated*.

III. Defining family firms empirically

The classification of firms as family-owned lies at the core of this study, raising questions about the reliability of the results and the weight that can be attributed to them. The study population comprises all firms recorded in the ORBIS database. We define family firms based on three criteria:

- Ownership
- The country of origin of the owner
- Whether a firm is family-owned and family-managed.

The ownership definition is the main focus of the study, while the other two approaches form a subset of this.

1. A multi-criteria definition

We implement a multi-layered, stepwise, twelve-decision process. The following section describes the rationale behind the method (see Figure 1 for the different steps and their importance in reliably identifying family firms).

8 See https://huggingface.co/nvidia/Gemma-4-31B-IT-NVFP4 (accessed on 22 September 2026).

9 See https://serper.dev/ (accessed on 3 August 2026).

10 See https://die-deutsche-wirtschaft.de/die-liste-der-1000-groessten-familienunternehmen-in-deutschland/ and https://familybusinessindex.com/?pageSize=80 (accessed on 3 August 2026).

A firm is considered to be family-owned if the individuals who have ultimate control over it are from one family or a small number of related families, whether they hold the shares directly or through a family holding company or foundation. The important factor is who ultimately controls the firm, not how many legal entities are involved. The following principles are therefore implemented:

- **Ownership**, not management. Whether or not a family member *runs* the firm is a separate classification, which is applied only to firms that have already been identified as family-owned. This is documented in a separate chapter. As the two classifications are based on different evidence and are subject to different limitations, combining them would render neither auditable.
- **Structure**, not self-description. Advertising itself as a 'family business' is considered weak evidence and is never used as the sole basis for classification. Otherwise, the measure would reflect public relations rather than ownership.
- It must be **family-owned**, not just closely held. For example, five individuals who are not related to each other are not a family. Wherever the procedure counts individual owners, it also determines whether they are likely to be part of the same family.

'Control' is defined as owning more than 50% of the shares. This threshold applies wherever evidence takes the form of an ownership record. Several rules use weaker evidence as an approximation (see §5 in Figure 1).

The methodological appendix contains the full documentation, including all twelve decision rules, the calibration evidence behind each rule, and the complete list of limitations.

Figure 1 should be interpreted as follows: Each firm is checked against a fixed list of 12 rules, in strict priority order. As soon as one rule provides a definitive answer – 'Family' or 'Not Family' – the process for that firm stops, and the answer is recorded. None of the subsequent rules are applied to that firm.

Firms are sorted into one of three possible categories: (1) Family: the firm is classified as being family-owned. (2) 'Not family' – the firm is classified as a non-family firm. (3) Unclassified – none of the rules could reach a decision. This happens to around 10.7% of firms and is reported separately rather than being included with 'Not Family'. The two rules that matter most in practice are Rule 1 and Rule 6.

Figure 1: Defining family firms in a stepwise approach

How a firm is classified as family-owned

Twelve rules are applied independently; the **first one that reaches a verdict decides**, and is recorded with the firm.

Rule, in priority order	Verdict	Firms
1 **Ultimate owner is an individual or family** The register names a natural person holding more than half the shares.	Family	28.6%
2 **Web-search verdict on the firm's owner** Live search of company websites, registers and news. Used in both directions.	Family/Not	0.1%
3 **Ultimate owner is a foundation** Family foundation, or a charitable or public one – classified per foundation.	Family/Not	0.2%
4 **Corporate owner traced upwards** Positive side only The holding company's own shareholders are followed up the chain.	Family	0.9%
5 **Ultimate owner is of another known type** Bank, fund, insurer, the state, private equity, dispersed holders.	Not Family	0.7%
6 **The legal form alone is decisive** Sole trader → family; non-profit, public authority, listed-company forms → not.	Family/Not	52.6%
7 **The firm's own shareholders are decisive** All owners are individuals, few in number, and share few surnames.	Family/Not	4.9%
8 **The firm's website declares family ownership** Positive side only Matched by registered identifier or domain, never by name alone.	Family	0.2%
9 **A 25% owner is an individual** Positive side only Only where no majority owner exists – chiefly the equal split between two.	Family	0.3%
10 **A 25% owner is a family company** Positive side only That owner already carries a family verdict from rule 4 or rule 11.	Family	<0.1%
11 **The corporate owner's name is eponymous** Positive side only Built on a family name. Six countries only: ES · NL · BE · CH · SE · DE	Family	0.5%
12 **The corporate owner controls at most two firms** Positive side only A personal holding vehicle, not a group. Four countries only: NL · SE · CH · ES	Family	0.4%
No rule reaches a verdict Report separately – never pooled with 'not family', which is a positive finding	Unclassified	10.7%

Applies in named countries onl, where it was shown to holdy

Rests on a threshold or classification chosen by us, not observed in the data

Positive side only: the rule may conclude 'family'; its 'not family' side is discarded as undetermined

Source: WIFO and ASCII.

Rule 1 asks if the ultimate owner is an individual or a family. If official ownership records show one individual owning more than half of the firm, it is classified as being family-owned. This rule alone decides the classification of 28.6% of all firms. We use ORBIS to establish a global chain of ultimate ownership comprising around 1.35 billion links of approximately 280 million entities (Faccio and Lang 2000; Loretz 2025).

Rule 6 asks if the legal form alone determines family ownership. Certain legal forms are considered decisive in themselves – for example, a sole trader is usually a family firm, whereas a non-profit organisation, government body or publicly listed company is not. This single rule determines the majority of the remaining cases: 52.6% of all firms. Together, these two rules settle over 80% of cases.

2. Justification of a multi-layered definition

The obvious approach of defining family ownership once and applying it to every firm is not possible due to data limitations. ORBIS only records an ultimate owner for around a third of firms, and the frequency with which it does so varies greatly by country – from 4% in Greece to 77% in Bulgaria, for example.

This leaves us with two suboptimal options. Firstly, restricting the study to firms with ownership data available would reduce the sample size, turning a study of Europe into a study of countries with reliable commercial registers. Secondly, treating a missing ownership record as evidence of non-family ownership would be incorrect. Since coverage is correlated with country-specific fixed effects, the resulting error would be country-specific and therefore not random.

Our procedure therefore has three properties. *Each source is evaluated separately* and can choose to abstain. Twelve rules are applied to every firm independently. Each returns a *'family', 'not family' or 'undetermined'* result – where 'undetermined' means 'this rule does not inform about the firm', rather than return a negative result. This assumption is relaxed for large firms when calculating weighted aggregates. Rules may contradict each other, and nothing is reconciled at this stage.

An explicit priority order arbitrates. The verdict is the reading of the highest-priority rule that did not abstain, and we record which rule was applied to each firm (Figure 1 provides the overall picture). This makes every verdict attributable: any aggregate can be broken down into the evidence that produced it. The ranking is a single object that can be discussed and tested again without changing the meaning of any rule.

Trust is asymmetric. Seven of the twelve rules are positive only; their 'family' verdicts are used, while their 'not family' verdicts are discarded. A family that controls a firm through a blandly named holding company leaves no trace of that ownership in the company's name. Family firms are under no obligation to disclose this information on their websites. Attempting to trace an ownership chain upwards will return a 'not family' result when the owners are entities, or when the chain simply runs out of recorded data. We examined the latter case: 38% of the 'not family' verdicts issued under this rule are contradicted by independent evidence, compared to around 5% of the 'family' verdicts.

This comes at a price. Two negative outcomes cannot be combined. 'Not family' indicates non-family control, whereas 'undetermined' indicates an absence of a marker. These represent 10.5% and 10.7% of firms, respectively (see Figure 1). Treating 'undetermined' firms as 'non-family' would provide an inaccurate representation of the respective rates.

3. Determinants of the classification

Overall, 78.8% of businesses are classified as family-owned, while 10.5% are not. The remaining 10.7% are undetermined.

Table 1: Distribution of markers of family firms

Deciding evidence	Share of firms	of which family	Precision
Legal form alone	52.6%	82%	0.86
Ultimate owner is an individual	28.6%	100%	0.99
Undetermined	10.7%	–	–
Firm's own shareholders	4.9%	94%	0.98
Corporate owner traced upwards	0.9%	100%	0.95
Owner of another known type	0.7%	0%	–
Eponymous owner name	0.5%	100%	0.82
Owner controls ≤ 2 firms	0.4%	100%	0.85
25% owner is an individual	0.3%	100%	0.99
Ultimate owner is a foundation	0.2%	54%	0.75
Website self-declaration	0.2%	100%	0.90
Web-search verdict	0.1%	43%	*n.a.*

Source: WIFO and ASCII.
Note: The precision scores are based on web search results. Therefore, a comparison with itself is not applicable.

Two striking observations appear to have a greater impact than any individual rule.

- More than four fifths of all verdicts are based on two types of evidence: legal form and recorded individual ownership. The former is an inference about ownership practices rather than an observation of ownership and is correct 86 per cent of the time. This suggests it is a valid starting point for robustness checks.
- The rules themselves may cause bias, but their contribution to the result is minor. For example, the eponymous-name rule, the small-holding heuristic, and website self-declaration determine the ownership of only around 1.1% of firms. These rules fill gaps that would otherwise remain undetermined. They are placed at the bottom of the priority order and do not override a determinate verdict.

4. Location of the owner

In the subsequent analysis, family firms are categorised according to the origin of the owning family: domestic; from one of the other 29 countries; or from outside them. However, this information is not available for a considerable share of firms.

ORBIS records ownership links in one table and the entities at either end of them in another. Each entity – including each ultimate owner – is assigned to a country. It is this field that we read. However, we only read this field for the ultimate owner that the classification identified: the owner whose record determined the firm's classification. If a firm was classified as family-owned based on its legal form, shareholder structure or website, no ultimate owner was identified and therefore no country can be read. Taking a different ownership record – that of a minority shareholder, for example – would assert something that the classification never established.

Consequently, the country of origin is known for 13.9 million firms – 36% of the family-owned population. 33.8% have a domestic owner, 1.2% have an owner in one of the other 29 countries, and 1.0% have an owner outside of them. For the remaining 64%, it is not determinable due to lack of information.

There are two consequences that matter for anyone using this variable. Firstly, the denominator is the 13.9 million firms whose owners could be located, rather than the 36.8 million. When computed on the larger base, foreign ownership is understated by about threefold. Secondly, since availability depends on ownership record availability, which varies from 4.2% of family firms in Greece to 91.9% in Norway, country rankings of foreign ownership partly reflect register quality. Cross-country comparisons require a comparable base or reported coverage.

5. Reliability of the estimates

We carry out a comprehensive set of checks to validate our estimates. The idea is simple. Our 12 rules quickly classify all firms, and are based on signals such as legal form, name, number of shareholders or shareholder list. To test the reliability of these signals, we manually examined a small sample of firms.

The reference standard involves classifying sampled firms independently using a large language model. This model analyses company websites, registers, and news articles to determine the ownership of specific firms via live web searches (Google API). Roughly 21,000 firms have been assigned to this classification, which was drawn as a stratified sample with recorded design weights. While this is useful for validation checks, it should be noted that this is not an official registry and relies partly on self-reported data.

As this web verdict is one of the twelve rules, scoring the published classification against it would be circular. Therefore, the cascade is re-resolved with this rule removed. The resulting web-free verdict is then scored.

Not all 21,000 firms can be used for comparison for three reasons. For around 1,000 firms, the model could not reach a conclusion. For around 3,700 more, no web search was actually run, so the answer came from the model's memory rather than evidence – these are discarded. The remaining eleven rules give no verdict at all for about 5,000 firms once the web rule is removed, so there is nothing to compare. This leaves 11,628 firms with two independent verdicts.

Overall, of the 11,628 firms with both a verdict and a reference, the precision rate is 93%, while the recall rate is 89%. 93% of the family-owned firms that we identify are confirmed, as are 89% of the family-owned firms identified by the reference.

Accuracy decreases as firms grow in size, from 0.98 among firms with fewer than ten employees to 0.79 among those with 250 or more employees. Small firms are identified using near-definitional evidence, whereas large firms are identified using structural inference about holding companies – precisely where a family's holding vehicle and an organisation's structure converge. Since firms with 250 or more employees account for only 0.18% of firms but 36.5% of employment, this directly impacts employment figures.

The two columns of Table 2 refer to the unweighted classification of firms recorded in ORBIS. This is the level at which the validation sample can be evaluated. They represent an intermediate step rather than the results of this study. The headline figures – 97.7% of firms and 76.1% of employment – are obtained by weighting the classification according to Eurostat's official

enterprise population figures. Therefore, the two headline shares were estimated independently from the weighted validation sample.

Table 2: Headline shares of family firms: baseline and web verdicts

	Independent estimate	Verdicts
Family share of **firms**	0.881	**0.882**
Family share of **employment**	0.649	**0.610**

Source: WIFO and ASCII.

The firm count is almost exactly the same. However, the employment share is understated by about four percentage points, with larger discrepancies within individual size classes. This is because the errors are not distributed evenly within a size class: firms that we do not classify, or that we classify as non-family on structural grounds, consistently employ more people than their peers. A count measure is insensitive to this, but an employment-weighted measure is not. Overall, employment-based figures in this study should be considered conservative. Firm-count figures need no such qualification. Compared to the only other available external estimates of family firm prevalence in Europe, the mean absolute deviation across 23 countries is 0.082.

6. Caveats

Our multi-step approach produces reliable results but has a number of limitations:

- Two-thirds of firms have no recorded ultimate owner. For these firms, classification is based on legal form and, where available, the list of shareholders. This is the single largest source of uncertainty and is particularly prevalent in countries with weaker registers.
- Not every rule tests the stated threshold. The 'more than 50% of shares' rule only applies where there is an ownership record. The other rules necessarily work with weaker evidence. The legal form and shareholder structure indicate the type of ownership rather than the percentage of shares held. The web verdict, eponymous name and website declaration provide an answer to the broader question of whether a family controls or dominates the firm.
  - We implement two gap-filling rules which use a 25% threshold because the majority definition structurally excludes an equal split between two owners. Thus, the measure is the stated definition where the data support it, and a close proxy elsewhere.
  - Restricting the study to firms with a recorded majority owner would cover only a third of firms, and this would be uneven by country. This is likely to cause a larger bias than the one the remedy addresses.

- Three rules are country-specific. Two gap-filling rules are restricted to countries where they have been proven effective, and the legal form classification is country-specific by design. Hence, the cross-country comparison is not one uniform rule applied to 29 countries. As the restricted rules are positive only, countries outside their scope lose coverage rather than generating false positives – the effect on those countries' family shares is conservative.
- The classification reflects ownership as recorded at the time of extraction and not the firm's history. It also does not account for succession, trusts with undisclosed beneficiaries or informal family control exercised without shares.

IV. Identifying family-managed Firms

Ownership and management are two distinct attributes of a firm, with the latter being assessed only once the former has been established. This section documents how family-owned firms are classified according to whether the owning family also holds executive responsibility, the reliability of this classification, and its limitations. The population consists of family-owned firms. All shares reported below have those firms as their denominator. The full procedure is set out in the Annex.

1. Measurement

A family-owned firm is classified as family-managed if at least one member of the owning family holds an executive or management position. The concept is defined by three boundaries.

Firstly, we identify family control in ORBIS. This can be carried out by senior management and members of executive and board of director committees. It is assumed that direct control cannot be exerted by supervisory boards, advisory committees, audit committees or departmental heads. This distinction is significant in Germany, Austria and the Netherlands, where the family's withdrawal to the supervisory board is a common stage in the succession process and is considered not a management position anymore.

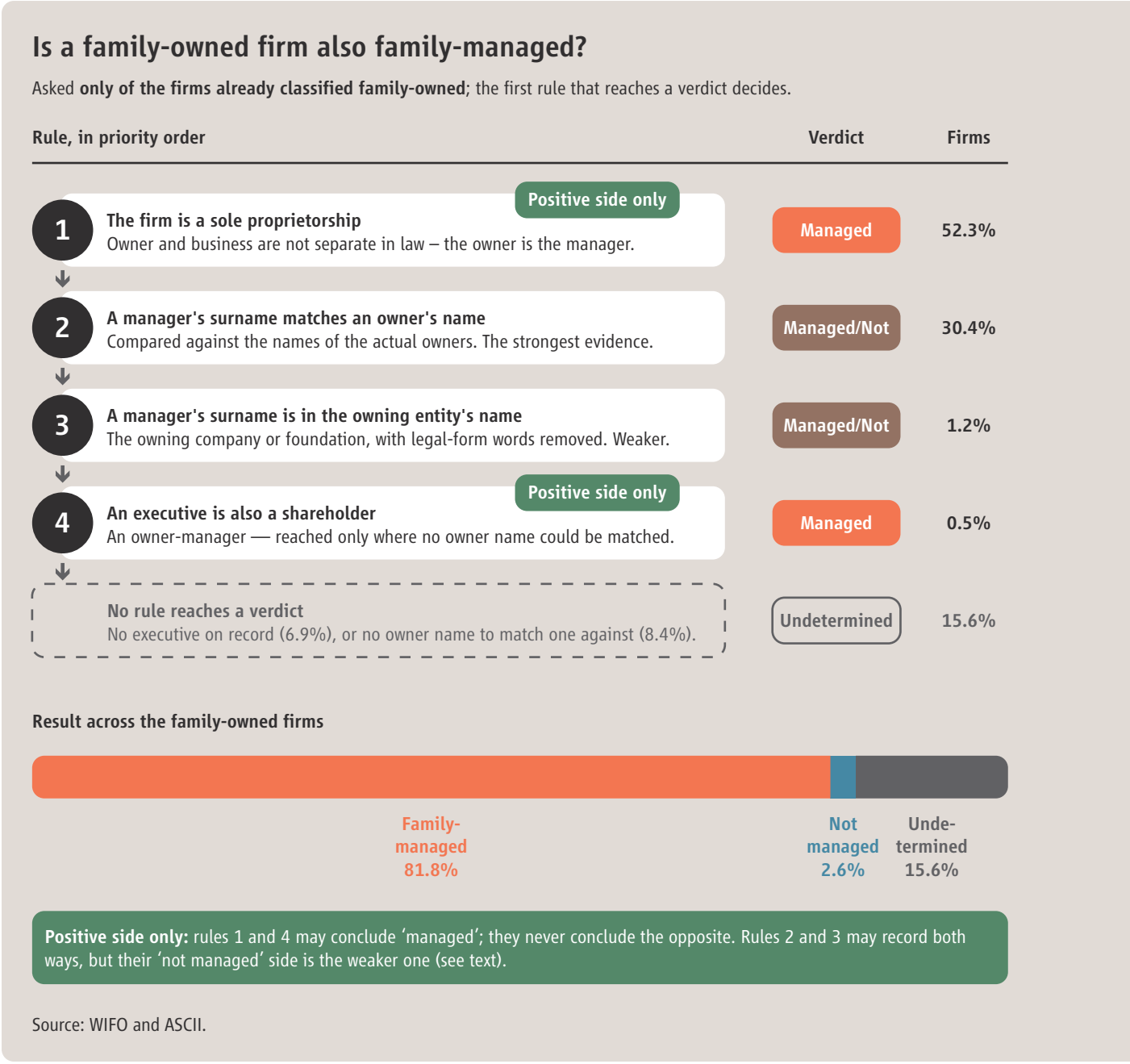
The second boundary is **attribution to the owning family**. An externally recruited executive with a disclosed shareholding is an owner-manager, but this does not constitute management by the owning family. If this distinction cannot be made, no verdict can be reached.

Third, since the population is the output of the ownership classification, any error in the latter propagates unchanged into the former.

2. Classification of family-managed firms

Four rules are applied independently to each family-owned firm. Each rule returns 'managed', 'not managed' (for the two rules based on the firm's name only) or 'undetermined'. The latter indicates that the rule is not applicable to the firm. The final verdict is that of the highest-ranked rule that does not abstain.

Figure 2: Defining family managed firms



Source: WIFO and ASCII.

The four rules, in priority order, with the verdict each can reach and the share of family-owned firms it decides.

The unweighted results show that 81.8% of family-owned firms are family-managed, 2.6% are not, and 15.6% cannot be determined.

Rule ordering (Figure 2). The first rule is definitional and therefore takes precedence. In a sole proprietorship, the owner is the manager. A recorded manager whose name does not match this definition must not be permitted to overturn it. The second rule compares managers with the names of the firm's actual owners, and it is the only rule that addresses this issue directly. Validation against independent web research identifies this rule as the most reliable of the four. The third rule applies the same comparison to the name of the owning company or foundation. As this tends to embed the family name rather than constitute it, it is ranked lower. It only applies to firms for which no individual owner is recorded. The fourth rule is ranked last because it cannot identify which family is involved. An executive who is also a shareholder is an owner-manager, a condition that can also be satisfied by a co-owner from outside the family.

Positive-only rules. Two of the four rules produce positive results only. For the first, this follows from its definitional nature. For the fourth, it is an empirical result: the positive aspect is among the most reliable evidence available, whereas the negative aspect was incorrect more often than not and was withdrawn. Approximately three quarters of all not-managed classifications were negative verdicts, predominantly for firms whose family ownership had been inferred from legal form alone. This meant that non-management was asserted for families that had never been identified. The relevant population is further dominated by holding structures, whereby a family member who manages the operating company and holds shares in the parent company is not recorded as a shareholder of the firm itself.

Contradiction guard. Where a name-based rule returns no match but an executive is recorded as a shareholder, the two sources of evidence diverge. Validation indicates that such firms are predominantly family-managed, meaning that the negative verdict is the least reliable in the cascade. These firms are therefore reported as undetermined. While the positive reading is better supported than the negative reading it replaces, it remains weaker than the remaining positive evidence. Contradictory evidence is more appropriately reported as unresolved.

Definitional component. Sole proprietorships account for 52.3% of the total. In a sole proprietorship, there is no legal distinction between the owner and the business. Therefore, family management is a legal fact rather than an observation. Therefore, the statement that 82% of family firms are family-managed rests on legal form rather than evidence concerning managers for approximately two thirds of its numerator. The rate among firms in which the owner and manager are not the same person is a distinct and more informative quantity, which is reported alongside.

Composition of the remainder. Almost all positive verdicts originate from the two most robust rules: the definitional rule and the rule that matches against an actual owner's name. Following the withdrawal of the negative aspect of the shareholder rule, the remaining unmanaged verdicts stem solely from the two name-based rules, resulting in a smaller number of verdicts. Therefore, the classification is informative in one direction and deliberately silent in the other.

3. Reliability

Our definition of family-run firms is based on signals, which we validate once more. Therefore, we ask whether a family-run firm that we have identified can be identified using another source, and how often our identification can be reproduced. To this end, we require a 'second opinion' on the same firms, obtained through a completely different process. The reference standard used is an independent classification obtained from a language model via a live web search (Google API). Management pages, news reports and registries were used to determine whether any executive of a named firm belongs to a named owning family. Total coverage is 611 firms. Of these, we found that 570 had both a reference verdict and a classification from us, and each had a confirmed search. Undetermined records are not considered.

We compare two verdicts for each of these 570 firms: ours, produced using the four rules, and the result of the reference model, obtained by looking up the firm. Table 3 shows how often these two verdicts match.

The sample was constructed to examine a specific issue rather than to be representative. It over-samples countries where surname matching is most likely to lead to over-identification, and is stratified such that both positive and negative verdicts are covered. The rates measured on it characterise these strata rather than the population.

The following concern was tested: In countries where a small number of surnames are very common, it is possible for a manager and an owner to share a name by pure coincidence. Our rule would interpret this as indicating a family relationship. The sample therefore deliberately includes exactly those countries.

Table 3: Reliability of the identification of family managed firms

Verdict	Reference agrees	Reference disagrees	
Family-managed	336	4	**99% supported**
Not family-managed	99	90	**52% supported**

Source: WIFO and ASCII.

Positive verdicts. In 99% of cases, a firm classified as family-managed receives support, and the surname rule, which accounts for the majority of these verdicts, is considered accurate in 986 out of 1,000 cases. The over-identification that the sample was designed to detect does not appear, even in countries with highly concentrated surnames. The earlier restriction of the rule to rare surnames was therefore deemed costly and unnecessary and withdrawn.

Negative verdicts. Of the firms classified as not being family-managed, only around half are supported as such (52%). This is due to a structural issue rather than an implementation error: an unobserved family manager is indistinguishable from an absent one. This may include an owner's child who has taken her/his spouse's surname, a manager whose name is recorded in a way that the name matching does not recognise, or an executive who is absent from the register. All of these yield the same observation as genuinely professional management. An earlier configuration, in which the shareholder rule could also return 'not managed', performed even worse on this measure; this prompted its withdrawal, and the rate reported above is what remains.

4. Caveats

Absence of family management is not established. This is the dominant limitation and follows from rule 3 (see Figure 2). Analyses should employ the positive rate, treat the negative rate as an upper bound, and refrain from interpreting differences between national not-managed rates as differences in practice, since they may equally reflect differences in register completeness.

Half of the positive rate is definitional. Reported in Figure 2, and the reason the rate excluding sole proprietorships is given alongside the headline figure.

Married names are not observable. This not only concerns family members who have changed their name, but also naming conventions which differ across Europe and have changed over time. The name bias is neither uniform across countries nor constant across generations.

Shared surnames are not proof of kinship. In countries with concentrated surname distributions the rules may link unrelated individuals. Validation provides no evidence of this in practice, but the sample is small and the mechanism is real.

Exclusion of supervisory roles. The exclusion is defensible but materially lowers the German and Austrian rates relative to a definition counting supervisory control as management.

Compounding with ownership error. The ownership classification is less accurate for large firms, with precision falling to 0.79 among firms of 250 or more employees; management verdicts for those firms inherit that uncertainty in addition to their own.

V. Weights and aggregation

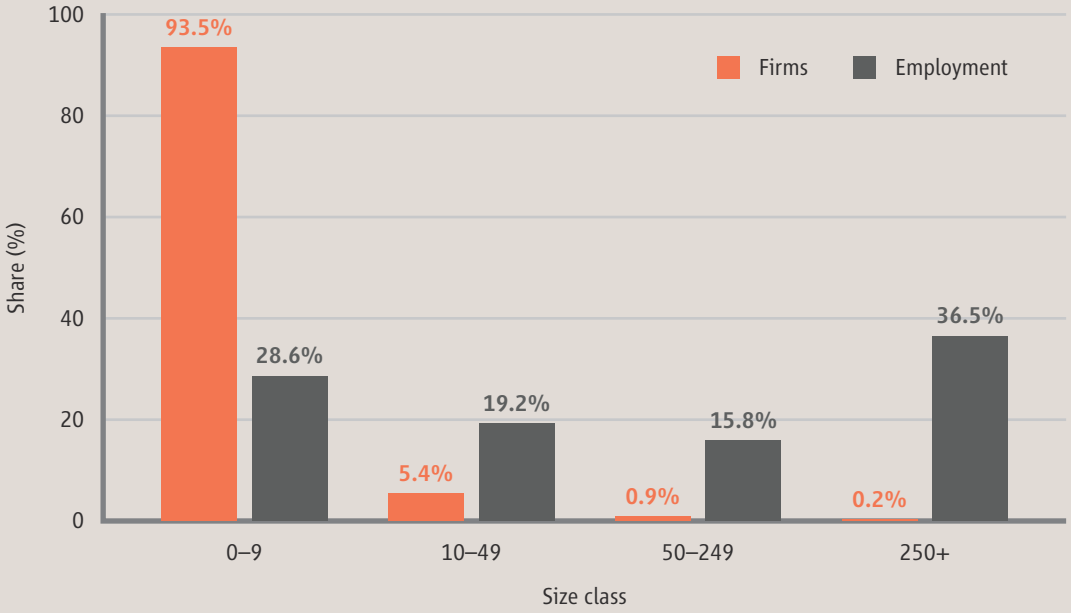
The identification of family businesses relies on ORBIS and Common Crawl data, the coverage of which varies by country and sector. Direct comparison would be misguided because the data is driven by different degrees of representativity. Therefore, we use official statistics provided by Eurostat to generate weights that ensure comparability across countries and sectors. We use the number of firms and employment levels as weights to reduce biases and ensure the data is representative. To generate weighted aggregates, we implement a data-intensive, stepwise procedure (see Annex).

__Weights__ based on __Eurostat__ data are used to __reduce bias__ and compute __representative__ shares of family firms across economies, sectors and firm size classes.

1. Constructing weights

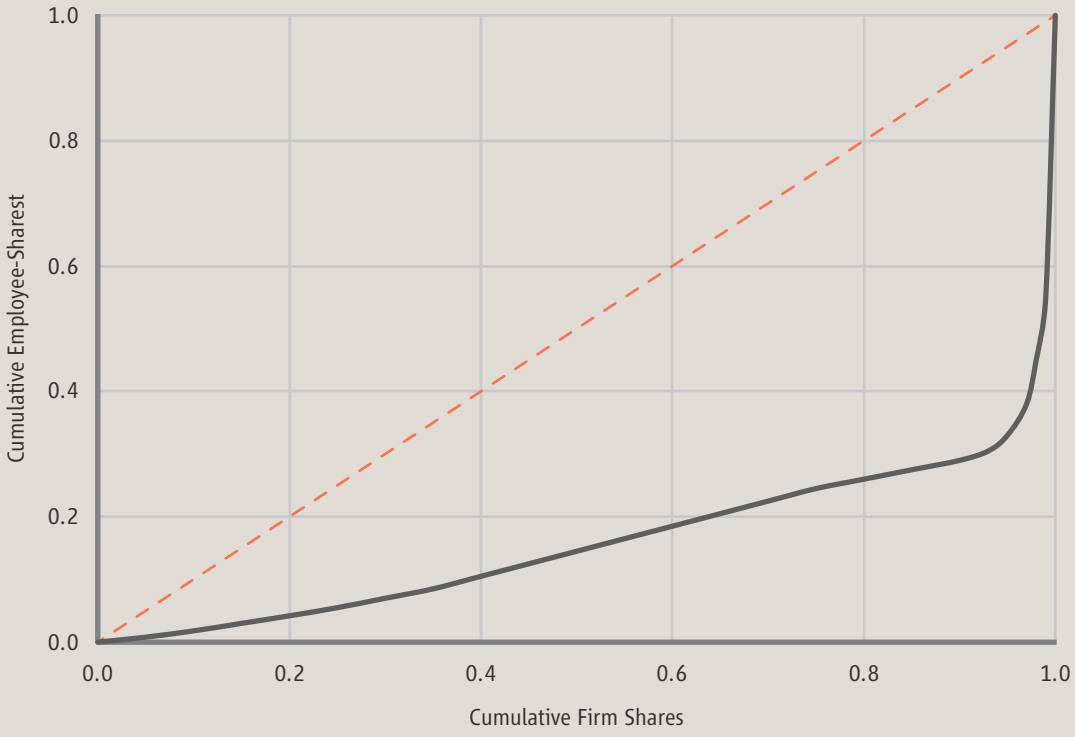
We define the population of firms and employment patterns using Eurostat data. The population is based on a grid derived from official statistics. Data cells are structured along three dimensions: (i) country, (ii) industry (NACE Rev. 2, 1-digit) and (iii) legal form or size class (see Figure 3, Figure 4, Table 4 and Table 5). This approach diversifies the analytical perspective and reduces bias through aggregation. It requires complete information, i.e. each cell must be filled with data. Since information is not available in some cells due to confidentiality concerns, we imputed the missing information.

Figure 3: Firms and Employment by size class



Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Figure 4: Cumulative Firm vs. Employee Shares



Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Table 4: Firms by country and size class

Size (employees)	Firms				
	0–9	10–49	50–249	250+	Total
Country	Share in %				Count in thousands
AT	89.6	8.7	1.4	0.31	424
BE[a]	95.9	3.3	0.6	0.15	764
BG	91.8	6.7	1.2	0.21	349
CH[a]	69.4	25.5	4.3	0.80	162
CY[a]	92.5	6.4	1.0	0.16	71
CZ	96.3	3.0	0.6	0.14	1,155
DE	84.3	13.1	2.1	0.45	2,629
DK	91.6	6.8	1.3	0.25	331
EE	94.4	4.6	0.8	0.13	125
EL[a]	94.2	5.2	0.6	0.08	782
ES[a]	94.3	4.9	0.7	0.14	2,842
FI	94.4	4.5	0.9	0.18	361
FR	94.7	4.4	0.7	0.17	3,661
HR	92.3	6.5	1.0	0.21	203
HU	95.2	4.0	0.6	0.13	747
IE	91.9	6.6	1.3	0.27	322
IT	94.4	4.9	0.6	0.11	3,860
LT	94.8	4.2	0.8	0.16	277
LV[a]	91.4	7.1	1.3	0.20	110
NL[a]	96.5	2.8	0.6	0.13	1,646
NO	92.4	6.4	1.0	0.21	349
PL	95.3	3.8	0.7	0.15	2,258
PT	95.4	3.9	0.6	0.11	1,061
RO	93.9	5.1	0.9	0.19	858
SE[a]	94.4	4.6	0.9	0.21	692
SI	94.6	4.5	0.8	0.16	165
SK	97.4	2.1	0.4	0.11	588
Total	93.5	5.4	0.9	0.18	26,792

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Note: The superscript 'a' denotes countries whose values should be interpreted with caution due to data issues, such as a high proportion of missing values or implausible outliers, in the raw data.

Table 5: Employees by country and size class

Size (employees)	Employees				
	0–9	10–49	50–249	250+	Total
Country	Share in %				Count in thousands
AT	24.5	21.6	17.7	36.2	3,274
BE[a]	33.6	15.8	14.7	35.9	3,187
BG	30.0	22.6	20.7	26.7	2,027
CH[a]	15.9	24.5	21.7	37.9	3,291
CY[a]	37.0	24.6	19.3	19.1	341
CZ	31.9	17.4	18.4	32.4	3,934
DE	19.1	20.7	16.8	43.4	31,331
DK	18.4	22.7	21.3	37.7	2,002
EE	37.5	22.6	20.4	19.5	497
EL[a]	43.7	25.1	13.7	17.5	3,000
ES[a]	32.8	18.8	13.4	34.9	13,596
FI	22.0	21.6	20.0	36.3	1,533
FR	23.9	15.1	12.5	48.6	18,307
HR	31.3	20.8	17.6	30.4	1,196
HU	36.5	18.4	14.9	30.2	3,058
IE	25.8	20.7	19.5	34.1	1,935
IT	39.8	20.5	13.7	26.1	16,504
LT	31.7	20.2	20.2	28.0	1,149
LV[a]	28.9	24.9	22.7	23.5	615
NL[a]	29.0	18.0	17.7	35.2	6,462
NO	21.9	24.6	19.8	33.7	1,715
PL	34.8	16.0	14.7	34.5	10,580
PT	39.0	20.0	16.5	24.5	3,966
RO	30.0	19.3	17.0	33.6	4,450
SE[a]	22.6	17.4	16.8	43.2	3,535
SI	33.9	19.5	18.9	27.7	719
SK	44.0	14.0	14.8	27.3	1,691
Total	**28.6**	**19.2**	**15.8**	**36.5**	**143,894**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Note: The superscript 'a' denotes countries whose values should be interpreted with caution due to data issues, such as a high proportion of missing values or implausible outliers, in the raw data.

Table 6: Firms by sector and size class

Size (employees)	Firms				
	0–9	10–49	50–249	250+	Total
Sector (NACE Rev. 2)	Share in %				Count in thousands
B – Mining & Quarrying	77.8	17.1	4.0	1.02	18
C – Manufacturing	84.1	12.1	3.0	0.76	2,181
D – Electricity & Gas	95.6	2.9	1.0	0.47	193
E – Water & Waste	80.7	13.8	4.4	1.07	83
F – Construction	93.4	5.9	0.6	0.06	3,997
G – Wholesale & Retail Trade	93.6	5.6	0.7	0.14	5,887
H – Transport & Storage	91.9	6.6	1.2	0.24	1,459
I – Accommodation & Food	89.2	9.9	0.8	0.10	1,990
J – Information & Communication	94.9	4.0	0.9	0.21	1,435
K – Finance & Insurance	97.4	1.8	0.5	0.27	887
L – Real Estate	98.3	1.5	0.2	0.03	1,628
M – Professional & Technical	97.2	2.5	0.3	0.06	5,136
N – Administrative & Support	93.6	4.9	1.2	0.31	1,897
Total (B–N)	**93.5**	**5.4**	**0.9**	**0.18**	**26,792**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Table 7: Employees by sector and size class

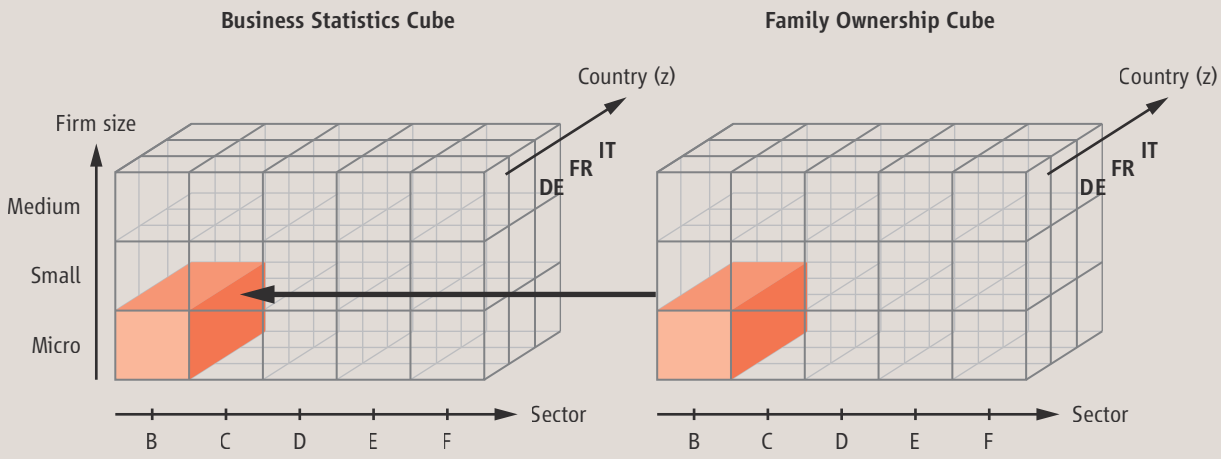
Size (employees)	Employees				
	0–9	10–49	50–249	250+	Total
Sector (NACE Rev. 2)	Share in %				Count in thousands
B – Mining & Quarrying	7.3	14.9	16.4	61.4	445
C – Manufacturing	12.2	17.5	21.8	48.5	30,883
D – Electricity & Gas	13.6	5.7	10.4	70.2	1,454
E – Water & Waste	8.2	14.8	23.0	54.0	1,661
F – Construction	45.7	28.1	13.1	13.1	14,344
G – Wholesale & Retail Trade	33.4	20.0	13.9	32.7	30,698
H – Transport & Storage	20.5	18.0	15.7	45.8	10,674
I – Accommodation & Food	40.3	31.6	13.3	14.7	11,223
J – Information & Communication	23.4	15.8	17.7	43.2	7,439
K – Finance & Insurance	18.4	6.2	10.2	65.2	5,229
L – Real Estate	62.7	15.1	10.0	12.2	2,852
M – Professional & Technical	50.9	18.4	11.9	18.8	12,635
N – Administrative & Support	17.7	13.2	16.7	52.4	14,357
Total (B–N)	**28.6**	**19.2**	**15.8**	**36.5**	**143,894**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

2. Aggregation

Next, we allocate the share of family businesses (see above) at the cell level. A cell is defined at the country-industry-size class level. In other words, we use information from Eurostat (Structural Business Statistics, Business Demography) to split official information about employment and the number of enterprises into family and non-family firms.

Figure 5: An illustration of the aggregation



Highlighted cell: Germany × sector B × micro firms.

Source: WIFO, ASCII.
Note: Each cell is split into family and non-family firms.

By definition, sole proprietorships are family businesses. ORBIS lacked sole proprietorship data for some countries because data providers collect it differently. Additionally, the ORBIS definition of a sole proprietorship appeared to differ across countries. Therefore, we used information about the number of sole proprietorships obtained from Eurostat and assigned them to the smallest size brackets.

Eventually, weighted aggregates are produced using a weighting approach based on Eurostat data. During the aggregation process, information about the number of enterprises and employment levels is used, respectively. For example, estimates at the country level about the total number of family firms are obtained by computing a weighted aggregate at the sector level, with the number of firms in each size bracket acting as intra-sectoral weights. Next, the sectoral indicators are aggregated at country level (sections B–N), again using the number of firms in each sector as weights. Employment information was used in a similar way for employment-based indicators.

We interpret the proportion of undetected firms differently across size classes. In general, the absence of a marker indicates that information on whether a firm is family-owned is unavailable. However, since data information about larger firms is usually available, particularly in online resources, we do not treat missing observations equally. Instead, we assume that information for larger firms tends to be abundantly available and therefore redefine large firms (i.e. firms with at least 250 employees) for which information is missing as non-family firms. The vast majority of large firms are identified as family or non-family firms.[11]

In addition, the quality of the data differs by country (see below). Hence, we impute missing information in other size classes using averages from a sample of countries whose information is deemed reliable. Overall, the results appear plausible, and the weighted averages are consistent with one another. However, the multiplicative nature of the aggregation and weighting procedures introduces small rounding errors that propagate and result in marginal discrepancies at the aggregate level. These minor discrepancies are a natural byproduct of the computation and do not affect the validity or interpretability of the results.

VI. Reliability of the aggregate results

Not all results are equally reliable. *In some countries, the raw data contains a high proportion of* ***missing values*** *or implausible* ***outliers****.*

We took several steps to ensure reliable results. However, the quality of the datasets used to identify family firms varies greatly, which affects the reliability of the aggregate results. We use two indicators to validate the reliability of the results.

1. Missing data

Firstly, the proportion of missing ownership data varies significantly between countries. On average, 26% of ownership observations for the firm count are missing, with a standard deviation of 18%. We argue that countries with missing values exceeding the sample mean plus one standard deviation should be treated with caution. This suggests caution should be exercised with regard to Belgium, the Netherlands, Sweden and Switzerland. We did not consider Luxembourg and Malta in our analysis due to missing information.

2. Plausibility

Secondly, we assess the plausibility of the data by comparing the distribution of family firms across size classes. We expect to see a decline in the number of family firms as the firm size brackets increase, i.e. negative gradients. To improve the robustness of this approach, we focus on two rather extreme groups: small firms between ten and 49 employees and large firms with more than 250 employees. This method additionally identifies Cyprus, Greece, Spain and Latvia.

11 See section C.III.

D. Results

The aggregation provides figures for both employment and firm count at size bracket, country, and sector levels. Additionally, the gradients across size classes demonstrate that family ownership is far more prevalent in smaller brackets. To reduce size bias, we also provide information on medium and large firms (i.e. those with at least fifty employees).

I. Results across size classes

When we break down the results into Eurostat's size brackets, we find that family firms are most prevalent among smaller businesses. They account for 98.3% of firms with 0–9 employees, but this figure steadily declines as the size of the firm increases, falling to 51.1% of firms with 250 or more employees. Therefore, the expected negative gradient across size classes is observed. A similar but much more pronounced pattern emerges for family-owned and family-managed firms: they are prevalent in small firms, but much less so in the largest size class. European ownership remains consistently high across all size groups, although it is slightly lower among the largest firms. Hence, extra-EU ownership tends to be slightly larger among large firms (see Table 8).

As shown in Table 9, family firms account for a significant proportion of employment in all size categories, although this proportion gradually decreases as the size of the firm increases. They employ 98.1% of workers in the smallest firms, compared to 48.8% in those with 250 or more employees. Family management follows an even larger downward trend, while European ownership remains consistently close to the numbers of family ownership across all size groups.

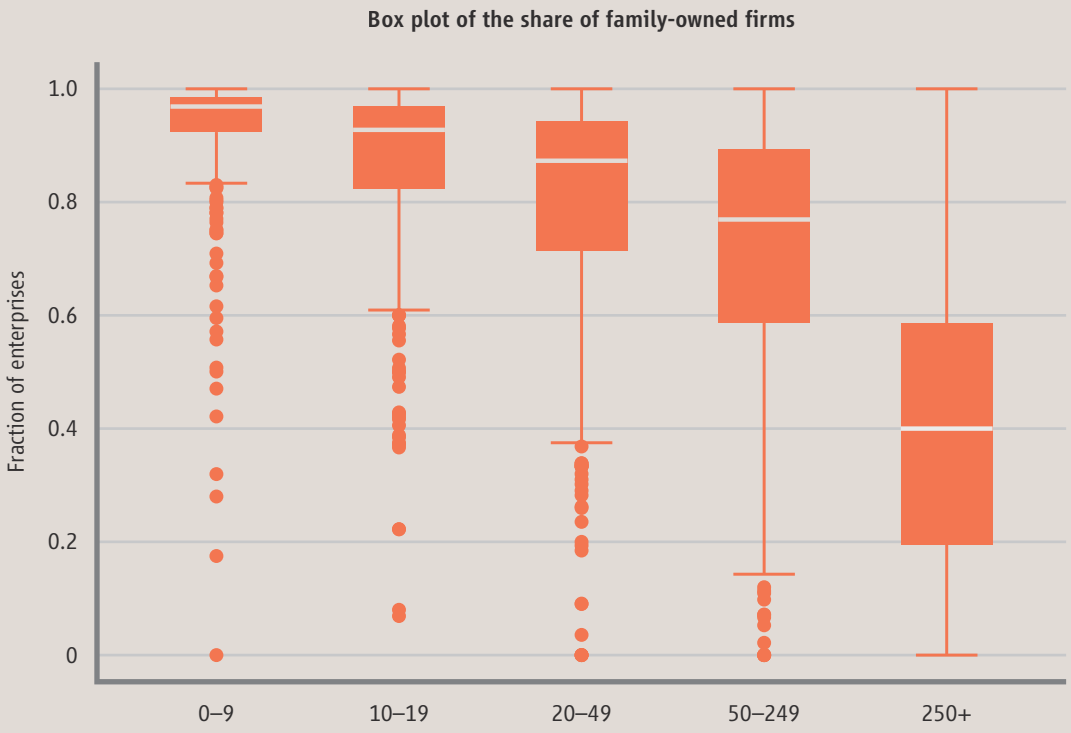
Figure 6 and Figure 7 are box plots illustrating the distribution differences of both employment and the number of firms across size classes. The unweighted differences are shown by the boxes, with one box representing each size class. Each box spans from the 25th to the 75th percentile, known as the 'interquartile range' (IQR), and has a horizontal line inside marking the median share. Whiskers extending above and below reach the furthest data points within 1.5 × IQR. Observations beyond the whiskers represent outliers (i.e. unusually high or low shares). The resulting plot shows that the share of family firms drops substantially across size classes, making the boxplot a useful way to quickly compare distributions, central tendency and variability across groups.

Table 8: Family firms by size class – number of firms

Size (employees)	Firms			
	Count	% Owned	% Managed	% Europe*
0–9	25,052,152	98.3	93.4	96.8
10–19	954,270	92.9	80.2	91.4
20–49	505,461	89.4	71.5	87.1
50–249	231,381	82.6	56.0	78.8
250+	49,111	51.1	23.5	47.4
Total	**26,792,375**	**97.7**	**92.1**	**96.2**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.
Note: *A family counts as European if based in one of the sample countries (EU-27 excl. Malta and Luxembourg, plus Switzerland and Norway).

Figure 6: Number of family firms across size brackets



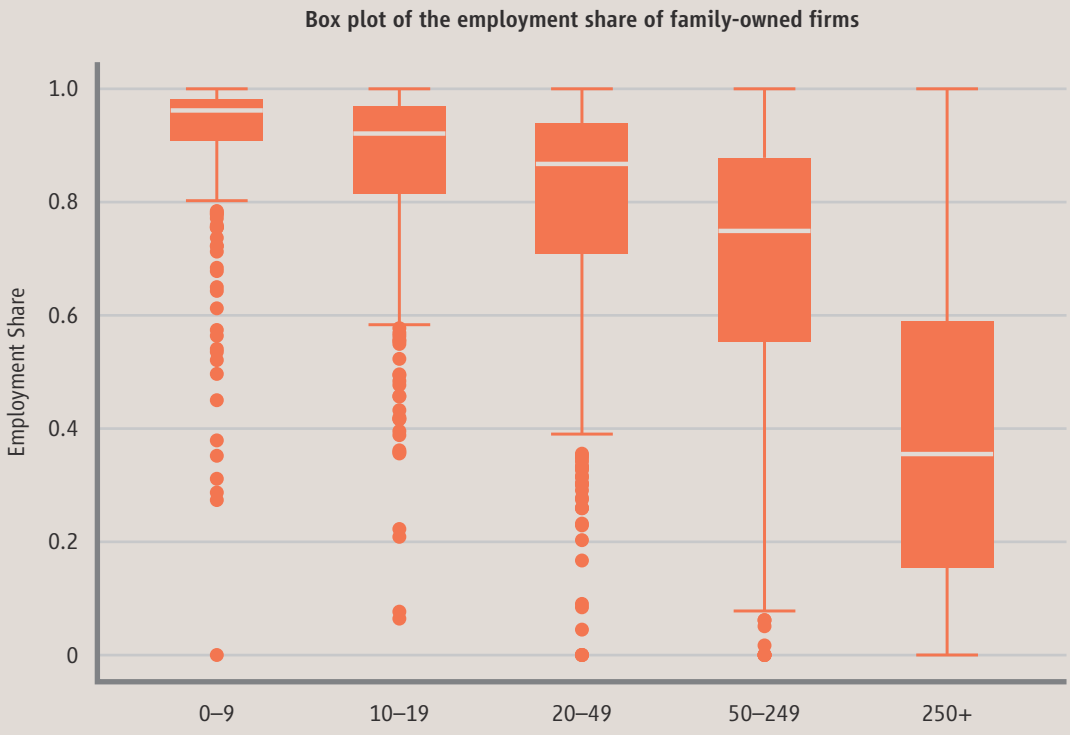
Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, no weights.
Note: The data used is at the country-industry-size bracket level.

Table 9: Employment in family firms by size class

Size (employees)	Employees			
	Count	% Owned	% Managed	% Europe*
0–9	41,107,594	98.1	93.0	96.8
10–19	12,675,217	93.5	81.3	92.0
20–49	14,938,884	89.2	70.9	86.9
50–249	22,671,858	80.9	53.2	76.9
250+	52,500,484	48.8	19.6	45.3
Total	**143,894,037**	**76.1**	**56.6**	**73.2**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.
Note: *A family counts as European if based in one of the sample countries (EU-27 excl. Malta and Luxembourg, plus Switzerland and Norway).

Figure 7: Employment in family firms across size brackets



Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, no weights.
Note: The data used is at the country-industry-size bracket level.

II. Results at the country level

*Family **ownership** is **common** across Europe, whereas **family management is much more varied**. The landscape is dominated by the sheer number of micro firms.*

Table 10 reports the relevance of family-owned firms. The figures highlight that family and European ownership are the norm across Europe, while family management is far more heterogeneous.

Family-owned firms make up the vast majority of businesses in Europe if all size classes are considered. The sample covers a total of 26.8 million firms, 97.7% of which are family-owned and 92.1% are family-owned firms which are also family-managed. Furthermore, 96.2% of the firms are owned by European families. Hence, family and domestic ownership are the dominant organisational forms across Europe.

*Some economies show a **distinction between ownership and management**. **Ownership** from outside the EU remains the **exception** across the entire sample.*

Family ownership is remarkably uniform across countries, with most reporting shares above 95%. The highest values are found in Greece, Portugal, Slovenia, Romania, Lithuania and Hungary. Sweden and Switzerland have the lowest ownership shares, with values below 90%. Family management shows greater variation: while most countries exceed 90%, Sweden has a notably low share of 43.7%, indicating a stronger separation between ownership and management. The Netherlands, Belgium, Switzerland, Cyprus, and France also lie below 90%. European ownership is almost universal. Only a small fraction of family-owned firms are not European-owned, with the slightly higher non-European ownership shares observed in Norway, Sweden, Cyprus, and Switzerland.This indicates a larger presence of non-European investors in these economies.

The overall picture is dominated by the sheer number of micro firms. Examining employment figures offers a first differentiation (see Table 11). We find that family firms are major employers throughout Europe, but their impact on employment, particularly with regard to family management, varies significantly across countries.

Across the sample, 76.1% of the workforce is employed in family-owned firms, 56.6% in family-owned firms which are also family-managed and 73.2% in family firms owned by European families. Hence, family and domestic ownership remain dominant employers in Europe, although clearly to a lesser extent than at the firm-count level, where the respective shares were 97.7%, 92.1% and 96.2%. Family and family-managed firms tend to be smaller on average, while larger employers are more often non-family or externally managed. Family-owned employment shares vary considerably across countries, generally ranging from the mid-30s to the high 70s percentiles, while family-managed employment displays even greater heterogeneity.

Table 10: Number of family firms by country (all size brackets)

Country	Firms			
	Count	% Owned	% Managed	% Europe*
AT	424,479	98.5	95.8	98.2
BE[a]	763,930	92.6	81.0	91.5
BG	348,650	98.8	95.7	97.7
CH[a]	161,645	89.7	77.6	85.4
CY[a]	70,860	95.5	84.3	86.8
CZ	1,154,845	98.3	96.3	96.3
DE	2,629,407	98.0	93.8	97.3
DK	331,324	96.1	91.8	95.4
EE	124,670	98.3	94.4	96.8
EL[a]	781,667	99.5	98.0	99.4
ES[a]	2,841,522	97.9	92.5	97.5
FI	361,236	96.5	92.9	96.3
FR	3,661,350	97.8	89.7	92.1
HR	203,221	98.6	96.0	97.6
HU	747,003	99.0	96.6	98.9
IE	322,326	96.5	94.6	93.6
IT	3,859,959	98.5	97.2	97.6
LT	277,359	99.0	92.1	96.8
LV[a]	110,094	97.7	92.5	93.6
NL[a]	1,646,472	97.7	82.6	97.4
NO	349,007	96.4	92.9	90.9
PL	2,258,053	98.4	96.4	98.1
PT	1,060,657	99.3	98.8	99.0
RO	857,881	99.1	97.3	97.5
SE[a]	692,111	88.9	43.7	88.6
SI	164,883	99.1	96.1	98.9
SK	587,764	99.0	97.6	98.2
Total	**26,792,375**	**97.7**	**92.1**	**96.2**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Note: *A family counts as European if based in one of the sample countries (EU-27 excl. Malta and Luxembourg, plus Switzerland and Norway). The superscript 'a' denotes countries whose values should be interpreted with caution due to data issues, such as a high proportion of missing values or implausible outliers, in the raw data.

Table 11: Employment in family firms by country (all size brackets)

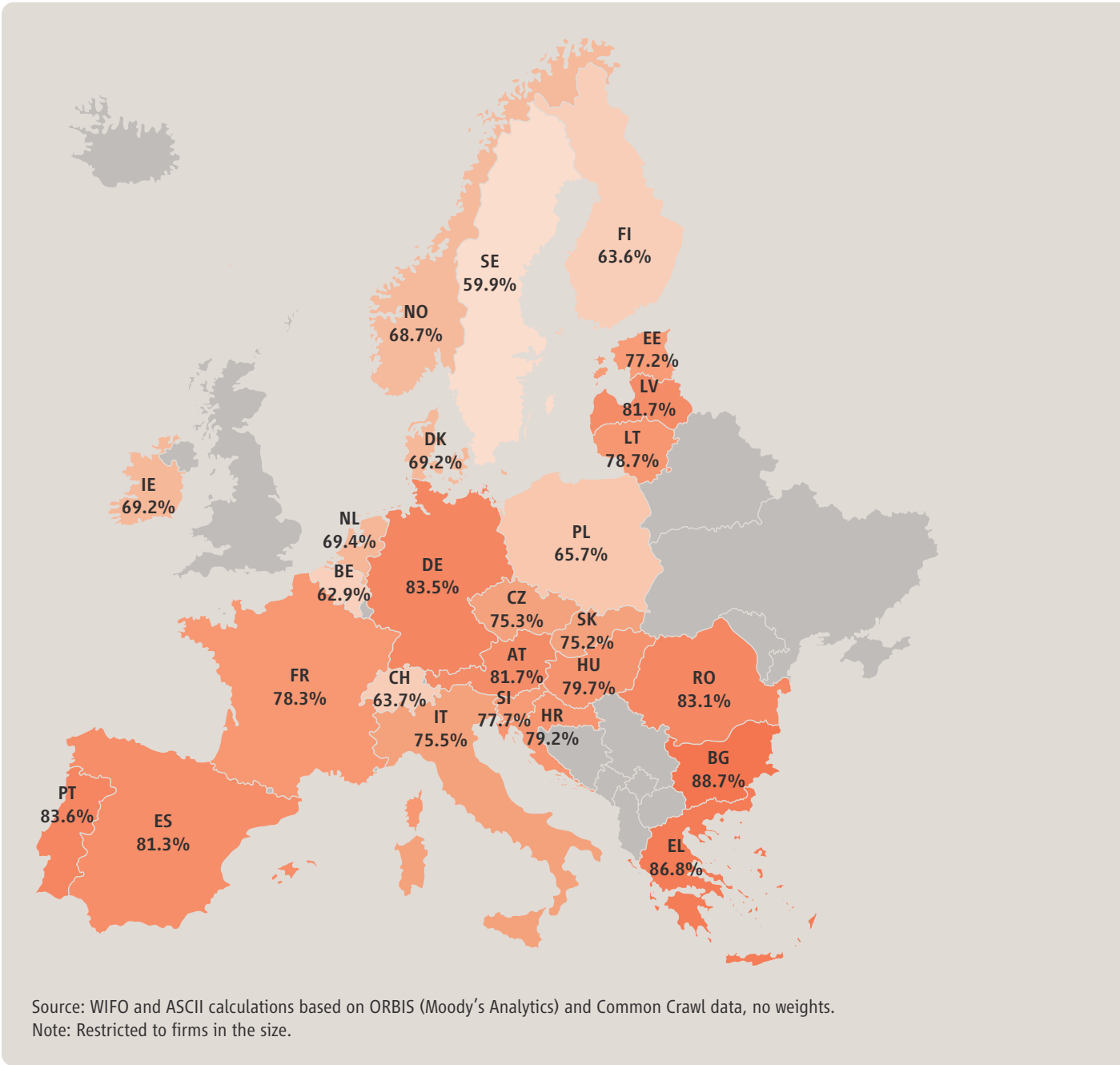
Country	Employees				
	Count	% Owned	Count owned	% Managed	% Europe*
AT	3,273,689	79.8	2,612,404	61.6	78.4
BE[a]	3,187,213	64.6	2,058,940	43.7	57.3
BG	2,026,916	85.6	1,735,040	70.8	82.9
CH[a]	3,290,738	53.9	1,773,708	35.4	49.9
CY[a]	340,777	83.5	284,549	69.6	73.8
CZ	3,933,889	73.9	2,907,144	59.4	69.9
DE	31,331,063	79.1	24,782,871	53.7	77.7
DK	2,001,731	67.8	1,357,174	49.8	63.4
EE	496,865	81.1	402,958	69.4	72.1
EL[a]	2,999,500	89.6	2,687,552	80.1	89.1
ES[a]	13,595,582	77.7	10,563,767	60.7	75.2
FI	1,533,475	63.9	979,891	53.0	59.7
FR	18,306,964	71.2	13,034,558	44.5	67.2
HR	1,195,715	80.3	960,159	65.7	76.9
HU	3,058,276	78.4	2,397,688	64.7	76.9
IE	1,934,852	65.7	1,271,198	59.0	58.7
IT	16,504,061	80.1	13,219,753	72.3	78.3
LT	1,149,124	83.8	962,966	58.7	80.7
LV[a]	614,908	82.0	504,225	64.5	77.9
NL[a]	6,462,417	75.4	4,872,662	37.3	70.5
NO	1,715,335	67.8	1,162,997	55.3	62.7
PL	10,579,944	74.1	7,839,739	60.6	72.3
PT	3,965,565	86.4	3,426,248	76.4	82.5
RO	4,450,364	81.0	3,604,795	67.8	77.5
SE[a]	3,535,237	59.7	2,110,536	21.5	50.9
SI	719,193	79.5	571,758	64.4	74.0
SK	1,690,644	80.0	1,352,515	66.7	77.0
Total	**143,894,037**	**76.1**	**109,437,794**	**56.6**	**73.2**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Note: *A family counts as European if based in one of the sample countries (EU-27 excl. Malta and Luxembourg, plus Switzerland and Norway). The superscript 'a' denotes countries whose values should be interpreted with caution due to data issues, such as a high proportion of missing values or implausible outliers, in the raw data.

The picture changes substantially when only medium-sized and large firms are considered. Our data shows that of the 280,492 firms in total, 76.9% are family-owned, 50.4% are family-owned family-managed and 73.3% are European-family-owned firms. While family management is less widespread, family ownership remains the dominant model (see Table 12 and Figure 8). While the figures for family ownership drop in comparison to the full sample, family ownership is still widespread across countries. Family management is less consistent. In some countries, family-owned firms are often still run by the family, whereas in others, ownership and management are more clearly separated. These differences suggest various business traditions and governance models across Europe.

Figure 8: Share of family owned firms across countries (50+ employees)



Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, no weights.
Note: Restricted to firms in the size.

Table 12: Number of family firms by country (50+ employees)

Country	Firms			
	Count	% Owned	% Managed	% Europe*
AT	7,171	81.7	56.8	79.6
BE[a]	5,740	62.9	29.5	51.8
BG	5,010	88.7	68.7	85.3
CH[a]	8,242	63.7	28.9	56.9
CY[a]	802	74.0	61.2	57.4
CZ	8,724	75.3	52.9	71.7
DE	66,132	83.5	54.8	81.4
DK	5,196	69.2	46.2	66.4
EE	1,183	77.2	58.7	66.2
EL[a]	4,990	86.8	66.6	85.6
ES[a]	22,660	81.3	53.7	77.5
FI	3,818	63.6	47.0	59.8
FR	32,647	78.3	36.3	74.6
HR	2,506	79.2	61.6	75.5
HU	5,590	79.7	61.4	76.5
IE	4,966	69.2	58.6	57.9
IT	27,330	75.5	62.9	73.2
LT	2,758	78.7	48.0	75.6
LV[a]	1,642	81.7	57.4	76.2
NL[a]	11,756	69.4	26.7	61.5
NO	4,216	68.7	49.0	64.8
PL	18,563	65.7	46.5	63.3
PT	7,789	83.6	68.6	79.2
RO	8,994	83.1	66.9	79.2
SE[a]	7,372	59.9	13.9	52.5
SI	1,628	77.7	57.8	74.1
SK	3,067	75.2	51.0	70.2
Total	**280,492**	**76.9**	**50.4**	**73.3**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.
Note: Restricted to firms in the size classes 50–249 and 250+.
Note: % Europe covers only the cells the ownership data reaches, and in this cut that is a minority of the firms in some countries – read it as indicative.
Note: *A family counts as European if based in one of the sample countries (EU-27 excl. Malta and Luxembourg, plus Switzerland and Norway). The superscript 'a' denotes countries whose values should be interpreted with caution due to data issues, such as a high proportion of missing values or implausible outliers, in the raw data.

A similar change is observable with the employment figures when employment-weighted figures for firms with at least 50 employees are considered. Family-owned firms employ the majority of overall employment. Across the countries covered, family firms represent 58.4% of total employment. A smaller proportion, 29.7%, are employed in family-owned firms which are family-managed, while 54.6% work in family firms under European ownership. This suggests that, although direct family management is less common in larger firms, family ownership remains important in employment terms. Also when we consider only medium-sized and large firms, family ownership is considerably more widespread than family management. In many countries, a significant proportion of employees work in family-owned firms, but a much smaller proportion work in family-managed firms. This suggests a common separation between ownership and management, particularly in more mature or internationally integrated economies (see Table 13).

Table 13: Employment in family firms by country (50+ employees)

Country	Employees			
	Count	% Owned	% Managed	% Europe*
AT	1,765,834	65.2	36.1	63.2
BE[a]	1,611,621	41.0	17.7	32.0
BG	960,568	72.2	46.7	67.6
CH[a]	1,961,586	33.6	16.3	29.7
CY[a]	130,864	67.5	53.4	53.7
CZ	1,997,115	52.4	28.4	46.3
DE	18,845,310	67.5	29.7	65.8
DK	1,180,059	50.0	26.1	43.8
EE	198,435	58.7	38.6	42.3
EL[a]	936,755	70.8	53.0	69.7
ES[a]	6,573,223	57.7	31.3	54.1
FI	864,474	41.6	26.9	36.3
FR	11,174,753	55.8	24.0	52.1
HR	573,494	62.7	36.9	56.1
HU	1,377,161	55.0	29.7	52.3
IE	1,036,479	40.8	30.8	33.4
IT	6,560,495	56.7	41.7	55.1
LT	553,536	69.8	34.6	64.7
LV[a]	283,857	66.9	39.7	61.7
NL[a]	3,419,309	60.7	14.8	50.1
NO	917,434	46.5	28.6	42.5

Country	Employees			
	Count	% Owned	% Managed	% Europe*
PL	5,203,773	52.1	28.7	49.7
PT	1,627,541	69.7	47.7	59.9
RO	2,253,515	64.5	41.6	59.8
SE[a]	2,119,875	42.6	13.4	31.4
SI	334,742	59.0	32.1	48.8
SK	710,534	57.1	30.1	51.7
Total	**75,172,342**	**58.4**	**29.7**	**54.6**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Note: Restricted to firms in the size classes 50–249 and 250+.

Note: % Europe covers only the cells the ownership data reaches, and in this cut that is a minority of the firms in some countries – read it as indicative.

Note: *A family counts as European if based in one of the sample countries (EU-27 excl. Malta and Luxembourg, plus Switzerland and Norway). The superscript 'a' denotes countries whose values should be interpreted with caution due to data issues, such as a high proportion of missing values or implausible outliers, in the raw data.

III. Results at the sector level

We reveal sectoral differences by breaking down the results for each one-digit section of the NACE Rev. 2 classification system. We present the number of firms alongside three indicators of family business prevalence: the proportion of firms that are family-owned, family-managed and European-owned (see Table 14).

Of the approximately 26.8 million firms covered, 97.7% are family-owned, 92.1% are family-owned as well as family-managed and 96.2% are owned by European families. Family and domestic ownership are therefore the dominant organisational forms throughout the private sector. Family ownership remains consistent across sectors, with values close to or above 95% in most industries. However, lower shares are observed in more capital-intensive or regulated activities, where large corporate or public entities play a more significant role.

Family management follows a similar pattern, but at generally lower levels. The widest gap between ownership and management appears in capital-intensive sectors. By contrast, European ownership is nearly universal across all sectors, typically around 96%, with only marginal differences between industries.

Table 14: Number of family firms by sector (all size brackets)

NACE section	Firms			
	Count	% Owned	% Managed	% Europe*
B – Mining & Quarrying	18,218	93.8	82.5	91.7
C – Manufacturing	2,180,924	97.4	91.9	96.1
D – Electricity & Gas	192,956	90.7	79.6	89.7
E – Water & Waste	83,138	87.2	77.5	85.8
F – Construction	3,997,289	98.9	94.9	97.0
G – Wholesale & Retail Trade	5,886,985	98.6	93.5	97.2
H – Transport & Storage	1,459,285	98.4	94.4	95.9
I – Accommodation & Food	1,990,102	98.6	92.9	96.5
J – Information & Communication	1,435,027	96.9	88.9	95.0
K – Finance & Insurance	887,071	92.5	83.5	91.3
L – Real Estate	1,628,400	95.0	85.8	93.8
M – Professional & Technical	5,135,929	97.9	92.3	96.9
N – Administrative & Support	1,897,051	98.0	92.5	96.6
Total (B–N)	**26,792,375**	**97.7**	**92.1**	**96.2**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.
Note: *A family counts as European if based in one of the sample countries (EU-27 excl. Malta and Luxembourg, plus Switzerland and Norway).

These results highlight that family firms dominate the European enterprise landscape across virtually every sector. The sharpest differences appear in family management shares, particularly between labour-intensive services and capital-intensive industries.

Table 15 uses the same logic and shows employment-weighted figures. In contrast to the firm-count perspective, where 97.7% of firms are family-owned, 94.3% are family-managed, family-owned and 96.2% are European-owned family firms, the employment figures are markedly less uniform. Overall, 76.1% of employees work in family-owned firms, 56.6% in firms managed by the family owners and 73.2% in European-owned firms. This means that family ownership and family management drop by over 20 and 30 percentage points respectively when moving from firms to employees. This supports the idea that family firms are concentrated among smaller businesses, while employment is disproportionately provided by larger non-family or externally managed corporations.

Table 15: Employment in family firms by sector (all size brackets)

NACE section	Employees			
	Count	% Owned	% Managed	% Europe*
B – Mining & Quarrying	445,260	46.8	32.4	45.5
C – Manufacturing	30,882,524	71.6	47.7	67.6
D – Electricity & Gas	1,454,249	20.4	13.1	19.9
E – Water & Waste	1,661,165	47.3	26.9	37.3
F – Construction	14,344,177	91.3	78.2	88.8
G – Wholesale & Retail Trade	30,698,434	85.1	62.4	83.1
H – Transport & Storage	10,673,767	64.5	47.6	62.9
I – Accommodation & Food	11,222,657	89.1	75.2	86.4
J – Information & Communication	7,438,795	64.9	41.4	59.3
K – Finance & Insurance	5,228,939	37.8	26.4	34.8
L – Real Estate	2,852,211	80.4	66.7	78.2
M – Professional & Technical	12,634,613	81.0	65.3	79.0
N – Administrative & Support	14,357,246	73.8	51.8	71.7
Total (B–N)	**143,894,037**	**76.1**	**56.6**	**73.2**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.
Note: *A family counts as European if based in one of the sample countries (EU-27 excl. Malta and Luxembourg, plus Switzerland and Norway).

Sectoral variation, which was modest at the firm level, becomes far more pronounced in terms of employment: family-owned employment shares range from around 20% in capital-intensive, regulated industries, to around 90% in labour-intensive services and construction. Family management shares vary even more widely. European ownership of employment remains close to universal in most sectors, though the differences across industries are slightly larger than for firm counts.

These tables highlight that, although family firms dominate the enterprise landscape, their weight in employment, especially in management-based measures, is considerably smaller and much more heterogeneous across sectors.

Table 16 shows the results of the firm count for businesses with 50 or more employees. Although family firms dominate the enterprise landscape almost universally, their presence is considerably smaller and much more heterogeneous among large firms, especially in management-based measures.

Table 16: Number of family firms by sector (50+ employees)

NACE section	Firms			
	Count	% Owned	% Managed	% Europe*
B – Mining & Quarrying	916	70.0	42.1	67.0
C – Manufacturing	81,445	80.7	53.4	76.8
D – Electricity & Gas	2,930	23.6	8.5	13.9
E – Water & Waste	4,570	51.3	28.1	46.6
F – Construction	26,435	86.3	61.2	84.2
G – Wholesale & Retail Trade	51,775	82.8	54.0	79.3
H – Transport & Storage	20,745	75.3	52.4	73.0
I – Accommodation & Food	17,890	84.8	60.2	80.3
J – Information & Communication	16,100	68.0	35.2	61.2
K – Finance & Insurance	7,043	31.3	15.9	26.9
L – Real Estate	3,388	47.8	27.5	42.6
M – Professional & Technical	18,391	66.9	37.2	62.9
N – Administrative & Support	28,864	80.2	53.6	77.9
Total (B–N)	**280,492**	**76.9**	**50.4**	**73.3**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.
Note: Restricted to firms in the size classes 50–249 and 250+.
Note: % Europe covers only the cells the ownership data reaches, and in this cut that is a minority of the firms in some countries – read it as indicative.
Note: *A family counts as European if based in one of the sample countries (EU-27 excl. Malta and Luxembourg, plus Switzerland and Norway).

Compared with the firm-count perspective covering all firms, family businesses are much less dominant among larger firms. Family ownership and family management drop by over 20 and 30 percentage points respectively when the sample is restricted to firms with 50 or more employees.

Sectoral variation, which was modest across all firms, is far more pronounced among large firms: family ownership ranges from below 25% in capital-intensive, regulated industries to around 85% in labour-intensive services and construction. Family management varies even more widely. European ownership among large firms remains high in most sectors but shows larger differences than at the level of all firms, reflecting the stronger presence of non-European investors in larger companies.

Table 17 shows the results for sectoral employment with more than fifty employees, categorised by the one-digit sections of the NACE Rev. 2 classification system. Overall, 58.4% of employees in large firms are in family-owned businesses, compared to 29.7% in family-managed businesses and 54.6% in European-owned businesses. These figures are substantially below those for all businesses (76.1%, 56.6% and 73.2% respectively).

There are pronounced sectoral differences: family ownership and management shares are highest in labour-intensive services and construction, dropping to very low levels in capital-intensive and regulated industries, such as electricity and gas, or finance and insurance. European ownership remains high across most sectors, but is notably lower in some.

Table 17: Employment in family firms by sector (50+ employees)

NACE section	Employees			
	Count	% Owned	% Managed	% Europe*
B – Mining & Quarrying	346,464	33.8	19.0	32.7
C – Manufacturing	21,709,919	61.5	31.6	57.0
D – Electricity & Gas	1,172,768	6.8	1.8	5.8
E – Water & Waste	1,279,373	36.8	14.8	24.3
F – Construction	3,758,315	74.3	43.7	68.9
G – Wholesale & Retail Trade	14,298,931	72.0	33.5	69.3
H – Transport & Storage	6,563,136	44.7	22.1	43.4
I – Accommodation & Food	3,149,009	68.0	41.2	63.5
J – Information & Communication	4,525,373	47.7	19.0	41.6
K – Finance & Insurance	3,943,863	22.1	10.7	19.1
L – Real Estate	632,941	46.1	22.3	40.1
M – Professional & Technical	3,876,506	52.5	23.4	49.4
N – Administrative & Support	9,915,744	64.3	37.1	62.1
Total (B–N)	**75,172,342**	**58.4**	**29.7**	**54.6**

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Note: Restricted to firms in the size classes 50–249 and 250+.

Note: % Europe covers only the cells the ownership data reaches, and in this cut that is a minority of the firms in some countries – read it as indicative.

Note: *A family counts as European if based in one of the sample countries (EU-27 excl. Malta and Luxembourg, plus Switzerland and Norway).

E. Discussion

A large body of literature has estimated the prevalence of family firms in different countries. Many of these studies use publicly listed firms because data on these firms is more readily available. However, this introduces sample selection bias. Other studies propose economy-wide estimates. These studies, however, differ in their definitions of family firms and the size classes shown (a summary of the country-specific studies can be found in the annex). While this often makes direct comparisons difficult, the results corroborate the general picture presented by the literature.

I. Implications of the mixed-methods approach

Some of our figures are higher than those in previous studies. This difference can be explained by our methodological approach. Family firms are identified through the use of markers, i.e. measurable indicators representing specific characteristics within a given dataset. If the approach correctly identifies firms as family firms, they are known as true positives. Conversely, if it correctly identifies firms as non-family firms, they are defined as true negatives.

However, there is a risk of bias if firms are incorrectly classified. Many studies rely on a single method, which implies that misclassification due to undetected signals is an issue ('false negatives'). Hence, these studies produce lower-bound estimates. Using a single method can lead to underestimation bias, which we aim to overcome by using a mixed methods approach that employs multiple datasets and procedures to identify family firms. For example, some studies that use ownership information only consider direct, domestic ownership, failing to identify the ultimate global owners by forming ownership chains. If a firm is indirectly family-owned (e.g., if a family-owned firm has a subsidiary abroad), the domestic signal would not suggest family ownership, meaning the entry would be incorrect – a false negative. The rationale behind this exploratory approach is geopolitical. It is assumed that the policy lever is greater if owners are located within the EU. Another issue is reliability on ownership alone. If ownership information is missing, but information about management clearly suggests that the firm is family-run, the mixed-methods approach would correctly classify the firm, whereas ownership classification alone would not.

Many studies in the literature rely on a single-method approach, which produces lower-bound estimates. The mixed-methods approach ***reduces the likelihood of fasle negatives****.*

It is also possible that some firms are incorrectly classified as 'false positives'. This would be the case if the signals we detect are incorrect. For instance, name similarities could suggest family ownership when they are actually coincidental and there is no kinship. However, this bias is likely to be minor.

II. Contribution to value added

*The weighted mean **value added contribution** of family firms across all countries and size classes is 59.6%, dropping to 42.1% when only medium-sized and large firms are considered.*

Another question concerns the contribution of family firms to economic value added. As value-added information is only sparsely available in the underlying microdata, using it is likely to cause substantial bias due to sample selection. However, the data enables us to calculate the contribution of family firms to value added by using sectoral employment estimates.

We use Eurostat data on labour productivity (i.e. value added per employee) to obtain a proxy for value added. We multiply the sectoral labour productivity by the employment in family firms to obtain their value-added contribution. This procedure is implemented at country-industry-size bracket level and for the entire sample (i.e. all size brackets) and larger firms only (i.e. all firms with more than 50 employees).

Table 18 compares the contribution of family firms to value added in European countries, divided into two groups by firm size: all firms, and those with 50 or more employees. When all firm sizes are considered, the proportion of family firms varies widely across countries, ranging from 39.9% in the Netherlands and 43.7% in Sweden to over 75% in Romania (78.3%), Croatia (77.7%), and Bulgaria (76.1%). Other countries with particularly strong family-firm contributions include those in Central and Eastern Europe, as well as Austria (64.2%), Germany (68.7%) and France (66.4%), while the Nordic-Benelux group, along with Portugal (49.2%) and Finland (48.9%), shows notably lower values. The weighted mean contribution to value added of family firms amounts to 59.6% in the sample.

Restricting the sample to firms with 50 or more employees reduces family-firm shares in every country, though the extent of the decline varies considerably. Family firms remain the most influential among larger firms in Romania (65.3%), Bulgaria (60.1%), Germany (53.1%), Lithuania (52.5%), and France (49.6%). In contrast, Ireland (24.0%), the Netherlands (27.4%), Portugal (28.6%), and Slovenia (29.7%) have the lowest contributions in this segment. The difference between the two columns is particularly striking in Ireland, Croatia, Denmark, and Spain, indicating that family firms in these countries are predominantly found in smaller businesses. In contrast, the difference is much smaller in Lithuania, Greece, and Romania, suggesting that family ownership is more evenly distributed across different business sizes. The weighted mean contribution to value added of family firms amounts to 42.1% in the sample.

*Their contribution to value added also **varies** markedly **by country**, ranging from around two fifth to almost three quarters in some Eastern European countries.*

Overall, the results emphasise that family firms generate a significant proportion of value added across Europe, but their presence among larger firms varies considerably by country.

Table 18: Approximate value added contributions of family firms by country

Country	Number of employees	
	All	50+
	Contribution of family firms (%)	
AT	64.2%	49.3%
BE[a]	47.3%	32.9%
BG	76.1%	60.1%
CH[a]	53.7%	36.0%
CZ	54.2%	32.3%
DE	68.7%	53.1%
DK	65.1%	38.3%
EE	54.2%	37.0%
EL[a]	51.9%	40.7%
ES[a]	64.9%	42.3%
FI	48.9%	30.9%
FR	66.4%	49.6%
HR	77.7%	46.5%
HU	63.5%	41.3%
IE	55.5%	24.0%
IT	55.5%	37.1%
LT	65.1%	52.5%
LV[a]	58.5%	42.1%
NL[a]	39.9%	27.4%
NO	50.4%	34.9%
PL	51.4%	33.2%
PT	49.2%	28.6%
RO	78.3%	65.3%
SE[a]	43.7%	30.3%
SI	49.4%	29.7%
SK	55.9%	43.1%

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

Note: The superscript 'a' denotes countries whose values should be interpreted with caution due to data issues, such as a high proportion of missing values or implausible outliers, in the raw data.

Table 19 compares the contribution of family firms to sectoral employment across two groups of firms: all firms, and those with 50 or more employees. Taking all firms of all sizes into account, family firms account for a significant proportion of value added in almost every sector. They make the greatest contributions in Administrative & Support (83.0%), Construction (79.1%), Wholesale & Retail Trade (78.6%), and Accommodation & Food (76.0%). They play a smaller role in Electricity & Gas (40.3%), Finance & Insurance (48.4%), and Mining & Quarrying (53.3%), where large, capital-intensive or heavily regulated firms tend to dominate.

Table 19: Approximate value added contributions of family firms by sector

Sector (NACE Rev. 2)	Number of employees	
	All	50+
	Contribution of family firms (%)	
B – Mining & Quarrying	53.3%	29.1%
C – Manufacturing	62.4%	48.6%
D – Electricity & Gas	40.3%	13.3%
E – Water & Waste	58.5%	40.5%
F – Construction	79.1%	67.9%
G – Wholesale & Retail Trade	78.6%	67.6%
H – Transport & Storage	70.7%	52.5%
I – Accommodation & Food	76.0%	62.1%
J – Information & Communication	58.0%	41.7%
K – Finance & Insurance	48.4%	26.5%
L – Real Estate	65.1%	46.9%
M – Professional & Technical	62.8%	45.3%
N – Administrative & Support	83.0%	67.0%

Source: WIFO and ASCII calculations based on ORBIS (Moody's Analytics) and Common Crawl data, Eurostat weights.

*The contribution of family firms to value added is particularly high in **labour-intensive services and construction**.*

Restricting the sample to firms with 50 or more employees sees family-firm shares decline across every sector, yet they remain high in Construction (67.9%), Wholesale & Retail Trade (67.6%), Administrative & Support (67.0%), and Accommodation & Food (62.1%). This underlines the strong presence of family businesses even among larger firms in these industries. The steepest declines are observed in Electricity & Gas (–27.0 percentage points), Mining & Quarrying (–24.2 percentage points) and Finance & Insurance (–21.9 percentage points), suggesting that family ownership in these sectors is concentrated among smaller firms.

Overall, the results confirm that family firms make a significant contribution to value added throughout the economy, particularly in labour-intensive services and construction, but comparatively less so in capital-intensive and regulated industries.

III. Explanatory factors

This raises the question of the structural determinants of family firms, which we address in two stages.

First, we conduct a straightforward analysis of variance (ANOVA) to examine the structural determinants associated with countries, industries, and firm size brackets.

Secondly, we conduct regressions to examine the institutional settings that influence the prevalence of family firms. This approach draws on the previous literature on institutions and economic dynamics (Ciccone and Papaioannou 2007; Friesenbichler et al. 2014; Kügler et al. 2023), and family firms (La Porta et al. 2000; Burkart et al. 2003; Amit et al. 2010; Iacovone et al. 2019). The findings are conditional associations and should therefore be interpreted descriptively. Nevertheless, they are an important tool for validating the properties of the data and ensuring consistency with existing research.

We use a cross-sectional fractional logit regression model (Papke and Wooldridge 1996; Wulff 2019) to explain the proportion of family-managed firms in sector i, country j, and size class s:

$$S_{ij\,s} = \beta_0 + \beta_1\,(INST_j) + \beta_2\,(GDPpc_i) + \mu_i + \mu_s + e_{ijs}. \quad (1)$$

INST denotes institutional indicators, which are measured at country level. In one set of specifications, we include country dummies. We avoid collinearity by omitting the country dummies and using real gross domestic product (GDP) per capita. All specifications include industry and size bracket effects. The standard errors are clustered at the country level.

We implement the regressions for both the share of firms and the employment share. Additionally, we consider the entire sample (i.e. all size classes) and a sub-sample consisting only of medium-sized and large firms.

1. Analysis of Variance

Building on the literature presented above, we conduct an analysis of variance (ANOVA) to determine the extent to which size, country and sector effects can explain the variance in the prevalence of family firms. Sectors are defined at the NACE Rev. 2 one-digit level. We consider both the proportion of firms and the employment-weighted proportion. Additionally, both dimensions are reduced to subsets of family-managed firms.

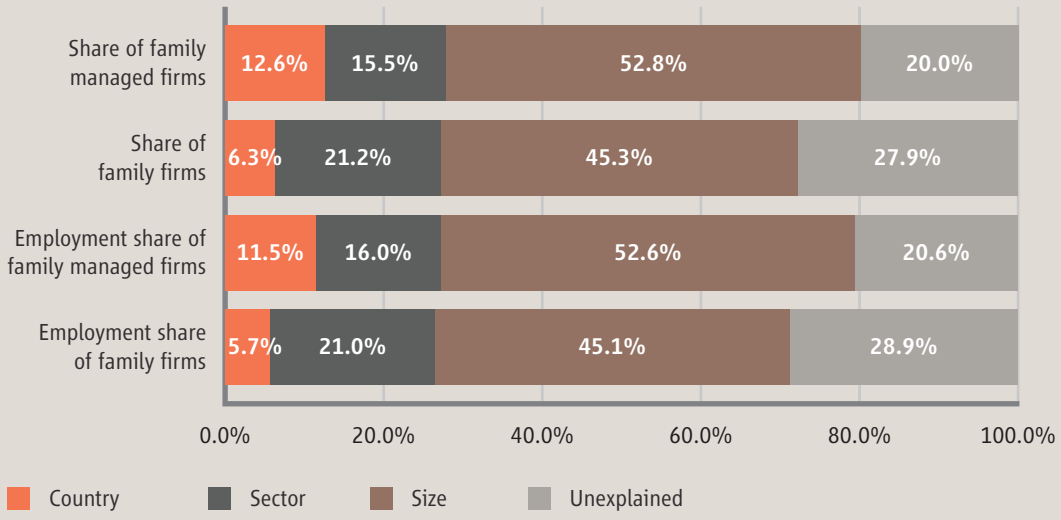
__Firm size__ is by far the most important structural driver of family business prevalence. The contributions of country and sector differ depending on whether ownership or management is measured.

The first set of analyses considers all size brackets. Across all four indicators, firm size is the dominant source of variation, accounting for between 45.1% and 52.6% of the observed differences. Sector and country play more moderate but distinct roles: sector effects are more pronounced for ownership-based indicators (around 21%) than management-based ones (around 12%), while the opposite pattern is seen for country effects, which contribute around 12% for management-based measures but only about 6% for ownership-based ones.

The unexplained portion ranges from 20.0% to 28.9%, being notably larger for ownership-based indicators. This suggests that a meaningful proportion of the variation in family firm prevalence is driven by factors beyond the structural dimensions considered.

Overall, the results support the notion that firm size is by far the most important structural driver of family business prevalence, while the contributions of country and sector differ depending on whether ownership or management is measured (see Figure 9 and Figure 10).

Figure 9: ANOVA results (all firms)



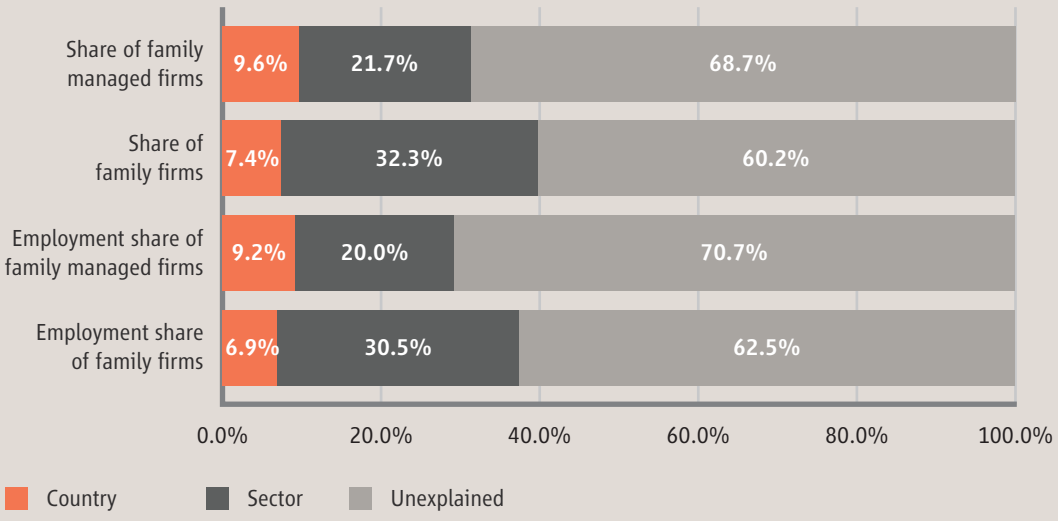
Source: WIFO and ASCII calculations.

Next, this analysis is restricted to medium-sized and large firms, which are treated as one size class. The idea is to exclude the size effect due to the small firm base, as small firms are often family businesses out of necessity. Again, we decompose the variation in the four family business indicators – the employment share of family firms, the employment share of family-managed firms, the share of family firms and the share of family-managed firms – into contributions from country, sector and an unexplained residual.

The unexplained portion dominates across all four indicators, ranging from 60.2% for the share of family firms to 70.7% for the employment share of family-managed firms. This indicates that much of the variation is driven by factors beyond country and sector affiliation. Sector effects are clearly stronger for the ownership-based indicators (30.5% and 32.3%) than for the management-based ones (20.0% and 21.7%), suggesting that sectoral structure is more important for determining ownership than management.

Country contributions remain relatively modest and stable across all indicators, ranging from 6.9% to 9.6%. Once firm size is excluded from the decomposition, sector emerges as the most important structural driver, particularly for ownership-based measures, while country differences explain only a limited amount of variation. A large residual points to substantial heterogeneity within countries and sectors.

Figure 10: ANOVA results (medium-sized and large firms)



Source: WIFO and ASCII calculations.

2. Legal origin

The prevalence of family control and management is associated with legal traditions, inheritance tax policies and institutional quality, and there is significant variation across countries. Civil law countries, particularly those influenced by the French legal tradition, tend to have the highest proportion of family-controlled and family-managed firms. In contrast, family firms are less prevalent in common law systems. Scandinavian jurisdictions tend to separate family ownership from management (La Porta et al. 2000; Ortiz 2025; Franks et al. 2008).

We assess the role of the legals system empirically. The legal systems included in the sample are rather diverse. Drawing on the law and economics literature (La Porta et al. 2000), we have created three clusters of countries that perceive their legal systems to be of French, German or Scandinavian origin. These are different forms of civil law systems. Ireland is the only country in the sample with a common law system, which is why we do not consider this system. We define sets of dummy variables that take on the value of one if a country belongs to the respective legal system group, and zero otherwise.

In our sample, countries with legal systems of French origin include Belgium, Bulgaria, Greece, Spain, France, Italy, Portugal and Romania and the Netherlands. Those with German-originated legal systems are Austria, Switzerland, the Czech Republic, Germany, Estonia, Croatia, Hungary, Latvia, Lithuania, Poland, Slovenia and Slovakia. We therefore assigned Eastern European systems, which often have a planning and transition legacy, to either French or German origins. The countries with Scandinavian legal systems are Norway, Sweden, Finland and Denmark.

The regression results suggest that family firms are less prevalent in legal systems based on Scandinavian than on German or French civil law. The findings for larger firms, and for employment (see Table 20) are slightly stronger than those for the number of firms.

Table 20: Origin of the legal system – descriptive regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All	All	All	50+	50+	50+	All	All	All	50+	50+	50+
	Emp.	Emp.	Emp.	Emp.	Emp.	Emp.	Firms	Firms	Firms	Firms	Firms	Firms
French origin	0.237			0.301*			0.290*			0.392**		
	(0.164)			(0.165)			(0.167)			(0.154)		
German origin		−0.058			−0.007			−0.100			−0.102	
		(0.168)			(0.165)			(0.172)			(0.165)	
Scand. origin			−0.439**			−0.478***			−0.469**			−0.485***
			(0.183)			(0.119)			(0.198)			(0.114)
GDP p.c.	−0.009***	−0.010***	−0.008***	−0.006***	−0.006**	−0.005*	−0.009***	−0.010***	−0.008***	−0.006***	−0.008***	−0.005**
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)
Sector effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Size effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	3.141***	3.268***	3.241***	0.923***	1.049***	1.042***	3.377***	3.552***	3.498***	1.156***	1.384***	1.310***
	(0.211)	(0.244)	(0.202)	(0.280)	(0.274)	(0.270)	(0.236)	(0.273)	(0.222)	(0.263)	(0.272)	(0.261)
Observations	1,655	1,655	1,655	652	652	652	1,655	1,655	1,655	652	652	652
Pseud-R^2	0.251	0.250	0.253	0.173	0.170	0.174	0.249	0.248	0.251	0.175	0.171	0.175

Source: WIFO calculations.

Note: This table shows the regression results explaining the shares of family firms with the origin of the legal system at the country level (see La Porta et al. 2000). The results are based on a fractional logit model with standard errors clustered at the country level *** p<0.01, ** p<0.05, * p<0.1.

3. Quality of the public administration

The literature on the relationship between family firms and the quality of the legal system yields somewhat mixed results. While recent evidence finds a positive correlation between stronger legal environments and the prevalence of family-managed firms (Ortiz 2025), other authors have suggested a negative relationship (Iacovone et al. 2019; Amit et al. 2010). Family-owned businesses are thought to be more prevalent in countries that offer robust shareholder protection than in those with weaker protections (La Porta et al. 2000; Burkart et al. 2003; Masulis et al. 2015; Lu and Tao 2009). Overall, the literature suggests that family firms are less prevalent in environments with more effective and efficient public administration.

*There is a **negative association** between the **quality and effectiveness** of the public administration index and the **prevalence of family firms**.*

We use data from the World Bank's Worldwide Governance Indicators (WGI) to measure the effectiveness of public administration. These annual composite indicators are based on perceptions of governance quality across more than 200 economies. The indicators draw on 35 cross-country data sources, including household and firm surveys, as well as expert assessments. In particular, we use the 'Government Effectiveness' indicator, which reflects perceptions of the quality of public services, the civil service, policy formulation and implementation, and the credibility of government decisions.[12]

While the index is based on qualitative assessments, it is a composite quantitative measure. Its mean percentile rank is 75.3 and its standard deviation is 11.7. The findings suggest a negative association between the World Bank's government effectiveness index and the prevalence of family firms. The signs are stable, but the relationship is either marginally insignificant or only weakly significant (see Table 21).

12 See https://www.worldbank.org/en/publication/worldwide-governance-indicators/documentation and https://www.worldbank.org/content/dam/sites/govindicators/doc/GE-2025.pdf (accessed on 31 August 2026).

Table 21: Government effectiveness and Liberal labour market regulations – descriptive regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	50+	All	50+	50+	50+	All	All
	Firms	Firms	Emp.	Emp.	Firms	Firms	Emp.	Emp.
Gov. Effectiveness	−0.017	−0.018*	−0.015	−0.015				
	(0.011)	(0.010)	(0.010)	(0.010)				
Labour market freedom					0.217**	0.100	0.194**	0.063
					(0.102)	(0.090)	(0.095)	(0.091)
GDP p.c.	−0.005	−0.002	−0.005	−0.002	−0.011***	−0.008***	−0.011***	−0.007***
	(0.004)	(0.003)	(0.003)	(0.004)	(0.002)	(0.002)	(0.002)	(0.003)
Sector effects	Y	Y	Y	Y	Y	Y	Y	Y
Size effects	Y	Y	Y	Y	Y	Y	Y	Y
Constant	4.517***	1.071	4.138***	0.806	2.444***	0.164	2.309***	0.121
	(0.711)	(0.000)	(0.692)	(0.664)	(0.567)	(0.504)	(0.510)	(0.519)
Observations	1,655	652	1,655	652	1,719	677	1,719	677
Pseud-R^2	0.249	0.174	0.251	0.172	0.252	0.173	0.254	0.174

Source: WIFO calculations.

Note: This table shows the regression results explaining the shares of family firms with the Government Effectiveness Indicator obtained from The World Bank's Worldwide Governance Indicators and the Freedom of the labour market index provided by the Heritage Foundation. The results are based on a fractional logit model with standard errors clustered at the country level *** p<0.01, ** p<0.05, * p<0.1.

4. Labour market regulation

Management literature has found that, on average, family firms offer lower wages but higher job security (Block et al. 2019; Van Essen et al. 2015). The degree of protection offered by labour regulations significantly influences employee choice, with employees preferring family firms when the Labour Code offers little protection (Belot and Ginglinger 2025). Political theories of corporate control emphasize that labour laws influence the relationship between business ownership, workers and investors. Hence, there is a link between family ownership and labour market regulations. In more liberal labour markets with lower employment protection, family firms partly substitute governance mechanisms (Bennedsen et al. 2022). This suggests that countries with more liberal labour markets have a higher proportion of family firms.

*There is a **positive association** between the **liberal labour market regulations** and the **prevalence of family firms**.*

Empirically, we use the freedom of the labour market, an aspect of the Economic freedom Index provided by the Heritage Foundation.[13] It provides an indication of individuals' ability to find employment opportunities. The ability of businesses to hire and fire workers as required is therefore essential to achieving enhanced productivity and sustained economic growth. In many countries in the sample, unions play an important role in regulating labour freedom, and depending on their activities, they can contribute to or impede the efficient functioning of labour markets.

The index is based on qualitative assessments and a composite quantitative measure. Its mean is 5.1 and its standard deviation is 0.7.

The findings suggest a positive conditional correlation between the prevalence of family firms and the degree of labour market freedom, as measured by the Heritage Foundation's Labour Market Regulation indicator. This relationship is significant in specifications that consider all firm sizes, but becomes statistically insignificant when only larger firms are analysed (see Table 21).

IV. Country-specific results

The results are broken down further to the country level and presented in country fiches, which are provided as separate documents. These provide a standardised overview of the distribution of family firms within each country. First, they verbally describe the country-specific firm base. Next, they present country-wide indicators:

13 See https://economicfreedom.heritage.org/ (accessed on 28 August 2026).

- Gross domestic product per capita as a measure of aggregate productivity obtained from Eurostat.
- The tradition of the origin of legal systems (La Porta et al. 2000).
- The position in the European Innovation Scoreboard (EIS) measures and compares the performance of EU and non-EU countries on research and innovation. Published annually by the European Commission, the Scoreboard provides governments and policymakers with a clear overview of their country's innovation strengths and weaknesses, and how they compare to others.[14]
  - We show the rank and the category provided by the European Commission. The rank is based on the EU-27 plus Switzerland and Norway.
  - Member States are grouped in four innovation groups based on their scores: Innovation Leaders (performance is above 125% of the EU average), Strong Innovators (between 100% and 125% of the EU average), Moderate Innovators (between 70% and 100% of the EU average) and Emerging Innovators (below 70% of the EU average).
- World Governance Indicators (WGI), provided by the World Bank, which measure the performance of public governance.
  - These indicators summarise six dimensions of governance: Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. The WGI draws on perception data from 35 cross-country sources, including household and firm surveys and expert assessments, to offer an internationally comparable picture of governance quality across economies.[15]

Next, we present the number of firms and employment-based indicators at the country level. Again, we show the share of family-owned firms, the ownership origin and whether the firms are family-managed. The figures are shown along two dimensions: (i) employment-based size bracket, and (ii) sector group (see Table 22). The figures are specific to a country or sector group, implying that they are based on a smaller sample size than the country figure. Differences in the samples may lead to minor discrepancies in the weighted aggregate values (see C.V.2). However, this does not affect the validity of the results. Overall, the country-specific results are consistent with the headline figures presented in this report.

14 See https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_en (accessed on 7 August 2026).

15 See https://www.worldbank.org/en/publication/worldwide-governance-indicators (accessed on 7 August 2026).

Table 22: Sector groups used in the country fiches

	Sector Group	NACE Sectors	Label/Description
1	Primary & Extractive	B	Resource-extraction oriented, factor endowments
2	Manufacturing	C	Manufacturing is large and analytically distinct
3	Electricity & Gas, Water & Waste, Construction	D, E, F	All infrastructure/utility-type activities
4	Trade, Transport, Accommodation & Food	G, H, I	Labour intensive, customer facing and often B2C
5	Digital, Finance & Real Estate	J, K, L	Sunk costs, b/c capital-intensive, asset/IP-driven sectors
6	Professional & Business Services	M, N	Both B2B service providers, often grouped in policy

F. Conclusion

Family firms occupy a prominent position in the economy. Although there is no unified definition, ownership and control are typically at the core. Despite their relevance, there are few comprehensive, cross-country, cross-industry studies. This literature struggles with data issues, which has led researchers to focusing on listed firms.

State-of-the-art data science methods allow us to overcome single-method bias by combining multiple datasets. Alongside global ultimate firm ownership information constructed using ORBIS data, we use publicly available information from Common Crawl, an internet archive. These results have been augmented and validated by large language models. We implement a multi-tier definition to identify family-owned and family-managed firms and to explore extra-EU and intra-EU ownership. To make the data comparable across countries, it is necessary to reduce the remaining sample selection bias and consider local economic structures. Therefore, we use official Eurostat data on employment and the number of firms by sector, industry and size class. Each cell is then split into family and non-family firms and used to obtain representative aggregates.

While our holistic approach differs methodologically and some results may deviate from previous studies, our findings are largely consistent with the existing literature. We strongly endorse the dual argument for family firms. Small firms are often family firms due to a lack of choice. Larger firms exhibit greater variance, both within and between sectors and countries. Additionally, our findings align with existing literature on the impact of country-specific factors, including the origin of the legal system, labour market regulations, and the quality of public administration.

The findings highlight some gaps in the literature. The currently implemented method is ultimately based on family ownership. Other defining aspects of family firms, such as corporate culture, are not considered, despite their potential to improve our understanding of cross-country and industry differences. Similarly, differences are likely to emerge in longitudinal studies of succession policy. Furthermore, the analysis of variance revealed significant sector effects that have rarely been studied in the literature. Future research may also focus on the regional dimension, because it is likely that there is a difference in the prevalence of family firms between urban and rural areas.

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List of countries

AT	Austria
BE	Belgium
BG	Bulgaria
CH	Switzerland
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LV	Latvia
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia

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Appendix-A. Identifying Family-Owned Firms: Method

This appendix documents the classification of firms as family-owned: the concept measured, the evidence available for measuring it, the twelve decision rules and the order of their application, the contribution of each, the calibration procedure, and the conditions under which the classification fails.

The population is the **universe of firms in 29 European countries** (the EU-27 plus Switzerland and Norway) recorded in Bureau van Dijk's Orbis database: **49,111,150 firms**. All figures reported below refer to the classification as of July 2026.

I. The concept measured

A firm is treated as **family-owned** if the persons or entities that ultimately control it are one family, or a small number of related families. Control counts whether it is exercised directly – the family holds the shares in its own name – or indirectly, through a family holding company or a family foundation. What matters is the identity of the ultimate owner, not the number of legal layers between that owner and the operating firm.

Three boundaries of the concept should be stated at the outset, because they determine how every number in this study is to be read.

Ownership rather than management. This chapter is about *who owns* the firm. Whether a member of the owning family also *runs* it is a second, separate classification, applied only to firms already identified as family-owned, and documented in its own chapter. The two questions are kept apart deliberately: they rest on different evidence (ownership links versus the register of directors and officers) and they fail in different ways, so combining them into a single verdict would make neither auditable.

Structure rather than self-description. We classify on the basis of ownership structure, not on how a firm presents itself. A firm advertising itself as a 'family business' is treated as *evidence* – one signal among twelve, and a deliberately weak one – never as the definition. The alternative would produce a measure that tracks national marketing conventions, which differ enormously across Europe, rather than ownership.

Family, not merely closely held. A firm owned by five unrelated individuals is closely held but not a family firm. Wherever the procedure relies on the number and identity of individual

owners, it therefore also tests whether those individuals plausibly belong to *one* family, rather than counting heads (Section 4.1).

The concept is deliberately close to the one used in the recent European prevalence literature, so that our rates can be compared against an independent estimate built from the same underlying database.

II. Rationale for a cascade of tri-state signals

A single definition applied uniformly to every firm cannot be implemented, for a reason residing in the data rather than in the concept: **the database records different information for different firms, and the extent of that information varies systematically by country**.

For approximately one third of firms Orbis reports an ultimate owner. For the remaining two thirds it reports none, and the available evidence reduces to the legal form and, in some cases, a list of immediate shareholders. A uniform rule must therefore adopt one of two positions, both unacceptable:

- **Restriction of the study to firms with ownership data.** This does not merely reduce the sample but distorts it in a specific direction. Owner-ship coverage ranges from 4% of firms in Greece to 77% in Bulgaria (Section 5.3); a coverage-restricted study is a study of the countries with well-maintained commercial registers, presented as a study of Europe.
- **Treatment of missing ownership data as evidence of non-family ownership.** This is false – a family firm without a register entry remains a family firm – and, since coverage is correlated with country, the resulting error constitutes a country-specific bias rather than noise.

The procedure adopted therefore has three properties, each addressing one part of the problem.

1. Every source of evidence is evaluated separately, and may abstain

Each of the twelve rules is applied to every firm independently of the others, and returns one of **three** values: *family*, *not family*, or **undetermined** – where 'undetermined' means *this rule has nothing to say about this firm*, not 'no'. A rule based on the legal form abstains where the form is uninformative; a rule based on the ownership chain abstains where no chain is recorded.

The rules are not mutually exclusive: several may return a substantive answer for the same firm, and they are permitted to contradict one another. Nothing is reconciled at this stage. The output is twelve independent readings per firm.

2. A single, explicit priority order arbitrates

The firm's verdict is then the reading of the **highest-priority rule that did not abstain**, and we record *which* rule that was, for every firm.

The separation between 'what each source says' and 'which source is believed' is the central design decision, and it buys three things. First, **every verdict is attributable**: any aggregate can be decomposed by the type of evidence that produced it, so a reader can see that (for example) 55% of our family verdicts rest on the legal form rather than on an observed ownership chain, and discount accordingly (Section 5.1). Second, **the ranking is a single, explicit object** rather than an assumption buried inside each individual rule, so it can be argued about, changed and re-tested without altering what any rule means. Third, the calibration exercises described in Section 6 score the *actual* production ranking, so validation cannot silently drift away from what the classification does.

3. Trust is asymmetric: most rules may only say 'family'

Seven of the twelve rules are **positive-only**: their *family* verdicts are used and their *not-family* verdicts are discarded as undetermined.

This is not caution for its own sake; it reflects the measured error structure of the sources. For nearly every kind of evidence available here, the *presence* of family evidence is far more reliable than its *absence*:

- a family controlling a firm through a holding company with an ordinary, non-personal name leaves no trace in the company name;
- a family firm has no obligation to say so on its website, and most do not;
- an attempt to walk the ownership chain upwards returns 'not a family' both when the owners really are institutions *and* when the chain simply ran out of recorded shareholders.

The last case is quantified in Section 6: **38% of the ownership walk-up's 'not family' verdicts are contradicted** by independent evidence, even among those the procedure itself rates as high-confidence, while its *family* verdicts are right about 81% of the time. An unfound family is indistinguishable from an absent one, so non-family status is systematically over-diagnosed. We therefore do not assert it: firms in that position fall through to weaker evidence, and if nothing else applies they remain unclassified.

The price of this asymmetry is that the two negative outcomes must be reported separately and never pooled. **'Not family' means a rule positively established non-family control.**

'Undetermined' means we established nothing. In this classification 10.5% of firms are the former and 10.7% the latter (Section 5.1); an analysis that treats the undetermined firms as non-family will misstate every country rate, and will misstate them unevenly.

III. The evidence base

1. Orbis ownership records

Two properties of the source data shape the entire procedure.

An ultimate owner is recorded for only a third of firms. Orbis resolves a Global Ultimate Owner – the entity at the top of the ownership chain – at a majority threshold. **16,256,451 firms (33.1%) have such an owner.** A further **2,419,135 (4.9%)** have one only at the lower, 25% threshold discussed in Section 4.9. **30,435,564 firms (62.0%) have none at all.**

Where an ultimate owner *is* recorded, it is overwhelmingly a family: of the 16.3 million, **86.3% are individuals or families** (14,029,072 firms). Corporate ultimate owners come second (1,776,576), followed at a distance by financial companies, foundations, funds, insurers, the state and private equity. This distribution is itself informative – the ownership records, where they exist, describe a European economy dominated by personal ownership – but it also means that the difficult cases are concentrated in one place: the corporate ultimate owner, which may be a family's holding vehicle or a multinational group, and which the records alone do not distinguish.

Ownership data is unevenly present across countries, by a wide margin. The share of firms with a recorded ultimate owner runs from 4.3% (Greece) and 5.3% (Hungary) to 76.6% (Bulgaria) and 74.0% (Latvia). This is the single most important caveat on any cross-country comparison in this study (Sections 5.3 and 7.1).

Beyond the ultimate owner, we use the firm's **immediate shareholders** (how many, of what kind, and their names), its **legal form** in both harmonised and national classification, its country, and whether it is listed.

2. Enrichment: five additional sources

The ownership records alone leave too many firms undetermined, and are silent exactly where the interesting cases are. Five further sources were built or acquired, each addressing a specific gap.

Classified foundations. Every foundation that appears as an ultimate owner was classified as a family foundation or not, using a large language model over the foundation's name and country, with manual review. This distinction cannot be derived from the ownership structure – it depends on what the foundation *is* – and it matters a great deal in the German-speaking and Nordic countries, where the family foundation is a standard succession vehicle (Section 4.3).

The ownership-chain walk-up. For every corporate ultimate owner, we retrieve that company's *own* shareholders from the ownership records and classify them, recursively, in order to determine whether the corporate owner is itself family-controlled. The procedure is described in Section 4.4.

Company-name classification. Independently, a language model judges for each corporate ultimate owner whether its name is *eponymous* – built on a person's or family's name. This is the only evidence available for holding companies whose own shareholders are not recorded at all (Section 4.11).

Web-search verdicts. For a set of large firms, a language model with web search was asked to establish who actually owns the firm, and to report the owner and its reasoning. This is the only source in the study built on narrative evidence about specific firms rather than on structural proxies, and it is used both as a classification rule (Section 4.2) and as the reference against which the heuristic rules were calibrated (Section 6.1). **21,410 firms were processed and 20,368 received a verdict**; the sample is concentrated among the largest firms (median 807 employees; 16,384 have 250 or more).

Company-website declarations. A commercial extraction of company websites records whether a firm declares itself family-owned. Matched to Orbis identifiers, this yields a weak positive signal for a large number of firms (Section 4.8).

Legal-form classification. The harmonised legal-form categories are too coarse to be used directly, because the same harmonised category covers forms with very different ownership implications in different countries. Every *national* legal form in every country was therefore classified – as implying family ownership, as implying its absence, or as uninformative and to be decided from the shareholder list – by a language model, subsequently corrected by hand. Section 4.6 describes the result and the one large error this process made.

3. A technical prerequisite: reconciling names

Two rules (Sections 4.4 and 4.7) and the entire management classification depend on comparing personal names. This is not straightforward in Orbis, for two reasons that must be handled or they introduce a systematic, country-correlated bias.

First, **non-ASCII characters are inconsistently encoded** across the database: the same surname may appear correctly, as double-encoded mojibake, or transliterated (Kühnle as KÜHNLE, KÃœHNLE, or KUEHNLE) depending on which table it comes from. All name comparisons therefore pass through a normalisation step that repairs the encoding damage, expands umlauts and folds accents in one consistent direction. Without it, every non-ASCII surname match is silently lost – which would mean losing them disproportionately in the German-speaking, Nordic and Central European countries.

Second, **name order is not standardised**: the surname may be the first, middle or last token, and which it is varies by country (Italian records are frequently surname-first, often with a salutation attached). No rule in this study therefore tries to *locate* the surname by position. Instead, individuals are compared by their **shared significant name tokens**: a set of people is clustered by which tokens they have in common, and the number of resulting clusters is counted. Four members of one family share a recurring surname token and collapse to a single cluster; twenty unrelated shareholders remain twenty clusters. This is the test referred to below as **surname concordance**.

IV. The twelve decision rules

The rules are stated below in priority order. Each is applied to every firm; the first one that does not abstain determines the verdict. For each rule we give the condition, the number of firms it decided, the reason for its position in the order, and its known weaknesses. Volumes are out of 49,111,150 firms.

Values marked (**parameter**) are thresholds set by us, not derived from theory; they are collected in Section 7.4.

1. Rule 1 – The ultimate owner is an individual or family

Condition. Orbis records an ultimate owner at the majority threshold whose entity type is *individuals/families*. The firm is **family-owned**. The rule is positive-only by construction: this owner type cannot mean anything else.

Decided: 14,029,072 firms – 28.6% of all firms, and 36.2% of all family-owned verdicts.

Position in the order. This is the only rule in the study that approximates a *direct observation* of the concept: an ownership chain, reconstructed from commercial-register filings, terminating in a named natural person or family. Every other rule is an inference from a proxy – a legal form, a company name, a head count, a website. Where the observation exists, it is preferred.

It also cannot conflict with rules 3, 4, 5, 11 and 12, since a firm has exactly one recorded ultimate owner and these rules are conditioned on its type. The ordering among them is consequential only relative to the non-ownership rules.

Weaknesses. The rule inherits, without any means of checking them, both the majority threshold used to define the ultimate owner (Sections 4.9 and 7.2) and Orbis's resolution of the chain itself. Where the chain is wrong, we are wrong.

We considered, and rejected, placing a definitional rule above this one: a registered sole proprietorship has exactly one natural-person owner by law, so 'sole trader implies family-owned' might be thought certain. It would change the verdict of only about **150** of the 20.2 million sole traders in the data – those recorded, contradictorily, with a corporate, state or foundation ultimate owner. These are genuine data errors, but too rare to justify overriding an ownership record; sole traders are handled instead by rule 6.

2. Rule 2 – Web-search verdict on the firm's owner

Condition. A language model with web search, given the firm's name, country, **location, website, sector, size band** and largest recorded shareholder, establishes who owns it. The verdict is used **in both directions**.

The identifying context matters more than it might appear. Most firms in the population are small and obscure, and the dominant failure mode of an name-and-country-only query is not that the model answers wrongly but that it answers about a *different, larger* firm with a similar name. Supplying the registered location, the firm's own website and its size band makes that error detectable to the model, which is instructed to answer 'unknown' unless the pages it finds match the firm it was asked about.

Two further properties are recorded with every verdict. First, whether a web search **actually executed**: a verdict produced without one is the model's prior, not evidence, and is excluded from every figure in this chapter. Second, the source URL the verdict rests on, so that individual classifications can be audited rather than merely counted.

Coverage and effect. 37,694 firms have a verdict, of which **16,681 come from the current pipeline with a confirmed search**; the remainder are from an earlier implementation (below). At the last full rebuild the rule **decided 17,756** firms (5,164 family, 12,592 not family); the firms it does not decide have an individual ultimate owner and are settled by rule 1, the only rule above it. Coverage is deliberately concentrated on large firms: firms of 250 or more employees hold 36% of all recorded employment, and two thirds of that employment sits in firms this rule decides.

Two generations of verdicts. An earlier implementation produced 21,013 of the verdicts in use, without recording whether a search had executed and with only name, country, legal form and shareholder as context. Rather than discard them, they were tested against the current pipeline on the 2,041 firms both classified: they agree **94.7%** of the time, and **95.5%** on firms of 250 or more employees, with errors close to symmetric in direction. They are therefore retained. The alternative would have been worse than it sounds — on precisely those firms the non-web rules reach only 0.56 precision, so discarding a 95%-concordant verdict would replace it with a far weaker one, or with no verdict at all.

Position in the order: second, above every ownership-record rule except rule 1. Two reasons. First, it is the only source of evidence in the study that can *correct* a mistaken structural inference rather than merely add to it. Firms with dispersed or institutional ownership are precisely where the structural rules break down: a large firm's holding company looks, structurally, exactly like a family's holding company. Second, that is also where an error is most costly, because these firms carry the employment and turnover weight of the entire population. On the firms where we have this evidence, we therefore allow it to override the foundation, corporate-owner and legal-form inferences.

Limited effect on the firm count. The rule decides 0.04% of firms. It exists to protect the top of the size distribution, not to move the firm count — and by employment it is anything but marginal. Its scarcity is a budget constraint rather than a design choice: each verdict consumes roughly two paid searches, so coverage is allocated deliberately rather than uniformly.

How coverage is allocated. Verdicts are drawn as a stratified sample with recorded design weights, over the same cells the study aggregates on (country × size class), so that the sample supports *estimation* and not only spot checks. The budget is directed by three principles. It is allocated by **employment mass** rather than firm count, because firms of 250 or more employees are 0.1% of firms and 36% of employment. It is withheld from firms whose verdict is not in doubt — where the database already names an individual as ultimate owner, or the firm is a sole proprietorship, the web only ever confirms what is already known (agreement 99.4% and 99.2% respectively); these form a **certainty stratum** that enters the aggregate

at its recorded verdict, sampled only thinly as an audit. And it is concentrated on firms whose verdict rests on the *weakest* evidence, which Section 6.1 shows to be the large ones.

Weaknesses. It is a language model reading the open web: it can be confidently wrong, and it is not auditable at scale. Its coverage is a size-selected, non-random sample, so it cannot be used to estimate anything about the population by itself. And because it also serves as the calibration reference for the heuristic rules (Section 6.1), the precision figures quoted in this chapter are measured against a fallible standard (Section 7.7).

3. Rule 3 – The ultimate owner is a foundation

Condition. The recorded ultimate owner is a foundation. The foundation is looked up in the classified list: a family foundation makes the firm **family-owned**, any other foundation makes it **not family-owned**. Foundations absent from the list default to family (**parameter**).

Decided: 120,710 firms – 64,654 family, 56,056 not.

Rationale. A foundation as ultimate owner is genuinely ambiguous, and both possible blanket treatments are badly wrong. Treating foundations as non-family would delete a large part of German, Austrian and Danish family capitalism, where transferring ownership into a family foundation – the German *Stiftung & Co. KG*, the Danish *erhvervsdrivende fond* – is a standard response to succession and inheritance taxation. Treating them as family would count church, charitable, municipal and research foundations, which also control operating firms, as family businesses. The distinction is not visible in the ownership structure at all; it depends on the identity of the foundation, and is therefore made foundation by foundation.

Position in the order, below the web verdict. The classification is made per foundation, largely from its name and country. Where we have direct evidence about the firm itself, that is better evidence.

Status of the default. In the current data the default is **inactive**: all 121,232 firms with a foundation as ultimate owner are covered by a classified foundation (34,030 foundations, of which 16,769 family and 17,261 not), so the default decides no firms. It is a safety net rather than an operative assumption – but one requiring attention after any refresh of the underlying data, since a growing unclassified share would begin manufacturing family firms silently.

Weaknesses. Beyond the classification's own error rate, the rule treats foundation control as equivalent to family control. This is a defensible reading of the institution – the foundation's purpose is typically to hold the family's firm across generations – but it is a substantive choice,

and a reader who disagrees can isolate exactly the 120,710 firms concerned, since every verdict records the rule that produced it.

4. Rule 4 – The corporate ultimate owner is itself family-controlled

Condition. The recorded ultimate owner is a company. We then reconstruct that company's own ownership: its immediate shareholders are retrieved and classified, recursively, to a maximum of **2 (parameter)** further links. Only *resolved family* verdicts at high or medium confidence are used, and only **positively**: the firm is family-owned.

Decided: 421,573 firms (1.1% of family verdicts).

How the walk-up decides. Each immediate shareholder of the holding company is assigned to one of three groups. Banks, insurers, funds, private-equity and venture-capital firms, the state, employee and management vehicles, and aggregated dispersed-shareholder records count as **non-family**. Foundations are resolved through rule 3's classified list. Other companies are recursed. And individual shareholders count as **family only if they plausibly form one family**, established by surname concordance (Section 3.3) – a group of individuals sharing a recurring surname token counts as a family, while a group of unrelated individuals is counted as non-family, not as family.

The verdict then follows a short cascade whose two important members are:

- a **value-majority family** – the individual shareholders hold more than half the company and form one family – which yields *family* at high confidence; and
- a **dispersal guard**: on a base of at least **10 (parameter)** shareholders in which the family bloc accounts for less than **34% (parameter)** of them, the company is *not* family-controlled, at high confidence.

The dispersal guard was added in response to a specific failure. The earlier version required the family bloc to be entirely absent, which a *single* named individual on a large institutional share register was enough to defeat: Deutsche Telekom, Philips and ASML, each with 150–200 recorded shareholders, almost all of them institutional, were being classified as family firms.

Position in the order, above the legal-form rules. A corporate ultimate owner is precisely where a family holding structure hides. Discarding these verdicts, or demoting them below the legal-form fallback, loses real family firms – on our hand-curated reference list of known

family firms, demotion loses five of them. The rule ranks below the web verdict because it is a count-based reconstruction of a chain rather than direct evidence about the firm.

Positive side only, and confidence-gated. Both restrictions are results of calibration, and are quantified in Section 6.1. Ungated, the rule's family verdicts were right only about **43%** of the time, and 87% of its errors came from its own lowest confidence tier – cases decided purely by head-count on a mixed shareholder base. Excluding that tier raises precision to about **81%** at the time of calibration, and **0.95** against the larger reference now available. Its *negative* verdicts, meanwhile, are wrong **38%** of the time even at high confidence – 37% for 'dispersed, family in the minority' and 41% for 'only non-family owners' – for the structural reason given in Section 2(c). They are therefore not used at all.

Depth of the recursion. Each additional link stacks one count-based inference on another, with no attenuation of the resulting uncertainty. Verdicts that were reachable *only* by allowing a third link tested at roughly 12% precision, i.e. they were worthless. Anything unresolved within two links is left undetermined rather than guessed.

Weaknesses. The procedure counts shareholders rather than weighting them by stake, because the stake is missing for about 94% of ownership links. It therefore treats a 1% institutional shareholder and a 40% institutional shareholder identically, except in the value-majority rule where a numeric stake happens to be present.

5. Rule 5 – The ultimate owner is of another known type

Condition. An ultimate owner is recorded and is a bank, financial company, insurer, mutual or pension fund, private-equity or venture-capital firm, hedge fund, public authority, employee/management vehicle, self-ownership record, or an aggregated dispersed-shareholder record. The firm is **not family-owned**.

Decided: 325,977 firms, all negative.

Safety of this negative. It is the only unconditional negative in the procedure. Every other negative verdict in this study infers absence of family control from a *failure to find* a family, which Section 2(c) shows to be unreliable. Here the data makes a positive statement about a *different kind* of ultimate owner: a bank, a pension fund, a buyout house, a ministry. That contradicts family control rather than merely failing to establish it. The one owner type that could plausibly conceal a family – a company – is excluded from this rule and handled separately, by rules 4, 11 and 12, for exactly that reason.

Weaknesses. A family that holds its firm through a *financial* company rather than an industrial one is misclassified here, and the study does not attempt to detect this case. It is presumably rare relative to the 326,000 firms the rule decides, but it is not measured.

6. Rule 6 – The legal form alone is decisive

Condition. The firm's legal form, in the classified table resolved by harmonised form, national form and country, gives a determinate verdict. It is used **in both directions**.

Decided: 25,835,690 firms – 21,189,388 family, 4,646,302 not. This is the largest rule in the procedure: **54.7% of all family-owned verdicts**.

What the classification says. The starting point is the harmonised category: sole proprietorships imply family ownership; private limited companies are uninformative and are passed to rule 7; partnerships, non-profit organisations, public authorities and public limited companies imply its absence; foreign and unrecorded forms are uninformative altogether. Each *national* form then overrides this default for its own country.

The overrides matter, and they move large numbers of firms, because national practice diverges from what the harmonised category suggests. Of 4.49 million firms in partnership forms, **4.12 million are classified as family-owned**: the Austrian and German *OG*, *KG* and *GmbH & Co. KG* and the Italian *S.n.c.* and *S.a.s.* are family vehicles in practice, not the anonymous partnerships the generic default assumes. Conversely, 3.36 million private limited companies receive a determinate verdict from their national form instead of being passed down to rule 7.

Admissibility of legal form as evidence. Because for 62% of firms there is nothing else, and because in the small-firm segment the form is genuinely informative rather than merely convenient. A registered sole proprietorship has, as a matter of law, exactly one natural-person owner; there is no ownership structure to look up. Some **20.2 million of the 49.1 million firms** in the population are sole proprietorships. This is the mass of European business, and any procedure that requires an ownership record in order to classify a firm excludes it – silently, and unevenly by country.

The price is that this is a statement about a legal *form*, not about a particular firm. Rule 6 is the largest and the crudest instrument in the procedure, and the 41% of all firms it classifies as family-owned should be understood as 'of a form whose owners are, in this country, almost always a family or an individual' rather than as 'observed to be family-owned'.

Position in the order, below every ownership rule. Where the ownership structure is actually observed, the observation is preferred; the legal form is a proxy for the unobserved case.

One large error, and where it came from. The initial classification assigned a blanket negative to the generic national public-limited forms – the Swiss *AG/SA* (345,000 firms), the Belgian *SA/NV* (172,000), and their Spanish, Cypriot, Greek, Portuguese, Czech, Luxembourgish, French, Danish, Italian and German counterparts – on the reasonable-sounding grounds that a public limited company is publicly held. In these countries it is not: the 'public' form is a routine choice for medium-sized private companies, and virtually none of these firms are listed. Checked against the web-search evidence, the blanket negative was wrong 36–60% of the time, and on its own it broke two country rates completely – the Swiss family share among small firms read 0.22 against an established national benchmark of roughly 0.88.

These forms are now treated as *uninformative* and passed to rule 7, while the explicitly public variants (the Swedish *AB publikt*, Dutch *NV*, Finnish *OYJ*, Norwegian *ASA*, Hungarian *NYRT*, Irish and Maltese PLC), banks, insurers and the *Societas Europaea* retain the negative. The episode is worth recording as a methodological point: the largest single error found in this study came not from a weak heuristic knowingly adopted, but from a plausible-sounding blanket rule applied across countries whose legal practice differs.

7. Rule 7 – The firm's own shareholders are decisive

Condition. For the forms rule 6 leaves uninformative – generic private limited companies – decide from the firm's *own* immediate shareholders. The rule applies **only if shareholder counts are recorded and every shareholder is an individual**. The firm is then family-owned if either

- there are at most **3 (parameter)** shareholders, or
- there are at most **10 (parameter)** and they form at most **2 (parameter)** surname clusters, by the concordance test of Section 3.3.

Otherwise it is not family-owned.

Decided: 2,388,074 firms – 2,255,479 family, 132,595 not. The rule reaches a substantive verdict for 7.96 million firms in total; the rest are decided by a higher-ranked rule, in most cases an individual ultimate owner.

Contribution. A private limited company owned by three natural persons is the canonical small family firm – and it typically has *no* recorded ultimate owner, because there is no chain

to resolve above natural persons none of whom holds a majority. Without this rule that entire segment is unclassifiable. The surname clause is what allows *more* owners to count as one family: five siblings sharing a surname are a family firm, five unrelated individuals are not. It replaces an earlier flat cap on the number of owners, which had the perverse property of excluding large families and admitting small consortia.

The deliberate abstentions, which are the methodologically important part. Two situations are left **undetermined** rather than negative:

- **No shareholder information at all.** The absence of a register entry is not evidence of dispersed ownership.
- **A corporate or other non-individual shareholder is present.** Here the *ultimate* owner is unresolved, and the firm may perfectly well be family-owned through that intermediate company. This case is extremely common in the Netherlands and Sweden, where the standard arrangement is founder → personal holding company → operating firm. Recording a negative verdict here would be the same over-reach as trusting the walk-up's negative side, and it would be concentrated in specific countries – the error most damaging to cross-country comparison.

Only an all-individual owner group that *fails* the family test – too many owners, or too many distinct surnames – is recorded as not family-owned. Hence the striking asymmetry of the rule's output: 2.26 million positive against 133,000 negative verdicts. Rule 7 is a family-firm detector, not a two-sided test, and should be read as such.

Weaknesses. The three thresholds are the most obviously arbitrary numbers in the study (Section 7.4). And surname concordance cannot distinguish kinship from coincidence: in countries where a few surnames are very common, unrelated shareholders will occasionally be counted as a family (Section 7.6). Nor can the missing owners be recovered by looking harder: the firms abstained on here have no recorded ultimate owner at either the majority or the 25% threshold, so there is no chain in the data to follow.

8. Rule 8 – The firm's website declares family ownership

Condition. The company's own website states that the firm is family-owned. Positive-only.

Coverage and effect. The signal is present for 529,013 firms; it **decided 82,696** – the others already had a higher-ranked verdict, which is the intended behaviour.

Positive side only. A website that says nothing about ownership proves nothing: most firms simply do not discuss it. More tellingly, where the extraction records an explicit denial *with* a reason, the reason describes a family firm about 60% of the time. The negative side is therefore discarded entirely.

Match quality. The declaration is extracted per website domain, while our unit is the firm, and 46% of matched domains correspond to several Orbis identifiers – typically a holding company and its operating subsidiary – each of which would inherit the claim. Identifiers matched *only* by company-name similarity are dropped: they account for about 13% of the verdict-changing positive claims and are the tier most likely to be the wrong firm. Only matches via a registry identifier or the firm's own web domain are retained.

Position in the order, below both legal-form rules. Deliberately, so that it functions as a **gap-filler**. Placed higher, a self-description would override an observed ownership structure. Placed where it is, it can only rescue firms that no structural rule decided. That the rule carries 529,000 firms but decides 83,000 is the visible consequence: it agrees with, and defers to, the structural evidence almost everywhere.

Weaknesses. Having a website at all, and discussing ownership on it, correlates with size, sector and country. The rule's coverage is therefore not random, and it can shift country rates without any underlying difference in ownership. Using it as a positive-only, low-priority filler limits this effect but does not remove it.

9. Rule 9 – The 25% ultimate owner is an individual

Condition. The firm has *no* ultimate owner at the majority threshold, but has one at the **25%** threshold, and that owner is an individual or family. Positive-only.

Decided: 166,921 firms.

Grounds for a second threshold: a database artefact, not a change of concept. Orbis's majority-threshold ultimate owner requires *strictly more than* 50% of the shares. A firm owned in equal halves by two people therefore *cannot* have one, ever. This is not a marginal case: it is the standard Belgian arrangement of two spouses holding 50.00% each, and it accounts for some 23,000 Belgian ownership links at exactly 50.00%. A threshold convention thus removes an entire national ownership arrangement from the ownership-based evidence.

Of the 41,700 Belgian private limited companies that have shareholder information but no majority ultimate owner, **61% do have one at the 25% threshold** – 13,000 individuals and

11,400 companies. Recovering these is what closes most of the Belgian gap against external estimates (see the benchmark chapter).

Positive side only, and low placement. An owner holding between 25% and 50% is *weaker* evidence of control than a majority owner, and in countries where the lower threshold captures genuine minority shareholders rather than 50/50 arrangements it over-counts substantially – using it on equal terms with the majority threshold raises the family rate by 0.18 in Austria, 0.16 in Germany and Denmark and 0.14 in France against the external benchmark. It is therefore used only as a positive gap-filler, below the legal-form rules, and the strict majority definition is retained wherever this study reports a control rate comparable to the literature.

10. Rule 10 – The 25% ultimate owner is a family company

Condition. As rule 9, but the 25%-threshold owner is a *company* that already carries a family verdict – either from the ownership-chain walk-up of rule 4 or from the eponymous-name evidence of rule 11, with the listed-owner guard of Section 4.11 applying. Positive-only.

Decided: 23,347 firms.

Rationale. The same threshold artefact applies to corporate owners as to individual ones; where we have already established that a given company is family-controlled, its 25%-level holdings are evidence of family control of the same kind, and no weaker than rule 9's. The rule adds no new inference of its own – it reuses verdicts made elsewhere – which is why it is small.

11. Rule 11 – The corporate ultimate owner has an eponymous name

Condition. The recorded ultimate owner is a company, its name is judged **eponymous** – built on a person's or family's name – the owner is **not itself a listed company**, and the firm is located in one of **six countries (parameter): Spain, the Netherlands, Belgium, Switzerland, Sweden or Germany**. Positive-only.

Coverage and effect. Before the country restriction, present for 425,020 firms and **decided 269,376**. The restriction was introduced after those figures were produced; the coverage it leaves is smaller and is reported with the next full rebuild.

Basis of the inference. A holding company called 'Müller Beteiligungs GmbH' is, with high probability, a family's vehicle. This is the assumption used in the existing European prevalence literature, and it is the only evidence available for the case that defeats every other rule: a holding company whose *own* shareholders are not recorded in the database at all. That is the

standard Dutch and Swedish situation, and it is quantitatively decisive there. Without this rule the Dutch family-control rate reads 0.12, against an external estimate of 0.56; with it, 0.41.

Position in the order. Because it is the least reliable rule in the cascade: where it is the deciding rule, it is right **67%** of the time (Section 6.1). Ranked above the legal-form rules it produced outright false positives – Nestlé Suisse was classified as family-owned because its parent's name contains a surname. At the foot of the order it cannot override any determinate verdict, and functions purely as a last-resort filler for firms nothing else decided.

This is the clearest illustration of what the priority design buys: a rule too weak to arbitrate between competing pieces of evidence is still useful as a filler of last resort, and the ranking is what makes that distinction operational rather than rhetorical.

Country restriction rather than removal. Measured against the web reference country by country, this single rule is not one rule but several. Where it *decides* the verdict it is right 0.97 of the time in Spain, 0.93 in the Netherlands, 0.91 in Belgium, 0.88 in Switzerland and Sweden, 0.84 in Germany – and 0.76 in Italy, 0.75 in France, 0.58 in Poland, 0.40 in Ireland. Applied uniformly it was the weakest deciding rule in the study, and removing it altogether raised the cascade's overall precision from 0.934 to 0.949 at a cost of 0.002 in recall – an apparently easy trade.

Two distinctions matter for reading those figures, and both were learned the hard way. The rule's precision where it *fires* (0.86 overall) is much higher than where it *decides* (0.79): it fires on many firms that a higher-priority rule then settles, so the firms it actually decides are the residual ones no other evidence could reach – a harder population. Only the deciding figure is relevant to the scope. And the per-country figures need roughly fifty decided firms before they are stable: an earlier reading, on 13 to 44 firms per country, put France at 0.46 and Germany at 0.68, and produced a country scope that later evidence showed to be wrong in both directions – excluding Spain, Belgium and Switzerland, which are among the rule's best countries, while including Germany on a figure that rose to 0.84 once the sample was four times larger.

It was restricted rather than removed because the aggregate obscures the purpose of the rule. Its highest precision is in the Netherlands, which is the country it exists for: the Dutch holding-company structure is exactly the case no other rule can reach, and without this rule the Dutch family-control rate reads 0.12 against an external estimate of 0.56. Removing a rule that is 0.88 accurate where it matters, in order to correct countries in which it is 0.31 accurate and contributes little, would have amounted to a loss of accuracy presented as a simplification.

Italy and France, at about 0.75, are left out as too weak for a rule that already sits last; Denmark, Austria and Norway have no deciding-rule sample at all and are out for want of evidence. The reasoning throughout is that a positive-only filler costs recall when a country is left out but costs precision when a country is wrongly left in, so 'out until proven' is the safe default.

The listed-owner guard. The eponymous inference is invalid when the holding company is itself listed: its subsidiaries carry a founder's name without any family control, as with Nestlé Suisse and Nestlé S.A. About 2,000 such verdicts, all subsidiaries of multinationals, are suppressed. *De*listed parents are deliberately **not** suppressed: a delisting is frequently a family or founder take-private – Duvel Moortgat, Massimo Zanetti – which is the opposite of the dispersed-ownership case the guard is aimed at.

12. Rule 12 – The corporate ultimate owner controls at most two firms

Condition. The recorded ultimate owner is a company that controls at most **2 (parameter)** firms in total, the firm is located in the **Netherlands, Sweden, Switzerland or Spain (parameter)**, and the owner is not listed. Positive-only, and last.

Coverage and effect. Present for 343,952 firms; **decided 196,834**.

The reasoning. A holding company that controls exactly one or two operating firms is not a group; it is one person's holding vehicle. The evidence for this is direct. Stratifying the *unresolved* corporate-owner cases in Sweden, the Netherlands and Belgium by the number of firms the owner controls, and looking at those resolvable by other means, the family share is **0.94, 0.98 and 0.90** respectively for owners controlling one or two firms, 0.85–0.97 for those controlling three to ten, and only 0.49–0.71 for those controlling more than ten. A dedicated web-search validation of 100 unclassified firms with such an owner returned **89% family**.

Country restriction, and its discomfort. The restriction has two justifications: those are the countries where the ~89% precision was actually validated, and they are the countries where the unresolved-corporate-owner mass is *structural* rather than incidental (238,000 unresolved firms in the Netherlands, 111,000 in Sweden, 44,000 in Spain, 33,000 in Switzerland). Applied to all countries, the rule pushes the family rate of the countries with good ownership data – Austria, Germany, Lithuania, Luxembourg, Latvia – *above* the external benchmark, in places where the walk-up already resolves the families and where we have no precision evidence at all, while barely changing the aggregate deviation. Where it does apply, its effect is large: the Dutch family-control rate rises from 0.41 to 0.65, the Spanish from 0.65 to 0.68, the Swedish from 0.24 to 0.53. It is deliberately *not* applied to Belgium, whose gap has the entirely different cause described in Section 4.9.

This is the least satisfying rule in the study and should be read as such: a country-conditional heuristic compensating for a country-specific deficiency in the source data, which means that the comparison between countries that carry the rule and countries that do not rests on the assumption that its precision transfers. We accept the trade-off because the alternative – leaving roughly a quarter of Dutch firms unclassified – distorts the country comparison more severely and far less visibly. Any use of the country series should state which countries carry this rule.

13. Firms to which no rule applies

5,233,124 firms (10.66%) receive no verdict. This is a reported category, not a residual to be absorbed into the negative. Its composition:

Situation	Firm	Share of unclassified
No ultimate owner recorded, and no shareholder information either	4,306,221	82.3%
No ultimate owner recorded, but a corporate or other non-individual shareholder present (ultimate owner unresolved)	192,378	3.7%
No ultimate owner recorded, shareholder information present, but the legal form is uninformative (foreign or unrecorded form)	~19,100	0.4%
A corporate ultimate owner the walk-up could not confirm	653,173	12.5%
An owner only at the 25% threshold, itself unresolved	62,206	1.2%

One property of this table is a useful check on the completeness of the procedure: **the only ultimate-owner type that appears among the unclassified is the corporate one**. A firm whose ultimate owner is an individual, a foundation, a bank, a fund or the state always receives a verdict. All remaining uncertainty on the ownership side of the data is concentrated in a single place – the unresolved corporate holding company – which is also where the remaining work lies (Section 7.3).

V. Composition of the classification

1. Decomposition by evidence

The classification yields:

Verdict	Firms	Share
Family-owned	38,704,504	78.81%
Not family-owned	5,173,522	10.53%
Undetermined	5,233,124	10.66%

Because every verdict records the rule that produced it, the aggregate decomposes by the type of evidence behind it – in our view the single most important table for assessing how much weight the headline figures can bear:

Rule	Family	Not family
1 – Individual ultimate owner	14,029,072	–
2 – Web-search verdict	5,164	12,592
3 – Foundation ultimate owner	64,654	56,056
4 – Corporate owner, walk-up family	421,573	–
5 – Other known owner type	–	325,977
6 – Legal form	21,189,388	4,646,302
7 – Own shareholder structure	2,255,479	132,595
8 – Website declaration	82,696	–
9 – 25% individual owner	166,921	–
10 – 25% family-company owner	23,347	–
11 – Eponymous owner name	269,376	–
12 – Owner controls ≤ 2 firms	196,834	–

Read structurally: **36% of family-owned verdicts rest on an observed ownership chain terminating in a person** (rule 1); **55% on the legal form** (rule 6); **6% on the firm's own shareholder list** (rule 7); and about **3% on the corporate-owner rules and the four gap-fillers together** (rules 4, 8–12). Any discussion of robustness should begin from this split, because the four blocks have entirely different error characteristics: rule 1 is limited by the accuracy of the register, rule 6 by the fit between legal form and ownership practice in each country, rule 7 by two arbitrary thresholds, and the gap-fillers by validated precisions between 0.85 and 0.89.

2. Location of the owner

For family-owned firms we additionally record the owning family's country, and from it a three-way origin: **national** (the owner sits in the firm's own country), **country-set** (elsewhere among the 29), or **foreign** (outside them). Several later chapters use this variable, and it carries a structural restriction that has to travel with it.

Where the country comes from. Orbis holds ownership links in one table and the entities at either end of them in another; every entity, ultimate owners included, carries a country there. That is the field we read – but only for **the ultimate owner this classification actually identified**, the one whose record settled the firm's verdict. A firm classified family-owned by rule 6, 7, 8 or 2 has no identified owner, so no country is recorded. Taking the country of an ownership record that did *not* settle the verdict would manufacture a fact: a 25%-shareholder in another country says nothing about the family that the legal form implied.

Availability. Of the 38.7 million family-owned firms:

Origin	Firms	Share
National	13,075,812	33.8%
Elsewhere in the country set	455,423	1.2%
Outside the country set	383,136	1.0%
Not determinable	24,765,507	64.0%

The 64% is missing **by construction, not by accident**, and it follows exactly the decomposition of Section 5.1:

Deciding rule	Firms	Origin known
1 – Individual ultimate owner	14.03 M	92%
3, 4, 10, 11, 12 – Other ownership-record rules	0.92 M	100%
6 – Legal form	21.19 M	0%
7 – Shareholder structure	2.25 M	0%

(The 8% gap on rule 1 is individuals for whom Orbis records no country.)

The consequence for cross-country work. Because availability tracks the presence of ownership records, and that presence varies enormously across Europe (Section 5.3), the share of family-owned firms with a known owner country ranges from **4.2% in Greece to 91.9% in**

Norway – a twenty-two-fold spread. Two things follow. First, the correct denominator for any origin statistic is **the 13.9 million firms whose owner could be located**, not the 38.7 million family-owned firms; computed on the larger base, foreign ownership is understated roughly threefold. Second, comparing foreign-owner shares *between* countries compares populations of very different composition – the countries with good registers are precisely the ones where origin is observable, and within them it is observable mainly for the firms that have an identified individual owner. A raw country ranking of 'foreign-owned family firms' is therefore not interpretable without either restricting to a comparable base or stating the coverage alongside.

Two limits of the concept itself. The data gives one country per individual, so the measure cannot separate genuine cross-border family control from a locally-resident owner of foreign nationality – the two are indistinguishable here. And it locates the *owner*, not the family: a family split across two countries is recorded at whichever member the register names as ultimate owner.

3. The coverage asymmetry across countries

The weakest property of the classification is that the *evidence available* varies enormously by country, and this variation does not average out.

Ownership coverage – the share of firms with a recorded ultimate owner – ranges from **4.3% in Greece** and 5.3% in Hungary to **76.6% in Bulgaria** and 74.0% in Latvia. The unclassified share ranges from **1.0% (Bulgaria)** to **43.7% (Spain)**, 38.7% (Cyprus), 32.2% (Sweden), 30.7% (Belgium) and 29.6% (Switzerland).

Two consequences follow, and both are binding on how the results may be used. First, **country rates must always be reported together with their unclassified share**; a rate computed over classified firms only is not comparable across countries with 1% and 44% unclassified. Second, **the unclassified firms are not missing at random**, and specifically they are not missing in a family-neutral way – Section 7.3 shows they are family-leaning, so classified-only rates are biased downward, and biased downward most in exactly the countries with the worst coverage.

VI. Calibration and validation

1. The web-search reference

The heuristic rules were calibrated against the web-search verdicts of Section 4.2, used as a *reference standard* on the firms where both it and the rule under test are present. Every design decision in Section 4 that took the form 'use only the positive side', 'use only the confident tier', or 'rank this rule last' is a result of this exercise.

Removal of the reference from the predictor. Rule 2 sits second in the priority order, so scoring the published verdict against the web reference would be circular: the web verdict has already decided every firm it covers. The cascade is therefore re-resolved with rule 2 **deleted**, and that web-free verdict is what the figures below score. This matters – the earlier version of this check omitted it and was measuring the reference against itself.

The cascade as a whole, scored on 11,628 firms where both the web-free verdict and a confirmed-search reference exist: precision **0.929**, recall **0.892**, accuracy **0.884**.

Rule by rule (positive predictive value against the reference; *n* is the number of firms scored):

Rule	Precision	*n*
9 – 25% owner is an individual	0.992	1,414
1 – Ultimate owner is an individual	0.985	2,334
7 – Firm's own shareholders	0.984	2,955
4 – Corporate walk-up, high/medium confidence	0.945	938
8 – Website declares family ownership	0.888	801
10 – 25% owner is a family company	0.862	65
11 – Eponymous owner name (six countries)	0.857	910
12 – Owner controls ≤ 2 firms (four countries)	0.851	255
6 – Legal form	0.834	4,887
3 – Ultimate owner is a foundation	0.748	412

Read as *deciding* rules – restricted to firms where the rule actually settled the verdict rather than merely fired – rule 11 reads **0.824**, rule 6 **0.856** and rule 3 **0.748**, while rules 1, 7 and 9 stay at 0.982 or above. The distinction matters: a rule fires on many firms that a higher-priority rule then settles, and the firms it is left to decide are the residual, harder ones. Rule 11's country restriction (Section 4.11) was set on the deciding figure for exactly this reason.

Conclusions drawn, in the order they were reached. The walk-up's low-confidence tier was excluded entirely, raising its precision from 0.43 to 0.81 (0.95 on the current, larger reference). Its negative side was excluded entirely, because a 38% error rate on high-confidence negatives is not usable for asserting non-family status. The two weakest rules were placed at the foot of the order, where they can fill gaps but cannot override anything. And rule 11, the weakest of all, was restricted to the six countries where it performs (Section 4.11).

2. Decline of precision with firm size

The single most consequential rule-level validation result is not about any individual rule:

Employees	Precision	Recall	*n*
0–9	0.979	0.947	1,939
10–19	0.986	0.883	904
20–49	0.934	0.857	970
50–249	0.880	0.858	1,593
250+	0.787	0.794	3,140

The classification is near-exact for small firms and materially weaker for large ones – and large firms carry the employment. Firms of 250 or more employees are 0.1% of the population and 36% of recorded employment, so the *employment* share of family firms is estimated from the least reliable part of the cascade, while the *count* share is estimated from the most reliable part. The two headline numbers of this study therefore do not deserve equal confidence.

The mechanism is straightforward. Small firms are settled by rules that are close to definitional – a named individual owner, a sole proprietorship, a handful of individual shareholders. Large firms are settled by structural inference about holding companies and legal forms, which is precisely where a family's holding vehicle and an institution's holding vehicle look alike. This is the argument for concentrating web-search coverage by employment mass (Section 4.2) rather than uniformly.

What this table does **not** license is an inference about the direction of the error in the aggregate. Both kinds of mistake are present – across the whole classification there are 830 firms classified as non-family that the reference calls family, against 524 in the opposite direction – and which one dominates the published *share* is a separate, weighted question. It is answered in Section 6.3, and the answer is not the one the precision column suggests.

3. Validation of the published shares

Rule-level accuracy and aggregate accuracy are different questions. A cascade can be right about 93% of firms and still misstate a share, if its errors are concentrated in the firms that carry the weight. The shares were therefore estimated **independently** from the stratified web sample of Section 4.2, using the recorded design weights, and compared against the published figures. The sampled cells contribute each firm at weight N/n of its cell; the certainty stratum (Section 4.2) enters at its recorded verdict.

Rule	Independent web estimate	Published
Family share of firms	0.881	0.882
Family share of Employment	0.649	0.610

The count share is confirmed. A difference of 0.001 on an independently weighted estimate is as close to agreement as this method can demonstrate.

The employment share is not confirmed. It is understated by roughly 4 percentage points, and the gap is systematic across the size distribution:

Employees	Web estimate	Published	Difference
0–9	0.955	0.873	+8.2 pp
10–19	0.879	0.753	+12.6 pp
20–49	0.791	0.673	+11.8 pp
50–249	0.635	0.548	+8.7 pp
250+	0.336	0.395	–5.9 pp

The direction is the opposite of what the precision column of Section 6.2 suggests, and the reason is that precision alone cannot answer the question. Below 250 employees the classification's dominant error is **omission**, not over-calling: the firms it leaves unclassified, or classifies as non-family on structural grounds, are systematically the *larger* firms within their size class. Because the count share matches almost exactly while the employment share does not, the errors cannot be spread evenly across firms – they are concentrated in the employment-heavy ones. Only in the largest class does the over-calling that Section 6.2 implies actually dominate.

The practical consequence is that **the family employment share reported by this study should be read as a lower bound**, by a margin of roughly four points overall and more within individual size classes. The firm-count share needs no such qualification.

Two assumptions carry this estimate and neither is tested by it. Firms the web reference could not resolve are dropped and their cell reweighted, which assumes the unresolved firms in a cell resemble the resolved ones – they are disproportionately small and obscure, so this is the weakest step. And the certainty stratum, about 80% of firms and 37% of employment,

is assumed correct on the strength of the 99.4%/99.2% agreement measured in Section 4.2 rather than re-verified here.

4. The reference-list check

A hand-curated list of known family firms is used to detect regressions in the priority order rather than to measure precision. It is what established that demoting rule 4 below the legal-form rules – attractive on grounds of parsimony – loses real family firms.

5. National benchmarks

Where an independent national estimate of family-firm prevalence exists, it is used as an external check. This is how the legal-form error of Section 4.6 was found: the Swiss family share among small firms read 0.22 against an established national benchmark of approximately 0.88, a discrepancy far too large to be explained by definitional differences, which localised the fault to the treatment of the Swiss *AG/SA*.

6. The external prevalence benchmark

Our country rates are compared systematically against the European prevalence estimates of Ortiz (2025), which are built from the same underlying database and are therefore a genuine external check rather than an unrelated survey. That comparison, the concept mapping it requires, and its country-by-country results are reported in the benchmark chapter. In summary: on the ownership-based measure directly comparable to his, the mean absolute deviation across the 23 comparable countries is **0.083** – unchanged, within rounding, by the country-scoping of rule 11. The corresponding deviation for family *management* is 0.145 and is dominated by seven central and eastern European countries in which we read more family management than the benchmark does. That is the direction the management validation was built to test, by over-sampling exactly those countries: our surname evidence there is confirmed in 190 of 192 sampled firms (0.99), so the gap is more plausibly under-detection in the benchmark than over-detection here, and we have not tuned toward it.

VII. Limitations

1. The employment share as a lower bound

The two headline numbers of this study are not equally reliable, and the difference has been measured rather than assumed (Section 6.3). Estimated independently from the weighted validation sample, the family share of *firms* reproduces the published figure almost exactly (0.881 against 0.882), while the family share of *employment* comes out roughly four percentage points **higher** than published (0.649 against 0.610), with double-digit gaps inside individual size classes.

The cause is that the classification's errors are not distributed evenly within a size class: the firms it fails to classify, or classifies as non-family on structural grounds, are systematically the larger employers among their peers. A firm-count measure is insensitive to this; an employment-weighted measure is not.

Every employment-based figure in this study should therefore be read as a conservative estimate. This limitation is first among the others because it affects the number most likely to be quoted.

2. Two thirds of firms have no recorded ultimate owner

62% of firms have no recorded ultimate owner at any threshold, and 82% of our unclassified mass has no shareholder information whatsoever. This is the binding constraint on the whole exercise: for most European firms, the database does not record who owns them. It is why rules 6 and 7 exist, and why 55% of our family-owned verdicts rest on a legal form rather than an observed ownership chain. Coverage is also strongly country-dependent (Section 5.3), so any procedure that *requires* ownership data implicitly reweights Europe towards the countries with the most complete commercial registers.

3. The majority threshold is a database convention – and not every rule tests it

The ultimate owner is defined by *strictly more than* 50% of the shares, which structurally excludes the exactly-equal split – 23,000 Belgian ownership links alone (Section 4.9). Rules 9 and 10 patch this using the 25% threshold as positive-only evidence, but the patch is imperfect in both directions: the lower threshold also admits genuine minority owners, which is why it is excluded from the strict control rate used for external comparison. Comparisons against studies that define control as 'at least 50%' must take account of this; the benchmark chapter quantifies the difference.

A related point should be made plainly, because it applies to more than the threshold. The majority test is implemented exactly only where the evidence is an ownership record – rules 1, 3, 4 and 5. The remaining rules do not test a shareholding percentage at all: the legal form (rule 6) and the shareholder structure (rule 7) speak to the *type* of ownership rather than to any threshold; the web verdict (rule 2), the eponymous name (rule 11) and the website self-declaration (rule 8) answer the looser question of whether a family controls or dominates the firm; and rules 9 and 10 deliberately use 25%. What the study measures is therefore the stated definition where the data support it, and a close proxy for it elsewhere. This is a compromise rather than an oversight: the alternative – restricting the study to firms with a recorded majority owner – would cover about a third of firms and would do so unevenly across countries (Section 2), which is a larger and less tractable distortion than the one it avoids.

4. The unresolved corporate holding – and its non-random selectivity

653,000 firms have a corporate ultimate owner we could not confirm, and the wider unclassified mass is concentrated in the Netherlands, Sweden, Belgium, Spain and Switzerland. Crucially, this mass is **family-leaning**. Among small firms (10–49 employees) with a corporate ultimate owner, only 31–41% are resolved in Sweden, the Netherlands and Belgium, against 59% in Germany – and of those that *are* resolved, **76–94% are family-owned** (Sweden 0.76, the Netherlands 0.94, Belgium 0.82).

Two things follow. Classified-only country shares for those countries, and any estimate reweighted from them, are **biased downward**. And the bias cannot be removed by assuming the unclassified firms resemble the classified ones, because they demonstrably do not.

Rules 11 and 12 recover part of this mass. The remainder – roughly 8,600 Swedish, 10,100 Dutch and 3,800 Belgian *holding companies*, standing behind firms under 250 employees – requires a source of evidence not currently available. A targeted web-search exercise was designed and sized for precisely these cases and could not be executed for want of search capacity. This is the largest single open item in the ownership analysis, and the one whose resolution would most improve the country comparison.

5. Several rules rest on arbitrary thresholds

None of the following is derived from theory. Each was set from calibration against the web reference or from inspection of cases, and each moves counts:

Parameter	Value	Used in	Parameter
Recursion depth of the ownership walk-up	2 links	Section 4.4	Recursion depth of the ownership walk-up
Dispersal guard: minimum shareholder base	10	Section 4.4	Dispersal guard: minimum shareholder base
Dispersal guard: maximum family share of owners	34%	Section 4.4	Dispersal guard: maximum family share of owners
Small shareholder group counting as a family	≤ 3	Section 4.7	Small shareholder group counting as a family
Larger shareholder group, if few surnames	≤ 10	Section 4.7	Larger shareholder group, if few surnames
Maximum distinct surname clusters counting as one family	2	Sections 4.4 and 4.7	Maximum distinct surname clusters counting as one family
Firms controlled by a ‘personal holding’ owner	≤ 2	Section 4.12	Firms controlled by a ‘personal holding’ owner

Parameter	Value	Used in	Parameter
Countries in which rule 12 applies	NL, SE, CH, ES	Section 4.12	Countries in which rule 12 applies
Default for foundations absent from the classified list	family	Section 4.3	Default for foundations absent from the classified list
Lower ownership threshold used as fallback	25%	Section 4.9	Lower ownership threshold used as fallback

The three thresholds of rule 7 deserve particular attention, since that rule decides 2.4 million firms; a sensitivity analysis over them should accompany any published country estimate.

6. Three rules are country-conditional

Rule 12 applies in four countries, rule 11 in six, and rule 6's legal-form classification is country-specific by construction. Each is a defensible response to a genuinely country-specific property of the data — the concentration of holding structures, the reliability of the eponymous inference, the meaning of a national legal form — and each was adopted on measured evidence rather than convenience. Together they nonetheless mean that the cross-country comparison is **not** a comparison of one uniform rule applied to 29 countries: a country's family share depends partly on which rules were licensed to operate there.

The effect is asymmetric, and its direction should be stated precisely. The two restricted rules are positive-only fillers, so a country left outside their scope loses *recall* — some family firms there go unclassified — while a country inside their scope risks *precision*. Restricting rule 11 to six countries therefore makes the affected countries' family shares conservative rather than inflated, which is the safer direction for a prevalence estimate but still an artefact of method rather than of the economy. This should be stated wherever the country series is used, alongside the per-country decomposition of Section 5.1, so that a reader can see which evidence carries which country.

7. Surname concordance cannot distinguish kinship from coincidence

Rules 4 and 7 treat a shared surname token as evidence of family relationship. In countries where surname distributions are concentrated this over-links unrelated shareholders; and if the name reconciliation of Section 3.3 were incomplete, it would under-link every name containing a non-ASCII character. Neither error is symmetric across countries, which is what makes them consequential for a comparative study rather than merely noisy.

8. The calibration reference is itself fallible

The precisions in Section 6.1 – from 0.995 down to 0.672 – are measured against a language model's web-search verdicts, not against registry truth. It is the best scalable reference available, and it is corroborated on the small hand-curated reference list, but it remains a *silver* standard: to the extent that the web verdict and a rule under test share a failure mode, that rule's apparent precision is overstated. Extending the web evidence to the unclassified firms (Section 7.3) would improve coverage and this reference simultaneously.

9. Structural rather than temporal classification

Ownership records are a snapshot, and their vintage differs by country. We classify a *state*, not a process: a firm recently sold out of family hands may still be recorded as family-owned until the underlying data is refreshed. The study therefore supports statements about the prevalence of family ownership, but not about transitions into or out of it.

10. Definitional choices open to disagreement

Two are worth naming explicitly, because both are recoverable from the output. Family foundations are counted as family control (Section 4.3) – a defensible reading of the institution, isolating exactly 120,710 firms. And control by a *financial* rather than industrial company is treated as non-family without further examination (Section 4.5), which will misclassify the rare family that holds its firm through a financial vehicle.

Appendix-B. Identifying Family-Managed Firms: Method

This appendix documents the further classification of firms already identified as family-**owned** according to whether they are also family-**managed**: the concept, the evidence, the four decision rules and their order, the contribution of each, the validation procedure, and the conditions under which the classification fails.

The population is not the full firm universe but the **38,679,878 firms classified family-owned** by the ownership procedure – 78.8% of the 49.1 million firms in the 29 countries studied. All figures refer to the classification of August 2026[16].

I. The concept measured

A family-owned firm is treated as **family-managed** if at least one member of the **owning** family holds an executive or managing position – that is, if the family does not merely own the firm but runs it.

Four boundaries of the concept matter.

Conditionality on ownership. The question is only asked of firms already found to be family-owned. Management of a non-family firm is not in scope, and every rate reported here has family-owned firms as its denominator. This also means that any error in the ownership classification propagates: a firm wrongly classified family-owned may then be classified family-managed, compounding the first error.

Executive rather than supervisory functions. Only senior management, executive board, executive committee and board-of-directors positions count. Supervisory boards, audit and advisory committees, proxyholders and department heads are excluded – at extraction, not later, so the underlying person records contain only these roles. The distinction matters most in the two-tier board countries (Germany, Austria, the Netherlands), where a family that has withdrawn to the supervisory board has in the relevant sense stopped managing the firm.

16 The ownership classification documented in Appendix A reflects the July 2026 run. The management classification below was produced after two rule revisions in August 2026, which reduced the family-owned count by 24,626 firms (0.06%). The aggregate results reported in the study are unaffected, as they are derived from weighted cell shares rather than from these raw counts.

Attribution to the owning family. A hired chief executive who happens to hold shares is an owner-manager but not evidence that the *owning family* manages. The rules are ordered to reflect this, and the one rule that cannot make the distinction ranks last.

Individuals rather than corporate officers. Where a company is registered as the manager – the corporate general partner of a German GmbH & Co. KG, for instance – that record is dropped. Such entities usually carry the firm's own name and would fire the surname rules spuriously.

II. Rationale for the same cascade design

The ownership appendix argues at length that a single uniform rule cannot be applied to firms the database describes unevenly. The management question has the same structure and the same remedy: **four independent tri-state rules, an explicit priority order, and asymmetric trust**. Each rule returns *managed*, *not managed*, or **undetermined**, where undetermined means the rule has nothing to say about this firm. The verdict is the highest-priority rule that did not abstain, and which rule that was is recorded for every firm.

One difference from the ownership side should be noted. There, seven of twelve rules are positive-only. Here **two of the four** are: rule 1 because it is definitional, and rule 4 because validation showed its negative side to be wrong more often than right (Section 4.4). Only the two name rules are still used in both directions, and Section 6 shows that their negative side is the weakest part of what remains – the case for restricting them further is empirical rather than theoretical, and is left open deliberately.

III. The evidence base

1. The register of managers

Orbis records officers and directors per firm: surname, full name, job title, position type, and a flag for whether the person is *also a shareholder*. Restricted to executive roles and to family-owned firms, this is the raw material for all four rules. Coverage is the first limitation: a firm with no executive on record cannot be classified by rules 2 to 4 at all.

2. The owning family's name

To ask whether a manager belongs to the owning family, the family's name must be known. It is assembled per firm from six sources, in descending strength:

Source	Kind	Firms	Source
Individual ultimate owner	Actual owner name	14.0 M	Individual ultimate owner
The firm's own individual shareholders	Actual owner name	18.7 M	The firm's own individual shareholders
Individuals owning the corporate ultimate owner	Actual owner name	0.37 M	Individuals owning the corporate ultimate owner
The family named by the ownership web search	Actual owner name	18.2 k	The family named by the ownership web search
The owning company's name	Entity name, embeds a surname	0.54 M	The owning company's name
The owning foundation's name	Entity name, embeds a surname	0.06 M	The owning foundation's name

The fourth source is new: the ownership web-search verdicts already name the controlling family, and that name is a researched fact about an actual owner rather than a company label, so it belongs with the strong sources. It is small but reaches firms that otherwise have no owner name at all – which, as Section 4.6 shows, is the single largest reason a firm cannot be classified here. Only verdicts that found a family are used; where the web found a non-family parent, the name it returns must not be matched against.

The distinction between the first four and the last two is what separates rule 2 from rule 3. A person's recorded name *is* the owner's name; a company called 'Müller Beteiligungs GmbH' merely tends to contain it.

3. A technical prerequisite: reconciling two spellings

The two sides of the comparison are spelled differently in the source data, and this is not cosmetic. Owner names taken from the entity register are **double-encoded** for non-ASCII characters (KÜHNLE arrives as KÃœHNLE), while manager surnames are **transliterated** in the German manner (KUEHNLE). Compared naively, a manager and an owner with the same umlaut surname would never match – producing systematic false negatives across German, Austrian, Swiss and Nordic names, precisely the countries where family management is most prevalent.

Both sides are therefore normalised before comparison: the double encoding is repaired, umlauts are expanded the same way on both sides, and the remainder is folded to ASCII. The same normalisation is used for the surname clustering on the ownership side, so the two stages treat names identically.

4. Name comparison

Names are compared by **token**, not positionally: Orbis name order is inconsistent, so the surname cannot be located reliably by position. Both sides are upper-cased, split on non-letters, stripped of salutations, titles and particles, and reduced to tokens of at least three characters. A firm matches if any owner name and any manager share one significant token. The manager side uses the dedicated surname field, which limits collisions with first names.

For entity names (rule 3), legal-form and generic words are removed first – GMBH, HOLDING, PRIVATSTIFTUNG and the like – otherwise every manager of every GmbH would match every GmbH owner.

IV. The four decision rules

1. Rule 1 – The firm is a sole proprietorship

Condition. The firm's legal form is a sole proprietorship. Positive-only.

Coverage and effect. Decides **20,225,118 firms – 52.3%** of all family-owned firms, all as family-managed.

Definitional rather than heuristic. A sole proprietorship has no legal separation between owner and business: the proprietor *is* the firm. There is no inference here, and no threshold.

Position in the order. Because it is definitional, it must outrank the heuristics. For a sole trader, an Orbis-recorded manager whose surname does not match is noise – and if the name rules were allowed to see such a firm first, they would flip it to *not* family-managed. As the largest single legal form in the population, this rule is what stops half the sample from resolving incorrectly.

Caution on interpretation. That 52.3% of the family-managed count is true by definition rather than by observation. Any statement of the form '82% of family firms are family-managed' therefore rests, for two thirds of its numerator, on a legal-form definition. This should be stated wherever the rate is quoted, and the rate excluding sole traders reported alongside it.

2. Rule 2 – A manager's surname matches an owner's name

Condition. A manager shares a significant surname token with one of the firm's *actual* owner names. Used in both directions.

Coverage and effect. Present for **30.8%** of family-owned firms; decides all of them – 28.6% as managed, 2.2% as not managed.

Position in the order, and grounds for trust. It is the only rule that tests the actual question – is a person from the owning family among the managers? – by comparing against the names of people who genuinely own the firm. Validation against independent web research confirms its positive side as the most reliable evidence in the cascade, including in the countries where concentrated surname distributions made over-matching most likely, which is why an earlier restriction to rare surnames was dropped as unnecessary.

Weaknesses. A shared surname is evidence of kinship, not proof of it – in countries with concentrated surname distributions the rule will over-link unrelated people, and it cannot distinguish a founder's son from an unrelated namesake. More seriously, its *negative* side is unreliable: Section 6 shows that about half the firms it declares not-managed are managed by the family after all.

3. Rule 3 – A manager's surname is in the owning entity's name

Condition. As rule 2, but matched against the name of the owning company or foundation, with legal-form and generic words removed. Used in both directions.

Coverage and effect. Present for **1.3%** of family-owned firms – 0.5% as managed, 0.8% as not managed.

Position in the order, below rule 2. An entity name only *tends* to embed the owning family's surname, whereas a person's recorded name *is* the owner's; and the stripping of generic words is imperfect in both directions, so the comparison is noisier on both sides. It earns its place by reaching firms whose owner is a company or foundation, where no individual owner name is recorded at all – without it those firms would fall to the weakest evidence or to nothing.

4. Rule 4 – An executive is also a shareholder

Condition. At least one executive is flagged in the register as also being a shareholder. **Positive-only since August 2026.**

Coverage and effect. Decides a small share of family-owned firms, all as managed.

Retention, and position in the order. Given that the firm is already established as family-owned, a manager who is also one of its owners is plausibly a member of the owning family

– and validation against the web reference confirms this reading as strong. It ranks last because it cannot establish *which* family: a co-owner from outside the family satisfies it equally. By construction it therefore only ever reaches firms where no owner name could be matched at all, which is precisely where it adds something the name rules cannot.

Withdrawal of the negative side. Until August 2026 the absence of a flagged shareholder was read as *not* family-managed, and that single inference produced roughly three quarters of every not-managed verdict in the study. It was withdrawn for three reasons, in increasing order of seriousness.

It could not be validated directly: the rule only decides firms outside the surname domain, and the validation sample was drawn from inside it, so the two populations never met. Scored indirectly – on firms where the column was computed but a higher rule decided – its negative side proved wrong more often than right, reproducing the same failure as rule 2's negative side.

The firms it was deciding make the inference untenable. Almost all of them had been classified family-owned from their **legal form alone**, and almost none has any owner name on record. The rule was therefore concluding that a family does not manage the firm without our ever having identified that family.

And its domain is dominated by holding structures – that is what it means for no owner name to be matchable. In those firms a family member who manages the operating company while holding shares in the *parent* is recorded as not a shareholder of the subsidiary. The flag is blind exactly where it was being applied.

5. The contradiction guard

Where rule 2 or rule 3 finds **no** name match but a manager **is** a shareholder, the evidence points both ways at once. Measured against the web reference, these were the least reliable verdicts in the whole cascade: the firms are predominantly family-managed, while the classification recorded them as not managed.

The explanation is that the two silences are not independent. A family member the name comparison cannot see – someone who took a spouse's name, whose spelling the normalisation does not reach, or who is simply absent from the register – is also unlikely to be recorded as a shareholder of the firm itself. A manager who *is* flagged is therefore positive evidence that the name comparison missed the family rather than that no family is present.

Such firms are now reported as **undetermined**. Flipping them to *managed* would be better supported than the negative it replaces, but weaker than the rest of our positive evidence, and it is more honest to report contradictory evidence as unresolved than to resolve it in either direction.

6. Firms to which no rule applies

Undetermined firms fall into two situations that should not be conflated, and which the tables below report separately. In one, **no executive is on record at all**: the register simply has no person for the firm in the positions we use, so every person-based rule abstains and nothing can be said. In the other, **executives are on record but there is no owner name to match them against** – the firm's family ownership was established from its legal form rather than from an identified owner. There the failure is not missing manager data but missing *owner* data, which is why the web-search owner names of Section 3.2 are the natural way to reduce it. The contradiction guard of Section 4.5 adds a third, much smaller group.

As on the ownership side, all of this must be reported separately and never pooled with *not managed*.

V. Composition of the classification

Across the 38.7 million family-owned firms:

Result: 81.8% family-managed, 2.6% not, 15.6% undetermined.

The undetermined group is three distinct situations and should be read as such:

Deciding rule	Verdict	Firms	Share
1 – Sole proprietorship	Managed	20,225,118	52.3%
2 – Surname matches an owner	Managed	11,059,237	28.6%
– No rule applies	Undetermined	6,023,514	15.6%
2 – Surname matches an owner	Not managed	713,619	1.8%
3 – Surname in entity name	Not managed	288,826	0.7%
3 – Surname in entity name	Mmanaged	193,021	0.5%
4 – Executive also a shareholder	Managed	176,543	0.5%

Two observations follow directly. The positive verdicts come overwhelmingly from the two strongest rules – definitional or actual-owner-name evidence – which is where Section 6 shows our reliability to be highest. And what remains of the negative verdicts comes only from the two name rules, since the register-flag rule no longer asserts them; the not-managed rate is correspondingly small, and should be read as a floor on our ignorance rather than a measurement of professional management.

VI. Calibration and validation

The reference standard is an independent classification by a language model with live web search, asked whether any executive of a named firm belongs to a named owning family. It reads company management pages, news and registries. Coverage is 611 firms, every one with a confirmed search; 570 have both a reference verdict and a production verdict.

Sample construction. It over-samples the countries where the surname rule looked most likely to over-fire (Croatia, Slovakia, Lithuania, Latvia, Czechia, Slovenia, Poland) and is stratified by the surname rule's own value so that both its positive and negative side are covered. Rates measured on it therefore describe the strata, not the population, and are not weighted up.

Against that reference:

Our verdict	Reference: managed	Reference: not managed	Precision
Managed	336	4	0.988
Not managed	117	113	0.491

Recall on the positive side is 0.742. By deciding rule:

Rule	Verdict	*n*	Confirmed
1 – Sole proprietorship	Managed	54	1.000
2 – Surname match	Managed	286	0.986
2 – Surname match	Not managed	230	0.509

Two conclusions.

The positive side performs well. A firm classified as family-managed is confirmed in 99% of cases, and the surname rule, which carries most of these verdicts, is correct in 986 cases per 1,000. No evidence appears of the over-identification the sample was designed to detect, including in countries with concentrated surname distributions. The earlier practice of restricting the surname rule to rare surnames was accordingly withdrawn, having reduced coverage without improving precision.

The negative side is not usable in its present form. **Of the firms classified as not family-managed, approximately half are family-managed according to the reference**, and for the surname rule specifically 117 of 230. The reason is the one given in Section 2(c) of the ownership appendix: an unfound family member is indistinguishable from an absent one. A family manager who married into a different surname, or is recorded under a spelling the normalisation does not reach, or simply is not in the register, produces the same observation as a genuinely professional management.

Consequence for the published figures. The family-managed rate of 81.8% should be read as a **lower bound**, and the not-managed rate of 2.6% as an upper bound. The direction is unambiguous even though the magnitude is not: the validation sample is not representative, so it cannot be used to correct the rate, only to establish its sign.

This measurement is what prompted the two changes of Section 4.4 and Section 4.5: the register-flag rule's negative side was withdrawn and the contradiction guard added, which together moved roughly 3.4 million firms from *not managed* to *undetermined*. The figures in Section 5 are after those changes.

The same argument could be extended to rules 2 and 3, whose negative side the table above also shows to be unreliable. It has **not** been extended, because unlike the register flag those rules at least compare against a known owner, and because doing so would leave the classification unable to say 'not family-managed' at all. That is the clearest remaining open question here, and it should be settled by sampling their negative side directly rather than by argument.

VII. Limitations

1. Unreliability of the negative verdict

Stated in Section 6 and repeated here because it is the dominant limitation: about half of the not-managed verdicts that were tested are contradicted by the reference. The worst of them – the register-flag rule and the contradictory cell – have since been withdrawn (Sections 4.4 and 4.5), which is why the not-managed rate is now small. What survives has not itself been

validated: it rests on the name rules, whose negative side the same exercise found unreliable. Analyses should prefer the positive rate and treat the negative rate as an upper bound.

2. Definitional component of the positive rate

Sole proprietorships contribute 52.3 of the 81.8 percentage points. For them, family management is a legal fact rather than an observation. The rate for firms with a genuine separation between owner and manager is a different and more informative quantity, and should be reported next to the headline.

3. Surname concordance cannot distinguish kinship from coincidence

The rules treat a shared surname token as evidence of family relationship. In countries with concentrated surname distributions this over-links unrelated people. The validation found no sign of this in practice — precision holds in the countries where it was expected to fail — but the sample is small and the mechanism is real.

4. Married names are not observable

A daughter who takes her spouse's name manages the firm without matching her family's name. This is one of the mechanisms behind the weak negative side, and it is likely to bias the measure by country and by generation, since naming conventions differ across Europe and have changed over time.

5. Compounding with ownership error

The population is the ownership classification's output, so its errors enter here unchanged. The ownership appendix shows precision falling to 0.79 among firms of 250 or more employees; management verdicts for large firms inherit that uncertainty on top of their own.

6. Exclusion of supervisory roles

A family that has moved from the executive board to the supervisory board counts as not managing. This is deliberate and defensible, but it is a definitional choice that materially affects the German and Austrian rates, where that arrangement is a normal stage of succession.

7. Fallibility of the reference standard

The validation reference is itself a language model reading the open web, not registry truth. Where it and a rule share a failure mode — a manager absent from both the register and the company's website — agreement overstates reliability.

Appendix-C. Constructing the weighting matrix

We allocate the proportion of family firms and the proportion of employment within them to statistical cells. These are based on employment size classes and the legal type of firms. All data was obtained for the period 2021–2024 and for one-digit NACE Rev. 2 industries. To portray the medium-term structure of firm demography, we calculated the mean value for each variable over the given period.

Data structured according to Eurostat's firm size class definition was obtained from the Structural Business Statistics (SBS) database. Where total values were missing in the SBS, the data were supplemented by the Business Demography (BD) database, and vice versa. Both databases are provided by Eurostat.

To rule out data errors, a series of plausibility checks was implemented. We did uncover data issues. For example, some values were missing from the official data due to confidentiality regulations, and some entries were implausible (e.g. the value of single cells exceeded the total value of the group in a few cases). This led us to implement an imputation algorithm to calculate a comprehensive weighting matrix.

To impute plausible values for the relevant cells, we implemented the following procedure, illustrated by employment size classes and the number of firms (ENT_NR) as an example. We start by completing enterprise counts across size classes by imputing missing class-level values of the number of enterprises within country-industry cells. The imputation relied on benchmark size-class shares to allocate residuals between observed class counts and the total number of enterprises across missing categories. As counts are discrete, the imputed values were rounded to integers using a floor-based approach. Any discrepancy remaining between the rounded class counts and the total was resolved by allocating the residual units to the classes with the largest fractional remainder. This procedure ensures that the class-level counts are consistent within each country-industry cell and that their sum exactly matches the total enterprise count in every cell.

We also implemented this approach for employment data (EMP_NR). In many cases, employment information by size class was set to zero rather than 'missing'. We changed the value to 'missing' if the number of firms was greater than one and the number of employees was zero. The baseline approach for imputing the most likely distribution of employment across size classes by country and industry was to generate observations that were likely wrongly entered even though they should have been missing.

The procedure for the legal types of firms was implemented analogously for employment and the firm count, using legal types instead of size brackets.

This leads to the question about the validity of the imputation procedure. The SME Performance Review, a website published by the EC, offers comparable information by employment size classes, which can be used to validate the presently generated dataset. The datasets correlate strongly with each other (r=0.99). For the legal types of firms, a benchmark is not available. Albeit the availability of data by employment size classes, the data imputed by the project team was used to ensure methodological consistency.

In some cases, observations showed as nil even though they were missing. This was revealed by a total number of firms or employment which was greater than nil. These industries were reset to missing values and estimated using the procedure outlined above.

Rounding errors caused bias. If the bias was minor (e.g., the number of firms was lesser than two), the excess number of firms or employees was assigned to the largest group (e.g., sole proprietors). This was the case in five observations. If the bias was larger, data issues are likely. In most cases, SBS and the BD databases showed the same results, However, sometimes there were marginal differences in the employment or number of firm aggregates. If such bias was likely, the affected industries were set to zero.

Eurostat's Business Demography database also provides information the legal types of firms, which can take one three dimensions: sole proprietorship, businesses with limited liability, and partnerships. We computed weights at the Nace Rev. 2 two-digit level using the same procedure as outlined above. Although two-digit information was often available, two-digit groups were frequently formed. These aggregates were a possible source of bias. This is why, in addition to the varying data availability in ORBIS at the two-digit NACE level, NACE. Rev. 2 one-digit aggregates were used for the final weighting.

The procedure only fills in missing values. It does not generate data if all classes are missing. Then the average sample-wide distributions were used for industries in which all cells are filled in.

Appendix-D. Weighting

To construct the weighted measure of the share of family businesses, we combined the representativity indicator of the Eurostat data with ORBIS (rep_firms) with the imputed number of enterprises (_ENT_NR_final) at the country–size class–industry level (geo × size_emp_string × nace_r2). This product was used as a composite weight, such that observations with greater representativity and a larger enterprise count contributed more heavily to the aggregate measure. The weighted value of v1 was then computed as the ratio of the weighted sum of the family business shares to the sum of composite weights within each cell. This approach ensures that the resulting measure reflects both the sampling representativity of the underlying data and the relative firm mass in each country-industry-size class combination.

Appendix-E. The webscraping methodology

The project extracts firm identity and family-ownership signals from Common Crawl imprint, about, team and landing pages across 31 European countries, using NuExtract-2.0-8B with a chain of continually-trained LoRA adapters, and reshapes the output for Orbis matching. Compute ran on an academic Slurm cluster (TU Wien datalab), orchestrated by Dagster through dagster-slurm, which dispatches one Slurm batch job per asset partition.

Throughout, pages are classified into four types of pages:

- *imprint* page is any page carrying the firm's legal identity information (legal name, registration or VAT number, registered address), whatever the page calls itself: contact, legal-notice or terms-and-conditions pages count when they hold this block.
- *teams* page is dedicated to the people affiliated with the firm: staff, management or board listings and their biographies.
- *about* page describes the company itself, its history and self-description, and typically carries information such as industry and number of employees.
- *landing* page is the base domain, the site root.

The system separates two kinds of work. Everything that is partitioned, restartable and deterministic given its inputs runs as Dagster assets: collection, extraction, cleaning, registration-ID labeling, merging, snapshotting, model inference and the LoRA training runs themselves. Everything that required judgment, external LLM APIs or per-language supervision runs as supervised offline procedures whose reviewed artifacts (training corpora, adapters) are staged back onto the cluster share where the pipeline expects them. The two sides are coupled only through the shared filesystem; no code crosses the boundary.

I. Fine-tuning pipeline

1. Adapter lineage

One model serves all of Europe. Each adapter continues training from the previous one (continual training with replay of earlier training sets), so later waves need fewer new training pairs:

Table A1: Adapter lineage and measured training cost

Adapter	Base	New coverage	GPU-h (measured)
v1 dach	NuExtract-2.0-8B	de at ch	14.2
v2 nordic-baltic	v1	se no dk fi is ee lv lt	59.3
v3 eu-slavic	v2	pl cz sk hr si bg	30.0
v4 eu-romance	v3	es fr it pt ro	15.2
v5 eu-dutch-greek-hungarian	v4	nl gr hu	19.5

Hours are the successful training runs only (138.2 GPU-h total); an aborted 24.0 GPU-h first attempt at v2 appears in the cost table as spend but not here. v1 was trained off-cluster on two GPUs (7.1 wall-hours; reconstructed from the experiment-tracking logs), a complete two-epoch train from the base model. Its smaller size is corpus-driven: 34.5k training pairs for two epochs, against v2's 85.5k pairs for three epochs at near-identical per-GPU throughput.

Across the on-cluster runs (fixed three epochs, effective batch 32, one A100 80GB), hours track corpus size: ~85.5k pairs for v2, ~31k for v3, ~22k for v4, ~19.7k for v5. The residual variation is tokenization density; Slavic, Greek and Hungarian text carries more tokens per 8,000-character sample than Romance text (0.85 to 0.86 samples/s for v3 and v5 against 1.22 for v4), the same language cost that reappears in per-page inference throughput.

2. Training-data construction

Training data for each adapter was built in one wave per extraction group (DACH, Nordic-Baltic, Slavic, Romance, Dutch-Greek-Hungarian), with the same four steps in every wave.

URL analysis. Collection keeps only pages whose URL path matches one of the label regexes (landing, about, team, imprint), so this regex set determines, for the entire corpus, which pages are fetched and everything downstream ever sees; a page it misses is never collected. The goal of the URL analysis was to arrive at the correct per-country regex set before committing the whole-corpus classification and extraction to it. The initial set was written from DACH conventions, where statute makes identity pages predictably named; most other countries only require firm identity to be easily accessible without mandating a page name, so for each wave the set had to be re-derived and verified on the new countries. Label assignment itself is stem-regex matching with a fixed precedence (landing, then imprint, then teams, then about, the broadest last), so a URL matching several lists is tagged with the most specific label. What the analysis determined is which stems belong to which label in each country, including the counterintuitive placements: where a country has no imprint-page tradition, the registration

ID often lives on contact or terms-and-conditions pages, so those stems enter the imprint list rather than the about list.

Corpus sampling. From the cleaned corpus of each country and page label we drew stratified samples, oversampling pages that contain a validated registration ID (60% of the sample) since these are the pages where the extraction schema is fully exercised. At most one page per domain enters the sample, and page text is truncated head-and-tail to 8,000 characters, matching the inference configuration.

LLM-judge labeling. Each sampled page was labeled independently by a panel of commercial LLM judges (DeepSeek, Gemini and Claude Haiku in the final panel). The judges fill the full extraction schema; the family-ownership claim is accepted by consensus, the remaining fields best-of across judges. Disagreements on the ownership claim were either resolved by a triage pass or dropped from the corpus. Raw inter-judge agreement is high in every wave but dominated by the negative class (over 90% of pages make no ownership claim); the informative statistic is the overlap on positive claims:

Table A2: LLM-judge labeling: agreement by wave

Wave	Pairwise agreement (avg)	Positive rate per judge	Overlap on 'yes'
Dach (v1), n=14.5k	96.3%	8.4% / 5.4% / 4.8%	72.0%
Nordic-Baltic (v2), n=73.7k	97.3%	6.4% / 4.6% / 5.6%	60.0%
Slavic (v3), n=32.2k	96.2%	8.0% / 5.0% / 4.8%	54.3%
Romance (v4), n=21.8k	98.4%	4.4% / 4.6% / 4.8%	72.7%
Dutch-Greek-Hungarian (v5), n=19.5k	97.9%	4.3% / 5.5% / 4.6%	70.0%

Training-pair construction. Consensus-labeled pages become prompt-completion pairs in the NuExtract template: the truncated page text plus the JSON schema as input, the judges' agreed structured record as target. To prevent catastrophic forgetting across waves, roughly 20% of each wave's training set is replayed from the previous adapters' training data. The result is split into train, validation and test sets, and only then uploaded to the cluster share for the training job.

These steps stayed outside the orchestrated pipeline deliberately. They are ad hoc and strongly language-specific: every wave meant new statutes, legal forms and registration-ID formats, new judge-prompt hints, and sampling knobs tuned to what the URL analysis showed for those

countries. That demanded watching over intermediate outputs and iterating, which is the opposite of the uniform, repeatable, partitioned work the Dagster pipeline is built for. They also call paid external APIs and, for batch endpoints, have day-scale asynchronous turnaround that fits poorly into a scheduler wall time.

3. Training and promotion

The training runs themselves are pipeline assets: one per adapter, LoRA rank 16, alpha 32, effective batch 32, three epochs, on a single A100 80GB with a six-day wall time and checkpoint-resume, all metrics logged to Weights & Biases. A separate evaluation asset loads baseline and candidate adapters side by side in one vLLM server and compares them on held-out test sets; an adapter is promoted to production, and entered the per-country routing table, only after this comparison.

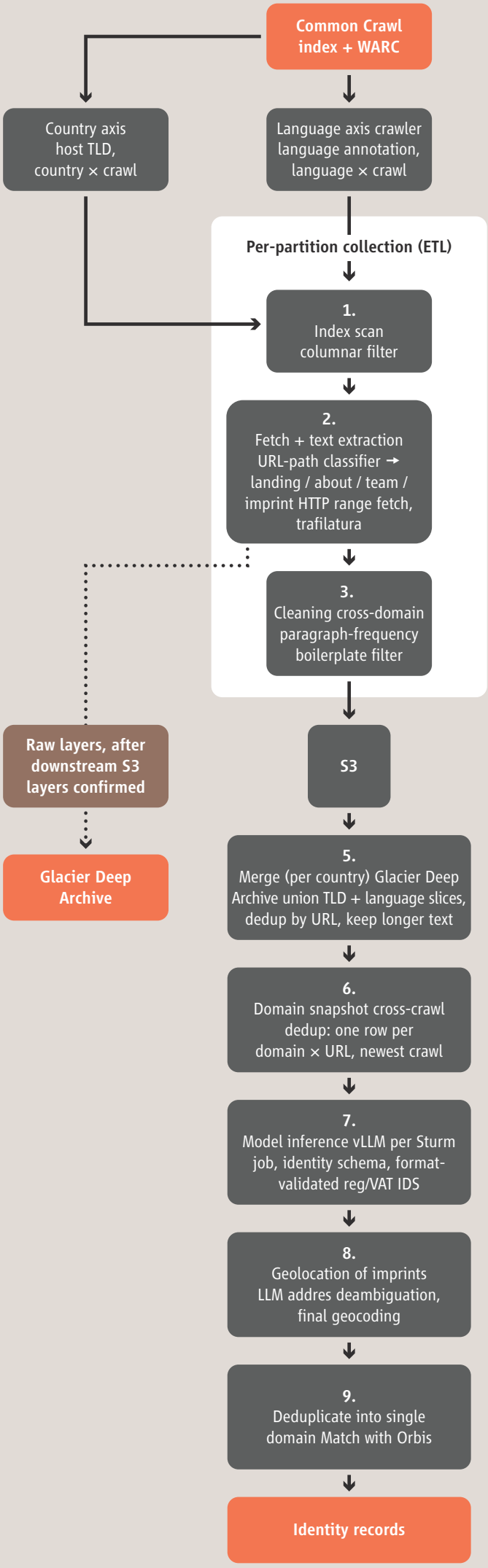
II. Inference pipeline

Collection runs on two parallel axes that cover each other's recall gap: a Swedish-language page on a .com domain is only visible by language, an English-language page on .se only by country-code TLD. Country partitions are keyed country x crawl, language partitions language x crawl.

1. **Index scan.** A columnar filter over the Common Crawl index binds pages to countries via the host TLD, or to languages via the crawler's top language annotation. CPU-only; a concurrency pool bounds parallel S3 traffic.
2. **Fetch and text extraction.** A URL-path classifier assigns pages to landing, about, team or imprint labels; per domain and label a capped number of pages is kept. The WARC records are fetched with HTTP range requests and converted to text with resiliparse, retaining title and raw HTML alongside the extracted text.
3. **Cleaning.** Cross-domain paragraph-frequency filtering removes boilerplate (cookie banners, navigation, legal templates) that repeats across many domains.
4. **Registration-ID labeling.** Per-country regular-expression banks for company registration numbers and VAT IDs, with checksum validation where the scheme allows it, run over the raw HTML. These labels are the distant supervision used for sampling above and later ground the model's extracted identifiers.
5. **Merge.** Per country, the TLD slice and the primary-language slice are unioned and deduplicated by URL, preferring the longer cleaned text.
6. **Domain snapshot.** Cross-crawl deduplication to one row per domain and URL, keeping the newest crawl, so each page is extracted once per year rather than once per crawl.

7. **Model inference.** Each inference job starts a vLLM server inside its own Slurm allocation, attaches the LoRA adapter routed for the partition's country (v2 for Nordic-Baltic countries, v3 Slavic, v4 Romance, v5 Dutch-Greek-Hungarian, v1 for DACH), and streams pages through the identity schema. Output rows carry the structured record plus format validation of extracted registration and VAT IDs.
8. **Imprint-people pass.** A second, cheaper pass over imprint pages only, with a compact person-focused schema, extracts managing directors and owners (21.0M pages, all 31 countries plus the English slice). It writes to a separate output root so its resume state does not collide with the identity pass.
9. **Archival.** Raw collection layers are moved to cold storage (S3 Glacier Deep Archive) with verified purge once downstream layers are confirmed.

Downstream of inference, two further stages run outside the orchestrated pipeline: the geocoding and Orbis-matching chain described in the next section, and a name-disambiguation step reconciling extracted people names against Orbis governance records.



III. Geocoding and matching

The extraction output is reshaped into a page-level table, one row per collected page carrying the structured identity record. Two stages turn this into an Orbis-linked firm table: geocoding the extracted registered addresses, then consolidating pages into firm records and linking them to Orbis. Both stages are deterministic given their inputs, cached at the level of their unit of work (address, firm record), and restartable.

1. Address geocoding

Registered addresses are taken from imprint pages, the page type that carries the legal-identity block. Geocoding runs against a self-hosted Nominatim instance (OpenStreetMap data), in four steps.

1. **Address preparation.** Character-encoding damage is repaired, and addresses are deduplicated so each distinct address string is queried once; results are cached and the stage is resumable.
2. **Primary geocoding**. Queries are free-text and planet-wide, deliberately without a country bias: collection partitions are language- or TLD-based, so a firm's registered address may lie outside the partition's nominal country. The resolved country is stored with the result and any cross-border filtering is left to downstream consumers rather than assumed at query time. When the geocoder returns several candidates, they are disambiguated by comparing each candidate's postcode against a format-aware postcode token parsed from the input address; every result records whether it was postcode-confirmed, along with the geocoder's importance score, as confidence tiers.
3. **LLM address normalization.** Addresses the primary pass cannot resolve are typically well-formed postal addresses obscured by free-form decoration: embedded firm names, floor and building annotations, transposed components, or mixed scripts. A language model rewrites them into a canonical street, postcode, city, country form, preserving the original script rather than transliterating, and the rewritten address is re-geocoded. This recovery pass is batched, cached and resumable in the same way as the primary pass.
4. **Fold-back.** Recovered coordinates are merged into the geocoded table only where the primary pass produced none, so a recovery can never overwrite a primary result. Every geocoded row is tagged with its source (primary or LLM recovery), keeping the provenance available downstream.

2. Firm consolidation

Pages are consolidated to one record per domain within each collection partition. Fields are merged across a domain's pages and crawls by taking the latest non-null value, with one exception: the family-ownership claim is affirmation-wins, so a landing page that makes no ownership claim cannot overwrite an imprint page's affirmative one. Each firm record then receives its best geocode, selected by source rank (primary over recovery), postcode confirmation, then importance.

Country resolution follows the partition type. Where the partition is a country, or a language whose footprint is effectively single-country, the partition determines the match country. Where the language crosses borders, the geocoded address determines the country: for languages whose firms mostly resolve outside the partition's home country (Spanish, Portuguese) the geocode is the only accepted evidence, while for French, whose in-country rate is high, the home country serves as a fallback when no geocode exists. Records without a resolvable country still participate in the match channels that identify their country themselves (below).

3. Orbis linkage

The Orbis candidate set is restricted to the countries observed in the firm table. Linkage runs over three channels of decreasing precision, each capped in how many Orbis entities a single key may bring in, since a shared web portal or a generic name can otherwise fan out to arbitrarily many firms.

1. **Identifiers.** Extracted registration and VAT numbers, already format-validated at extraction time, are normalized (upper-cased, non-alphanumerics stripped, VAT country prefixes removed) and matched exactly against Orbis identifier records of the same country. Matches must also agree in kind: a VAT number is accepted only against VAT-typed Orbis identifiers and a register number only against registry-typed ones, using per-country label vocabularies. A reconciliation pass lets identifiers that carry their own country, such as prefixed VAT numbers, match across partition boundaries; for France, register and VAT forms are reduced to their common SIREN stem before comparison.
2. **Web domain.** The firm's registered domain is matched against the normalized host of the website recorded in Orbis. Because recorded websites go stale, a redirect table supplements the direct match: Orbis-recorded domains absent from the crawl were probed and their redirect targets recorded, so a firm whose former domain now forwards to a crawled domain is still linked.
3. **Name.** Exact match on aggressively normalized legal names (case-folded, punctuation stripped, per-country legal-form suffixes removed), restricted to the same country.

Rather than forcing a one-to-one assignment, each firm record keeps the full list of candidate Orbis identifiers together with per-channel provenance flags recording which channels support each link, so downstream analyses can trade precision against recall explicitly. The consolidated table holds 26.4M domain records across the 31 countries and the English slice; 29% carry a geocoded registered address (imprint coverage is the binding constraint) and 37% link to at least one Orbis firm.

IV. Cost disaggregation

Cloud-equivalent prices; the actual cluster is an academic allocation. Rates: AWS us-east-1 on-demand as of 2026-07-08 (A100 $2.745, L40S $1.861, A40 $1.006 per GPU-h; c6i $0.0425 per vCPU-h). Provenance labels: **measured** (accounting records or logs), **attributed** (measured hours assigned by run-database join or job name), **estimated** (assumption stated).

Table A3: Cost disaggregation (cloud-equivalent, US on-demand)

Stage	Quantity	US on-demand	Provenance
Collection: CC index scan + WARC fetch	17,079 vCPU-h	$726	Attributed
Cleaning: boilerplate + language filter	11,195 vCPU-h	$476	Attributed
Seed scans (training-data substrate)	6,405 vCPU-h	$272	Attributed
Extraction: HTML to text	3,394 vCPU-h	$144	Attributed
Reg-ID labeling	2,272 vCPU-h	$97	Attributed
Merge, snapshot, reshape	177 vCPU-h	$8	Attributed
LoRA fine-tuning on-cluster (v1 to v5, incl. one 24 GPU-h abort)	162.2 GPU-h	$446	Attributed
Identity inference (eng + 31 countries)	2,534 GPU-h	$6,695	Attributed (mixed A100/L40S/A40 pricing)
Imprint-people inference pass	453.8 GPU-h	$1,246	Attributed
Smoke tests/benchmarks	~9 GPU-h	~$25	Attributed
LLM-judge APIs, logged	3 judge runs	$197.51	Measured (script logs)
Glacier Deep Archive (12 TB, ongoing)		$12/month	Measured
Total compute	3,145.6 GPU-h + 40,528 vCPU-h	~$10,100	

Notes:

- CPU hours co-allocated with GPU jobs (26,361 vCPU-h) are inside the GPU instance prices, not a separate line.
- Spot pricing with the pipeline's URL/partition-level resume brings the compute total to ~$6,110; the EU (Frankfurt) scenario is ~$12,520 on-demand, ~$9,180 spot.
- The label loop (judges plus fine-tuning, under $700 all-in) is about 6% of project cost; the two inference passes dominate at ~79% of the compute total ($7,941 of ~$10,100).
- Per-page economics (measured): identity pass ~0.10 GPU-s/page for English and ~0.17 for German-wave pages (~13k pages per on-demand dollar); imprint-people pass ~0.078 GPU-s/page (~17k pages per dollar) because it runs a single label with a compact schema.

Appendix-F. Findings of the previous literature

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
AT	2005	Hytti et al.	Czernich/Guggenberger/ Schwarz, 2005	80% of all firms, 75% of employees	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
AT	2007	Hytti et al.	Frasl/Rieger, 2007	80% of all firms, 70% of employees		Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
AT	2007	Hytti et al.	Austrian Institute for SME Research, Economic Performance Database (3rd quarter 2007)	75% of craft and trade companies are completely owned by families; in 80% of those craft and trade companies having 2 or more managers, all belong to the same family	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
AT	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	19.8 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
BE	2002	Hytti et al.	Vicindo DataMarketing, 2002	–	52% of the 100,000 biggest companies	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
BE	2003	Hytti et al.	Estimations of the Instituut voor het Familiebedrijf and the Institut de l'Entreprise Familiale on the basis of IFERA, 2003	70% of firms	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
BE	2006	Hytti et al.	Les 400 grandes PME à forte croissance, 19/10/2006, Tendances	–	40% of the gazelles in the Walloon region	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
BE	2008	Hytti et al.	Estimations of the Instituut voor het Familiebedrijf	70% of enterprises	52% of biggest 100.000 enterprises	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
BE	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	17.4 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
BG	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	19.5 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
CH	2004	Frey, Urs; Halter, Frank; Klein, Sabine; Zellweger, Thomas 2	Swiss National Bureau of Statistics, National Census 2001	Share of 88.4% of family firms		Frey, Urs; Halter, Frank; Klein, Sabine; Zellweger, Thomas 2004: Family Business in Switzerland: Significance and Structure, in: Tomaselli, Salvatore, Melin, Leif (Hrsg.) Research Forum Proceedings, Family Firms in the Wind of Change. F.B.N. 15th World Conference, Copenhagen, 2004, S. 73–89.
CH	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	19.9 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
CY	2008	Hytti et al.	Experts opinion	85–90%, including more than half of the existing public limited about; share of employees: 40–50% companies		Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
CY	2008	Hytti et al.	Expert's opinion	85–90% of firms, including more than half of the existing public limited companies; 40–50% of employees	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
CY	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	20.6 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
CZ	2007	Hytti et al.	Czech Statistical Office, 2007	84% of enterprises	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
CZ	2008	Hytti et al.	Expert's opinion	–	80–95% of SMEs	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
DE	2007	Hytti et al.	Hauser/Wolter, 2007	95% of firms, 57% of employees	97% among companies with an annual turnover of less than EUR 1 mio, 88% among those with EUR 1–5 mio; 74% among those with EUR 5–10 mio; 34% among those with more than EUR 50 mio	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
DE	2023	ZEW	Mannheimer Unternehmenspanel	85% of all firms; 55% of total employment, Revenue?	88.4% of sizeclass 0–9; 10% of sizeclass 10–49 empl.; 1.2% of sizeclass 50–249 empl.; 0.08% 250–499 empl.; 0.04% >500 empl.	Die volkswirtschaftliche Bedeutung der Familienunternehmen, 7. Auflage 2025.
DE	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	7.1 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
DE	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	26.2 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
DK	2001	Hytti et al.	Bennedsen/Nielsen, 2001	94.6% (85.7% of publicly traded and 97.0% of closely held enterprises, respectively)	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
DK	2001	Hytti et al.	Bennedsen/Nielsen, 2001	76.5% (69.9% of publicly traded and 78.3% of closely held enterprises, respectively)	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
DK	2001	Hytti et al.	Bennedsen/Nielsen, 2001	35.6% (35.8% of publicly traded and 35.2% of closely held enterprises, respectively)	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
DK	2001	Hytti et al	Bennedsen/Nielsen, 2001	49.5% (50.5% of publicly traded and 47.0% of closely held enterprises, respectively)	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
DK	2001	Hytti et al.	Bennedsen/Nielsen, 2001	80.1% (73.9% of publicly traded and 82.4% of closely held enterprises, respectively)	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
DZ	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	14.3 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246.
EE	2004	Hytti et al.	Kirsipuu, 2004	90% of firms, 50% of employees	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
EE	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	40 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
ES	2007	Hytti et al.	Instituto de Empresa Familiar, 2007	85% of firms, 75% of total employment	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
ES	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	22 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
FI	2003	Hytti et al.	Heinonen/Toivonen, 2003	86% of firms, 75% of SMEs employees	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
FI	2006	Hytti et al.	Koiranen, 2002a and MTI 2006	80% of firms, more than 50% of workforce	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
FI	2007	Hytti et al.	Tourunen, 2007	–	49% medium-sized companies employees; 22% of large companies employees	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
FI	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	8.8 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
FR	1995	Hytti et al.	Allouche/Amann, 1995	–	49.2% of the 500 largest manufacturing enterprises	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
FR	2004	Hytti et al.	Srear/Thesmar, 2004	2/3 of all firms	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
FR	2006	Hytti et al.	PriceWaterhouseCoopers, 2006	–	75% of medium-sized and 20% of large (3,000 or more employees)	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
FR	2007	Hytti et al.	FBN International, 2007	80% of firms, 49% of employees	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
FR	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	29.2 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
GR	2006	Hytti et al.	Grant Thornton, 2006	80% of firms	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
GR	2007	Hytti et al.	EOMMEX, 2007	52% of firms are family-owned	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
HR	2006	Hytti et al.	Croatian Bureau of Statistics, Labour force survey, 2006	–	33.54% of the employed are employed by owners of enterprises, crafts and farmers (+17.32% if also considering the entrepreneurs themselves); 6.16% of total employment declared to work in a family business	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
HR	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	18.4 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
HU	1997	Hytti et al.	SEED, 1997	70% of firms	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
HU	2007	Hytti et al.	Ministry of Economic and Transports, 2007	55% of employees	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
HU	2008	Hytti et al.	Small Business Development Center	72.2% of firms	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
IE	2007	Hytti et al.	Central Statistics Office, 2007	47% of service enterprises; 39.2% of services enterprises employees	(47.1% of small and 36.8% of large service enterprises); 49.3% of services enterprises' employees (49.3% of small and 27.1% of large enterprises	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
IE	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	7.7 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
IS	2008	Hytti et al.	Expert's opinion	70–80% of firms and employees		Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
IS	2008	Hytti et al.	Expert's opinion	50% of employees in the private sector	75%; 62% of the top 50 private enterprises1	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
IT	2004	Hytti et al.	Bank of Italy, 2004	–	93% of manufacturing companies with less than 50 employees	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
IT	2008	Hytti et al.	Expert's opinion	65–81%	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
IT	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	36.1 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
LT	2007	Hytti et al.	Statistics Lithuania, 2007	38% of firms	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
LT	2007	Hytti et al.	Statistics Lithuania, 2007	–	92.3% of SMEs	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
LT	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	20.6 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
LU	2007	Hytti et al.	PriceWaterhouseCoopers, 2007	70% of firms	1/3 of the 369 biggest enterprises; 25% of the 369 biggest enterprises employees	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
LU	2008	Hytti et al.	PriceWaterhouseCoopers	70% of enterprises/25% of the 369 biggest enterprises' employees	1/3 of the 369 biggest enterprises	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
LU	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	27.3 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
LV	2008	Hytti et al.	BICEPS, Survey of Innovative Business in Latvia (SIBIL)	–	30% of SMEs with less than 50 employees	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
LV	2008	Hytti et al.	BICEPS, Panel Study of Entrepreneurial Dynamics	–	58% of start-ups have 1 owner and further 11% are owned by entrepreneur and spouse	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
LV	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	33.3 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
MT	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	5.9 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
NL	1993	Hytti et al.	Flören, 1993	83% of firms	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
NL	2002	Hytti et al.	Flören, 2002	22% of firms	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
NL	2002	Hytti et al.	Flören, 2002	40% of employees	55% (55% of enterprises with 1–9 employees, 60% of those with 10–99 employees and 45% of those with 100 or more employees)	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
NL	2007	Hytti et al.	FBN International, 2007	61% of firms, 1/3 of employees	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
NL	2008	Hytti et al.	Flören(2002) and 1993	Between 61–83% of enterprises	55% (55% of enterprises with 1–9 employees, 60% of those with 10–99 employees and 45% of those with 100 or more employees)	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
NL	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	10.5 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
NO	2007	Hytti et al.	NHO, 2007	2/3 of all firms, about 40% of employees	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
NO	2007	Hytti et al.	Steen Jensen, 2007	–	30% of the largest 500 enterprises	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
PL	2008	Hytti et al.	Experts' opinion	70–80% of firms and employees		Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
PO	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	30.7 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
PT	2008	Hytti et al.	Experts' opinion	70–80% of firms; 50% of employees	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
PT	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	40.7 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
RO	2008	Hytti et al.	Romanian Trade Register	–	Half of new SME business registration	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
RO	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	21.1 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
SE	2000	Hytti et al.	Emling, 2000	54.5% of all firms; 3 4.7% of employees	26.4% of large enterprises (more than 500 employees)	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
SE	2008	Hytti et al.	Emling, 2000	54.5% of enterprises	26.5% of large enterprises	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
SI	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	7.4 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
SK	2008	Hytti et al.	Experts' opinion	80–95% of firms	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
SK	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	7.3 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.
SL	1999	Hytti et al.	Duh, 1999	–	44.11% of SMEs	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
SL	2003	Hytti et al.	Duh/Tominc, 2005 and Duh, 1999 and Duh, 2003	–	46.45% of SMEs	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.

Country	Year	Authors	Data Source	Findings aggregate	Findings Size classes	Reference
SL	2005	Hytti et al.	Glas, 2003 and Vadnjal, 2005	At least 26% of active adult population	58.6% of SMEs	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
SL	2006	Hytti et al.	Glas et al., 2006	60–80% of firms	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
UK	2002	Hytti et al.	Barclays survey, 2002	–	3/5 of SMEs with an annual turnover of less than £ 5 mio	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
UK	2002	Hytti et al.	Omnibus Survey of Small Businesses in Scotland, 2002	–	69% of SMEs	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
UK	2006	Hytti et al.	DTI Annual Survey of Small Business, 2006	–	68% of SME employers	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
UK	2006	Hytti et al.	IFB report, 2008 and GEM report, 2006	65% of private sector enterprises; 41.9% of private sector employment	–	Hytti, U., Lambrecht, J., Stenholm, P., Voithofer, P. (2008). Overview of Family Business Relevant Issues, Final Report.
UK	2014	Aminadav, G., & Papaioannou, E. (2020).	ORBIS/Datastream/ Computstat and others	10.1 (Percentage of Listed Firms)	–	Aminadav, G., & Papaioannou, E. (2020). Corporate Control around the World. The Journal of Finance, 75(3), 1191–1246. https://doi.org/10.1111/jofi.12889.

Appendix-G. Legal entity types across countries

Table A4 a: Legal forms in Europe[17]

Legal form category	Austria	Belgium	Bulgaria	Croatia
Sole proprietorship	Einzelunternehmen	Entreprise individuelle/Eenmanszaak	Ednolichen Targovets (ET)	Obrt
Partnership	Gesellschaft nach bürgerlichem Recht (GesbR), Offene Handelsgesellschaft (OHG), Kommanditgesellschaft (KG), Kooperation, Europäische Wirtschaftliche Interessenvereinigung (EWIV)	Société simple/Maatschap, Société en nom collectif (SNC)/Vennootschap onder firma (VOF), Société en commandite (CommV)	Săbiratelno druzhestvo (SD), Komanditno druzhestvo (KD)	javno trgovačko društvo (j.t.d.), komanditno društvo (k.d.)
Corporation/ Limited Company	Aktiengesellschaft (AG), Gesellschaft mit beschränkter Haftung (GmbH), Societas Europaea (SE)	Société à responsabilité limitée (SRL)/Besloten vennootschap (BV), Société anonyme (SA)/Naamloze vennootschap (NV)	Druzhestvo s ogranichena otgovornost (OOD), Ednolichno druzhestvo s ogranichena otgovornost (EOOD), Aktsionerno druzhestvo) (AD)	društvo s ograničenom odgovornošću) (d.o.o./j.d.o.o.), dioničko društvo (d.d.)
Hybrid forms	GmbH & Co. KG		Komanditno druzhestvo (KD)	
Dual-Structure Entity	Arbeitsgemeinschaft (ARGE)			
Cooperative	Erwerbs- und Wirtschafts-genossenschaften, Europäische Genossenschaft (SCE/SCE mbH)	Société coopérative (SC)/ Coöperatieve vennootschap (CV)	Kooperatsiya	Zadruga
Association	Europäischer Verein (EUV)	Association sans but lucratif (ASBL)/ Vereniging zonder winstoogmerk (VZW)	Sdruzhenie	Udruga
Foundation	Privatstiftung, Europäische Stiftung	Fondation/Stichting	Fondatsiya	Zaklada
Mutual Society	Versicherungsverein auf Gegenseitigkeit (V.V.a.G.), ME/ Europäische Gegenseitigkeits-gesellschaft (EUGGES)	Mutualités/Mutualiteiten		
Public Benefit			Yuridicheski litsa s nestopanska tsel	Yes

17 Note: If 'Yes' is indicated in the table, this means that while the legal form exists, it is not of practical relevance.

Legal form category	Austria	Belgium	Bulgaria	Croatia
De Facto Partnership				Yes, indirect
Holding				Yes
Capital Investment				Investment Funds and Investment Companies
State-owned enterprise			Darzhavno predpriyatie	Yes
Foreign companies		Zweigniederlassung (Succursale/ Filiale)	Klon, Targovsko predstavitelstvo	Yes

Table A4 b: Legal forms in Europe (continued)

Legal form category	Cyprus	Czech Republic	Denmark	Estonia
Sole proprietorship	Sole Proprietorship	Individuální podnikání/Živnostenské podnikání	Enkeltmandsfirma	Füüsilisest isikust ettevõtja (FIE)
Partnership	General Partnership, Limited Partnership	Veřejná obchodní společnost (v.o.s.), Komanditní společnost (k.s.)	Interessentskab (I/S), Kommanditaktieselskab (K/S), Europäische Wirtschaftliche Interessenvereinigung (EWIV)	Täisühing (TÜ), Usaldusühing (UÜ)
Corporation/ Limited Company	Private Company Limited by Shares (Ltd), Public Limited Company (PLC)	Společnost s ručením omezeným (s.r.o.), Akciová společnost (a.s.)	Osaühing (OÜ), Aktsiaselts (AS)	
Hybrid forms	Limited Partnerships	Komanditní společnost (k.s.)		
Dual-Structure Entity				
Cooperative	Cooperatives	Družstvo	Andelsselskab (AmbA), Europäische Genossenschaft (SCE/ SCE mbH)	Tulundusühistu
Association	Company Limited by Guarantee	Spolek, Obecně prospěšná společnost (o.p.s.)	Association, Europäischer Verein (EUV)	Mittetulundusühing (MTÜ)
Foundation	Trusts	Nadace/Nadační fond	Fond, Europäische Stiftung	Sihtasutus (SA)
Mutual Society	Yes		gensidige selskaber, ME/Europäische Gegenseitigkeits-gesellschaft (EUGGES)	
Public Benefit		o.p.s./Spolek		MTÜ, SA
De Facto Partnership		Sdružení		
Holding	Yes	Holdingová společnost (usually s.r.o. nebo a.s.)		
Capital Investment	Collective Investment Schemes (AIFs)	Investiční společnost/fond, UCITS/AIF regulated funds		
State-owned enterprise	Yes	Státní podnik		Yes
Foreign companies	Branch	Zahraniční osoba/zahraniční společnost s pobočkou		Filiaal

Table A4 c: Legal forms in Europe (continued)

Legal form category	Finland	France	Germany	Greece
Sole proprietorship	Toiminimi (Tmi)	Entreprise unipersonnelle à responsabilité limitée (EURL)	Einzelunternehmen, Eingetragener Kaufmann (e.K.)	Individual enterprise
Partnership	Avoin yhtiö (Ay), Kommandiittiyhtiö (Ky)	Société civile (SC), Société en nom collectif (SNC), Société en commandite simple (SCS), Europäische Wirtschaftliche Interessenvereinigung (EWIV)	Gesellschaft bürgerlichen Rechts (GbR), Offene Handelsgesellschaft (OHG), Kommanditgesellschaft (KG), Partnerschaft, Freiberufler, Europäische Wirtschaftliche Interessenvereinigung (EWIV)	OE, Astiki Etairia (GbR), EE
Corporation/ Limited Company	Osakeyhtiö (Oy), Julkinen osakeyhtiö (Oyj)	Société anonyme (SA), Société par actions simplifiée (SAS), Société à responsabilité limitée (SàRL),Entreprise unipersonnelle à responsabilité limitée (EURL), Societas Europaea (SE)	Aktiengesellschaft (AG), Gesellschaft mit beschränkter Haftung (GmbH), Unternehmergesellschaft (Unterform der GmbH), Societas Europaea (SE)	Aktiengesellschaft (AE), EPE (GmbH), IKE (Private Kapitalgesellschaft)
Hybrid forms		Société en commandite par actions (SCA)	Kommanditgesellschaft auf Aktien (KGaA), GmbH & Co. KG	
Dual-Structure Entity		Société momentanée	Arbeitsgemeinschaft Konsortium (ArGE)	
Cooperative	Osuuskunta (Osk)	Société coopérative, Europäische Genossenschaft (SCE/ SCE mbH)	Eingetragene Genossenschaft (e. G.), Europäische Genossenschaft (SCE/ SCE mbH)	Yes
Association	Yhdistys (ry)	Europäischer Verein (EUV)	Eingetragener Verein (e. V.), Europäischer Verein (EUV)	Yes
Foundation	Säätiö (sr)	Fondation, Europäische Stiftung	Stiftung, Europäische Stiftung	Yes
Mutual Society	Keskinäinen vakuutusyhtiö	Société d'assurance mutuelle (S. A. M.), ME/Europäische Gegenseitigkeitsgesellschaft (EUGGES)	Versicherungsverein auf Gegenseitigkeit (V. V. a. G.), ME/Europäische Gegenseitigkeitsgesellschaft (EUGGES)	

Legal form category	Finland	France	Germany	Greece
Public Benefit	ry, sr		Gemeinnützige GmbH (gGmbh)	Yes
De Facto Partnership		Société créée de fait		Yes
Holding		Société en participation (SEP)	Stille Gesellschaft	Yes
Capital Investment				Yes
State-owned enterprise	Yes			AE (Aktiengesellschaften im Staatsbesitz)
Foreign companies	Sivuliike			Yes

Table A4 d: Legal forms in Europe (continued)

Legal form category	Hungary	Iceland	Ireland	Italy
Sole proprietorship	Egyéni vállalkozó	Sole proprietorship, individual firm	Sole Trader	Ditta individuale
Partnership	Közkereseti társaság (Kkt.), Betéti társaság (Bt.)	Sameignarfélag (sf.), Samlagsfélag (svf.)	Partnership, Limited Partnership	Società semplice (S. s.), Società in nome collettivo (S. n. c.), Società in accomandita semplice (S. a. s.), Europäische Wirtschaftliche Interessenvereinigung (EWIV)
Corporation/ Limited Company	Korlátolt felelősségű társaság (Kft.), Részvénytársaság (Rt.)	Einkahlutafélag (ehf.), Hlutafélag (hf.)	Private Company Limited by Shares (LTD), Designated Activity Company (DAC), Public Limited Company (PLC)	Società per azioni (S. p. a.), Società a responsabilità limitata (S. r. l.), Societas Europaea (SE)
Hybrid forms				Società in accomandita per azion (S. a. p. a.)
Dual-Structure Entity				
Cooperative	Szövetkezet	Samvinnufélag (svf.)	Co-operative Society	Società cooperativa, Europäische Genossenschaft (SCE/ SCE mbH)
Association	Egyesület	Unincorporated non-profit associations	Unincorporated Association, Company Limited by Guarantee (CLG)	Europäischer Verein (EUV)
Foundation	Alapítvány	Foundations		Fondazione, European Foundation
Mutual Society			Mutual Insurance Companies, Friendly Societies	Società di mutua Assicurazione, ME/Europäische Gegenseitigkeits-gesellschaft (EUGGES)
Public Benefit	Yes	Foundations, Associations or Charity Trusts	Company Limited by Guarantee (CLG), Charities/Trusts	
De Facto Partnership	Yes, indirect	Yes, indirect	Yes, indirect	

Legal form category	Hungary	Iceland	Ireland	Italy
Holding	Yes			
Capital Investment	Investment fonds and Investment companies			
State-owned enterprise			State-Owned Enterprises	
Foreign companies	Branch Office, Representative office, Subsidiary (Kft., Rt.)	Branches or subsidiaries (e.g., ehf./ hf.) are possible	Branch, subsidiary	

Table A4 e: Legal forms in Europe (continued)

Legal form category	Latvia	Lithuania	Luxembourg	Malta
Sole proprietorship	Individuālais komersants	Individuālais komersants (IK)	Entreprise individuelle	Sole Trader
Partnership	Pilnsabiedrība (PS), Komandītsabiedrība (KS)	Sabiedrība, Pilnsabiedrība (PS), Komandītsabiedrība (KS), Europäische Wirtschaftliche Interessenvereinigung (EWIV)	Société en nom collectif (SNC), Société en commandite simple (SCS), Société en commandite spéciale (SCSp)	Partnership en nom collectif, Partnership en commandite
Corporation/ Limited Company	Sabiedrība ar ierobežotu atbildību) (SIA), Akciju sabiedrība) (AS)	Akciju sabiedrība (AS), Sabiedrība ar ierobežotu atbildību (SIA), Societas Europaea (SE)	Société anonyme (SA), Société à responsabilité limitée (SARL), SARL-S	Private Limited Company (Ltd), Public Limited Company (plc)
Hybrid forms	Yes		Société en commandite par actions (SCA)	
Dual-Structure Entity				
Cooperative	Kooperatīvā sabiedrība	Europäische Genossenschaft (SCE/ SCE mbH)	Société coopérative (SC)	Co-operative Society
Association	Biedrība	Europäischer Verein (EUV)	Association sans but lucrative (ASBL)	Voluntary Organisation
Foundation	Nodibinājums	Europäische Stiftung	Fondation	Foundation
Mutual Society		ME/Europäische Gegenseitigkeitsgesellschaft (EUGGES)	Mutualités	Mutual insurance organisations
Public Benefit	Yes		Yes	
De Facto Partnership	Yes, indirect		Société de fait	
Holding				
Capital Investment			Very important! LU is a leading centre for: investment funds, SICAVs/SICAFs, private equity structures	Investment funds, asset management companies

Legal form category	Latvia	Lithuania	Luxembourg	Malta
State-owned enterprise			Yes	
Foreign companies	Branch, subsidiary	Fili le Zweigniederlassung, P rst vniec ba Repräsentanz	Branch office, subsidiary (e.g. SA, SARL)	Branch, subsidiary

Table A4 f: Legal forms in Europe (continued)

Legal form category	Netherlands	Norway	Poland	Portugal
Sole proprietorship	Eenmanszaak	Enkeltpersonforetak (ENK)	Zaklad osoby fizycznej (z.o.f.)	Empresário em nome individual
Partnership	Vennootschap onder firma (VOF), Commanditaire vennootschap (CV), Maatschap	Ansvarlig selskap (ANS), Selskap med delt Ansvar (DA), Kommandittselskap (KS)	Spółka cywilna (Sp.c./S.c.), Spółka jawna (Sp.j./S.j.), Spółka komandytowa (Sp.k./S.k.), Spółka partnerska (Sp.p./S.p.), Europäische Wirtschaftliche Interessenvereinigung (EWIV)	Sociedade em nome coletivo (SNC), Sociedade em comandita simples
Corporation/ Limited Company	Besloten vennootschap (BV), Naamloze vennootschap (NV)	Aksjeselskap (AS), Allmennaksjeselskap (ASA)	Spółka akcyjna (S. a.), Spółka z organiczona odpowiedzialnoscia (SP.z.o.o./ S.z.o.o.), Societas Europaea (SE)	Sociedade por quotas (Lda.), Sociedade anónima (S.A.)
Hybrid forms			Yes	Sociedade em comandita por ações
Dual-Structure Entity				
Cooperative	Coöperatie	Cooperatives	S-nia spoldzielnia, Europäische Genossenschaft (SCE/ SCE mbH)	Cooperativa
Association	Vereniging	Forening	Stowarzyszenie, Europäischer Verein (EUV)	Associação
Foundation	Stichting	Stiftelse	Fundacja, Europäische Stiftung	Fundação
Mutual Society	Onderlinge waarborgmaatschappij (OWM)	Mutuals/Insurance Mutual-type organisations	ME/Europäische Gegenseitigkeits-gesellschaft (EUGGES)	Associações mutualistas
Public Benefit		Non-Profit-Organisationen, Charity-Associations, Stiftungen, etc.		Yes
De Facto Partnership		Yes, indirect		Sociedade irregular
Holding				

Legal form category	Netherlands	Norway	Poland	Portugal
Capital Investment			p.p. przdsiebiorstwo panstwowe	Investment funds, investment companies
State-owned enterprise		Statsforetak (SF)		
Foreign companies	Branch, subsidiary	Norskregistrert Utenlandsk Foretak (NUF)		Branch (Sucursal), subsidiary (Lda., S.A.)

Table A4 g: Legal forms in Europe (continued)

Legal form category	Romania	Slovakia	Slovenia	Spain
Sole proprietorship	Persoană Fizică Autorizată (PFA), Întreprindere individuală	Živnostník, Fyzická osoba podnikateľ	Samostojni podjetnik (s.p.)	Empresario individual/Trabajador autónomo, Emprendedor de Responsabilidad Limitada (ERL)
Partnership	Societate în nume colectiv (SNC), Societate în comandită simplă (SCS)	verejná obchodná spoločnosť (v.o.s.), komanditná spoločnosť (k.s.)	družba z neomejeno odgovornostjo (d.n.o.), komanditna družba (k.d.)	Comunidad de Bienes, Sociedad Civil, Sociedad Colectiva, Sociedad Comanditaria Simple
Corporation/ Limited Company	Societate cu răspundere limitată (SRL), Societate pe acţiuni (SA)	spoločnosť s ručením obmedzeným (s.r.o.), akciová spoločnosť (a.s.)	družba z omejeno odgovornostjo (d.o.o.), delniška družba (d.d.)	Sociedad Anónima (S.A.), Sociedad de Responsabilidad Limitada (S.L.)
Hybrid forms	Societate în comandită pe acţiuni (SCA)	k.s.	komanditna delniška družba (k.d.d.)	Sociedad Comanditaria por acciones, Sociedad Anónima Laboral, Sociedad de Responsabilidad Limitada Laboral, Sociedad Agraria de Transformación, Sociedades Profesionales, Agrupación de Interés Económico
Dual-Structure Entity				Unión Temporal de Empresas (UTE)
Cooperative	Cooperativă	Družstvo	Zadruga	Sociedad Cooperativa, Sociedad Cooperativa de Trabajo Asociado
Association	Asociaţie	Občianske združenie	Društvo	asociación
Foundation	Fundaţie	Nadácia	Ustanova	
Mutual Society	Mutual-/Insurance organisations	Yes		Sociedad de Garantía Recíproca
Public Benefit	Yes	Yes	Yes	
De Facto Partnership	Yes, indirect	Faktická spoločnosť	Yes, indirect	
Holding				

Legal form category	Romania	Slovakia	Slovenia	Spain
Capital Investment	Investment funds, investment companies	Investment funds, investment companies	Investment funds, investment companies	
State-owned enterprise				
Foreign companies	Branch, subsidiary (SRL, SA)	Branch, subsidiary	Branch, subsidiary (d.o.o., d.d.)	

Table A4 h: Legal forms in Europe (continued)

Legal form category	Sweden	Switzerland	United Kingdom
Sole proprietorship	Enskild näringsverksamhet	Einzelunternehmer	Sole Trader
Partnership	Handelsbolag (HB), Kommanditbolag (KB)	Einfache Gesellschaft, Kollektivgesellschaft, Kommanditgesellschaft (KG)	General Partnership (GP), Limited Partnership (LP)
Corporation/ Limited Company	Aktiebolag (AB)	Aktiengesellschaft (AG/S.A.), Gesellschaft mit beschränkter Haftung (GmbH/SARL)	Private Limited Company (Ltd), Public Limited Company (PLC)
Hybrid forms		Kommanditgesellschaft auf Aktien (KGaA)	Limited Liability Partnership (LLP)
Dual-Structure Entity			
Cooperative	Ekonomisk förening	Genossenschaft	Co-operative Society
Association	Ideell förening	Verein, Europäischer Verein (EUV)	Unincorporated Association, Community Interest Company (CIC)
Foundation	Stiftelse	Stiftung, Europäische Stiftung	Charitable Trust/Foundation
Mutual Society	Ömsesidigt försäkringsbolag		Mutuals
Public Benefit			Yes
De Facto Partnership			Yes, indirect
Holding			
Capital Investment			Investment funds, limited partnerships for investment purposes
State-owned enterprise			
Foreign companies	Filial (Branch)		Branch or subsidiary (Ltd/PLC)

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