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Access to stock markets impact on SMEs performance

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Abstract

This study investigates the impact of unregulated stock market listing on the financial performance of small and medium-sized enterprises (SMEs) in Europe. The analysis seeks to determine whether listing improves financial performance or whether associated costs outweigh the potential benefits. To address this question, the performance of listed and unlisted SMEs is compared across five key indicators: solvency, liquidity, profit margin, return on assets (ROA), and return on equity (ROE). The sample covers a ten-year period from 2014 to 2023. Statistical analyses were conducted using unpaired Student's t-tests in RStudio to assess the significance of performance differences between the two groups. The findings reveal a mixed impact of listing on SMEs' financial performance. On the one hand, listed SMEs show significant improvements in solvency and liquidity, suggesting that listing facilitates access to external capital and enhances the ability to meet both short-term and long-term obligations. On the other hand, profitability measures, including profit margin, ROA, and ROE, exhibit a notable decline after listing. This deterioration indicates that while listing improves financial stability, it may simultaneously impose costs and constraints that undermine operational efficiency. Overall, the study provides empirical evidence of SMEs' access to unregulated stock market trade-offs, offering relevant insights for SMEs considering IPOs, investors evaluating SME securities, and policymakers supporting SME financing through stock markets.

Keywords: Financial performance, Liquidity, Profitability, Small and medium enterprises, Solvency, Stock markets.
JEL Classification: M130; G1; C120; C220.

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Contents

Contribution of this paper to the literature

This study contributes to the existing literature in different ways. For instance, the results of this research will shed light on whether SMEs' financial performance post-listing is one of the factors behind the constant decline of SMEs' IPOs and increased delisting in Europe. This may also help regulators and policymakers in their decisions on whether additional steps are necessary to enhance unregulated stock market efficiency as a tangible solution to SMEs' financing hurdles.

1. Introduction

Regulatory bodies accredit stock markets with the aim of establishing platforms to enhance enterprises' access to equity funds, which are essential for their growth and development. Unlike for SMEs, stock exchanges such as Euronext, the London Stock Exchange, and Deutsche Börse, among others, have proven effective for European large enterprises in their pursuit of financial resources, as well as for their development and expansion (Boccaletti, Ferrando, Rossi, & Rossolini, 2025). Compared to just 40,000 active larger enterprises, more than 22 million SMEs were operating in the EU in 2019 (European Commission, 2021). According to the European Commission (2021), SMEs made up 99.8% of all enterprises in the region; and according to the annual report on European SMEs 2020/2021, SMEs are the largest employers in the EU and globally, and they contribute significantly to the GDP of the EU economies. However, compared to large enterprises, SMEs have different characteristics because they have specific features and higher risk levels, which make it difficult to secure financing (Karlsson, 2021). Additionally, Karlsson highlighted that size positively influences enterprise performance; the larger the enterprise, the better its performance.

Hence, cognizant of the important contribution of SMEs to the global economy, contrasted by their limited access to financial resources, which impairs their growth (European Commission, 2021), unregulated stock markets with less stringent listing conditions, particularly dedicated to SMEs, have emerged to facilitate access to long-term funds (Bolek & Gniadkowska-Szymańska, 2023; Demir, 2024). Furthermore, Demir found that 68% of primary stock markets now offer dedicated SMEs segments with incentives such as reduced fees and relaxed profitability criteria. According to the European Commission (2022a), listing on stock exchanges can give a significant boost to SMEs; the benefits of listing include easier access to additional financial resources and a higher public profile.

Regardless of these regulatory astute initiatives to boost and facilitate access to the public equity markets, it must be noted that SMEs IPOs are in constant decline in Europe, leaving policymakers in a vacuum regarding the reasons behind this trend. From 2006 to 2007, the annual average of IPOs was 478, compared to an average of 218 IPOs annually from 2009 to 2017 (European Commission, 2018). Also, recent reports highlight that SMEs listing has fallen by two-thirds (Lehmann, 2023) and IPO capital raising in the EU decreased from 0.9‰ of GDP in 2015 to just 0.3‰ in 2020, indicating a significant decline in EU stock market access (European Commission, 2022b). An assessment by the EU Audit Office (2020) found that SMEs face substantial costs up to 15% of capital raised along with complex compliance requirements, which ultimately diminish SMEs' motivation to go public and limit the potential performance benefits of stock market access.

Although research focusing on SMEs has increased significantly in recent decades, limited attention has been given to the impact of unregulated stock markets on listed EU SMEs. Consequently, further research is required to close this gap, as these markets offer an alternative financing opportunity to SMEs. Therefore, in this study, we address the following question: *"Does access to unregulated stock markets improve EU SMEs' financial performance compared to their unlisted counterparts?"*

The goal is to evaluate the listing effectiveness of SMEs' listings on their financial performance. To fulfill this objective, a comparative analysis was conducted using financial indicators to assess the performance of both listed and unlisted SMEs.

2. Literature Review

Some of the work done on SMEs includes the following.

Dabić et al. (2020) analysed SMEs pathway to internationalization; Gherhes, Williams, Vorley, and Vasconcelos (2016) investigated SMEs and microbusinesses growth constraints; Mariani and Spoletini (2023) initially, conducted a comparative study examining the markets' environment, incentives, primary and secondary market activity, composition, and rules, they then carried out an empirical study to evaluate how investment schemes affect primary market by measuring IPO activities and the secondary market measuring the trading activity; Stefanelli, Ferilli, and Boscia (2022) investigated the role of crowdfunding and how it supports the financing choices of SMEs; Chaithanapat, Punnakitikashem, Oo, and Rakthin (2022) investigated the relationship between knowledge-oriented leadership, customer knowledge management, innovation quality, and SMEs performance; Hilmersson and Hilmersson (2021) investigated the role of networking in accelerating SME innovations; Ortigueira-Sánchez, Welsh, and Stein (2022) investigated the factors that influence innovation and export performance; Karmaker, Al Aziz, Palit, and Bari (2023) examined supply chain risk factors in SMEs, with an emphasis on sustainability in emerging economies; and Sommer (2024) assessed capital markets impact on SMEs financing limitation.

These studies offer a holistic, insightful look at the complex environment of SMEs' access to finance, innovation, and sustainability; although investment schemes are important in promoting SMEs' IPOs and favorably impacting their choices to go public, findings emphasize the urgent need for a comprehensive in-depth analysis of the variables impacting SMEs' performance.

2.1. Access to Stock Market as an Alternative Solution

In fact, research illustrates that SMEs' ability to raise capital for their expansion and development determines their growth capacity, whether in Europe or elsewhere; it is the biggest obstacle SMEs face globally. The causes of these limitations range from SMEs' main reliance on bank credits, which are becoming scarce (Wehinger & Nassr, 2016), the pecking theory (Myers & Majluf, 1984) whereby enterprises tend to prioritise internal financing over external, and debt over equity; along with the difficulties accessing capital markets because of the costly disclosure requirements during and after IPOs, the regulatory hurdles coupled with institutional and legal impediments (Lopez-

de-Silanes, Phalippou, & Gottschalg, 2015). Even though IPOs are gateways that provide enterprises access to equity capital for their growth and development (Fama & French, 2004), due to the dearth of information on SMEs' financial status, investors have long perceived SMEs as risky investments (Ritter & Welch, 2002).

To alleviate this problem, regulators in the EU have launched the SME Growth Markets with the creation of unregulated markets such as Euronext Growth (formerly known as Alternext) or Euronext Access (formerly known as the Free Market) and others. This is intended to contribute to reducing SMEs' financial hassle. Certainly, capital markets' mandatory requirement for financial information disclosure would increase SMEs' visibility, giving investors access to more credible and reliable information for investment. In addition to offering tax advantages to investors, it offers considerable opportunities for investors to distinguish and finance high-growth SMEs and take part in their valuation, which will ultimately generate value for all parties involved. The literature has shown that as they gain from long-term financing, listed SMEs would expand and surpass unlisted SMEs, which are left behind (Sommer, 2024) which is consistent with the signalling theory, enterprises IPO decision is not merely only a means of accessing external finance but also a strategic signalling mechanism to reduce information asymmetry and attract external stakeholders (Leland & Pyle, 1977). Chemmanur and Fulghieri (1999) demonstrate that enterprises utilise listing to fund growth, research and development, and acquisitions, thereby enabling strategic expansion. According to Floros and Sapp (2011), access to the stock market can increase enterprises' visibility and credibility, which in turn may translate into competitive benefits and business opportunities.

The above theoretical background gives a clear guideline on why SMEs should consider the unregulated stock market as an efficient alternative solution to their financial difficulties. Furthermore, studies support the need to reduce SMEs' reliance on financing through credit and bank loans, particularly in times of economic shocks such as the 2008 financial crisis (Mehrotra & Sergeyev, 2021) or the COVID-19 pandemic (Juergensen, Guimón, & Narula, 2020). This highlights the various potential advantages of stock market listing for enterprises. However, these advantages should be carefully weighed against the associated costs and risks that access to stock markets could cause.

2.2. Adverse Impacts and Risks Associated with Listing

In contrast, previous studies conducted on enterprises before and after IPOs demonstrated a negative correlation between economic performance indicators and access to stock markets, challenging the assumption that enterprises primarily go public to fund their growth and expansion. For instance, Sentis (2001) examined both the operational and stock market performance of enterprises newly listed on the French stock market between 1991 and 1995; the author found that in the long run, enterprises' IPOs underperformed compared to the market benchmark, and financial performance declined post-IPO. Additionally, Sentis (2004) provided a comprehensive international perspective on IPOs, combining both theoretical frameworks and empirical evidence from various countries, including the US, France, and other global markets, and concluded that market timing (enterprises often go public during market highs) and underperformance post-IPO are universally observed across markets in the long run. Similarly, using a panel data econometric approach, Serve (2007) focused on the economic impact of listing enterprises on stock markets, especially in terms of operational and financial performance; the main finding is that there is a mixed effect on operational performance; some enterprises experienced productivity gains and increased investment, while others show decreasing profitability or no significant change. Brau, Couch, and Sutton (2012) investigated whether post-IPO acquisition activity is a driver of underperformance of newly listed firms and found that after the first year post-IPO, acquirers' abnormal returns were notably negative, pointing to overpayment or integration challenges. Wang (2005) investigated the role of institutional and ownership context in post IPO success in China; his findings imply that state ownership is negatively associated with enterprises' performance post IPO. Pagano, Panetta, and Zingales (1998) explored the motivation behind Italian enterprises' IPOs and suggested that enterprises' post-IPO investments don't significantly increase. The motivations for going public are rebalancing ownership (IPOs allow original owners to diversify their portfolios by selling part of their shares), reducing leverage (enterprises use IPOs to pay down debts), and enhancing market visibility and prestige (IPOs improve enterprises' reputation and expand business opportunities). Jain and Kini (1995) investigated the operating performance of enterprises after listing, and in line with agency theory, found that ownership becomes more dispersed post-IPO, agency costs increased significantly, reducing enterprises' performance. In parallel, Coakley, Fuertes, and Wood (2004) conducted the same analysis in the UK by providing important insight into how timing and financing sources impact post IPO outcomes, especially in developed markets like the UK. Analogously, Mikkelson, Partch, and Shah (1997) examined the relationship between structure and post IPO operating performance of US enterprises and found that SMEs experienced decline in their profitability post IPO. In the same vein, Kutsuna, Okamura, and Cowling (2002) analyzed the ownership structure before and after IPO and its impact on enterprises' performance, and found that performance declined with high ownership dilution.

In summary, the above findings illustrate that although stock markets offer growth opportunities, listing exposes enterprises to challenges, and the factors behind this differ from one market to another, ranging from regulatory costs and market timing hypotheses to agency theory and management structure.

Notwithstanding the fact that there are substantial studies examining enterprise performance before and after going public, recent studies focusing on EU SMEs remain limited.

Therefore, this paper explores how access to the unregulated stock market affects EU SMEs by comparing the financial performance of listed SMEs versus similar unlisted counterparts over 10 years (2014 to 2023). Based on the findings, a comparative discussion with existing literature is carried out.

3. Data and Methodology

To conduct our analysis, we collected yearly key financial data on listed and unlisted European SMEs for a period of 10 years from 2014 to 2023 from the Orbis Bureau van Dijk database on 18/04/2025.

We took the following search steps in our selection:

1. Status: active companies (search result 431,648,873 enterprises).

2. Size classification: Small and Medium Enterprises (Search results: 428,116,263 enterprises). It is worth highlighting that enterprises on Orbis are considered to be SMEs when they meet the following conditions: operating revenue less than 10 million EUR; total assets less than 20 million EUR; or fewer than 150 employees.
3. World region: European Union [27] (Search results: 58,633,866 enterprises).
4. All companies scored by Moody's Analytics Pulse (search results: 47,642 enterprises).
5. Unlisted companies (Search results 47,642 enterprises).
6. Publicly listed companies (search results: 20 enterprises).

To ensure comparability, 20 listed SMEs were paired with 20 unlisted counterparts of similar size, selected at random.

The financial performance of selected SMEs is measured using solvency, liquidity, profit margin, ROA, and ROE. Although the sample size was constrained to a total of 20 listed SMEs, the decision to use an equal size from unlisted SMEs enhances comparability and reduces sampling bias. Even though the sample size may be considered modest, it is methodologically adequate for conducting unpaired t-tests under the assumptions of normality and homogeneity of variances. These assumptions were verified through diagnostics such as the Shapiro–Wilk test and Q-Q plots. To mitigate limitations associated with the sample size, effect sizes and 95% confidence intervals are reported alongside p-values.

Table 1. Financial performance metrics.

	Definition	Formula
Liquidity	This is a financial metric that measures an enterprise's ability to meet its short-term financial obligations.	$\frac{Current\ Assets}{Current\ Liabilities}$
Solvability	This is a financial metric that measures an enterprise's ability to meet its long-term financial obligations.	$\frac{Total\ Assets}{Total\ Liabilities}$
Profit margin	This is a financial metric that measures an enterprise's profitability as a percentage of its revenue.	$\%\frac{Net\ Income}{Revenue}$
Return on assets	This is a financial metric that measures an enterprise's ability to use its assets to generate profit.	$\frac{Net\ Income}{Total\ Assets}$
Return on equity	This is a financial metric that measures an enterprise's ability to use its equity to generate profit.	$\frac{Net\ Income}{Shareholders'Equity}$

Table 1 presents the financial metrics used in our comparative analysis along with their definition and formula.

The unpaired student t-test is used to test our main hypothesis by determining whether there is a statistical difference in listed and unlisted SMEs' financial performance indicators. We used Excel to calculate the financial ratios and RStudio to analyze the data.

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \qquad (1)$$

Where:

$\overline{x_1} - \overline{x_2}$= Sample means of Listed SMEs and Unlisted SMEs.

s_1^2 , s_2^2 = Sample variances of both Listed and Unlisted SMEs.

n_1, n_2 = Sample size of both Listed and Unlisted SME.

3.1. T-Test Null Hypothesis

There is no difference in the mean financial performance between listed and unlisted EU SMEs.

H_{01}: There is no significant difference in the solvency of listed and unlisted SMEs.

H_{02}: There is no significant difference in the liquidity of listed and unlisted SMEs

H_{03}: There is no significant difference in the profit margin of listed and unlisted SMEs

H_{04}: There is no significant difference in the ROA of listed and unlisted SMEs.

H_{05}: There is no significant difference in the ROE of listed and unlisted SMEs.

3.2. Alternative Hypothesis (H_1)

There is a difference in the mean financial performance between listed and unlisted EU SMEs; it could be positive or negative.

$H_{1.1}$: There is a significant difference in the solvency of listed and unlisted SMEs.

$H_{1.2}$: There is a significant difference in the liquidity of listed and unlisted SMEs

$H_{1.3}$: There is a significant difference in the profit margin of listed and unlisted SMEs

$H_{1.4}$: There is a significant difference in the ROA of listed and unlisted SMEs.

$H_{1.5}$: There is a significant difference in the ROE of listed and unlisted SMEs.

Before conducting the t-test, we performed the Shapiro–Wilk test to assess whether the data are normally distributed.

$$w = \frac{(\sum_{i=1}^{n} a_i x_{(i)})^2}{\sum_{i=1}^{n}(x_i - \bar{x})^2} \qquad (2)$$

Where:

W = The Shapiro–Wilk test statistic.

$x_{(i)}$ = The ordered sample values (i.e., from smallest to largest).

$\bar{x}$ = The sample mean.

a_i= Constants derived from the expected values of order statistics of a standard normal distribution and the covariance matrix of those order statistics

n = Sample size.

4. Results and Discussion

4.1. Descriptive Statistics (Mean, Median, Standard Deviation, Kurtosis, Skewness)

Tables 2, 3, 4, 5 and 6 report the descriptive statistics.

Table 2. Mean.

Mean	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Listed SMEs solvency (x)	52.809	48.645	46.487	45.604	44.072	44.404	43.739	43.111	49.766	49.770
Unlisted SMEs solvency (x)	43.896	45.813	45.608	41.350	45.816	44.700	43.982	45.026	44.500	37.770
Listed SMEs liquidity (x)	3.939	4.031	4.058	5.743	5.295	5.854	2.992	1.832	2.262	1.884
Unlisted SMEs liquidity (x)	1.908	2.160	1.933	1.719	1.711	2.293	1.936	1.957	1.519	1.252
Listed SMEs profit margin %	6.459	-2.589	7.160	3.443	5.468	4.900	2.040	2.040	2.240	2.000
Unlisted SMEs Profit Margin %	11.023	9.659	5.780	7.099	7.312	9.045	6.958	8.042	6.517	5.048
Listed SMEs ROA %	4.479	4.070	5.199	-0.534	3.794	4.689	1.189	1.189	1.534	-0.321
Unlisted SMEs ROA %	13.636	11.943	10.784	13.087	7.767	14.174	11.704	10.663	10.344	6.809
Listed SMEs ROE %	8.870	15.581	11.199	0.440	4.319	10.582	5.933	4.133	4.569	1.786
Unlisted SMEs ROE %	35.821	30.703	33.802	65.253	18.966	47.084	28.989	24.751	31.339	24.284

Table 2 presents the solvency, liquidity, profit margin, ROA, and ROE means for listed and unlisted SMEs from 2014 to 2023. The results show that while the listed SMEs' solvency and liquidity averages are higher than those of unlisted SMEs, their profit margin, ROA, and ROE averages are lower compared to the unlisted counterparts.

A line plot was used to visualize the mean performance of listed and unlisted EU SMEs across key financial metrics. This allows for a clear comparison of trends and reveals consistent differences in liquidity and profitability.

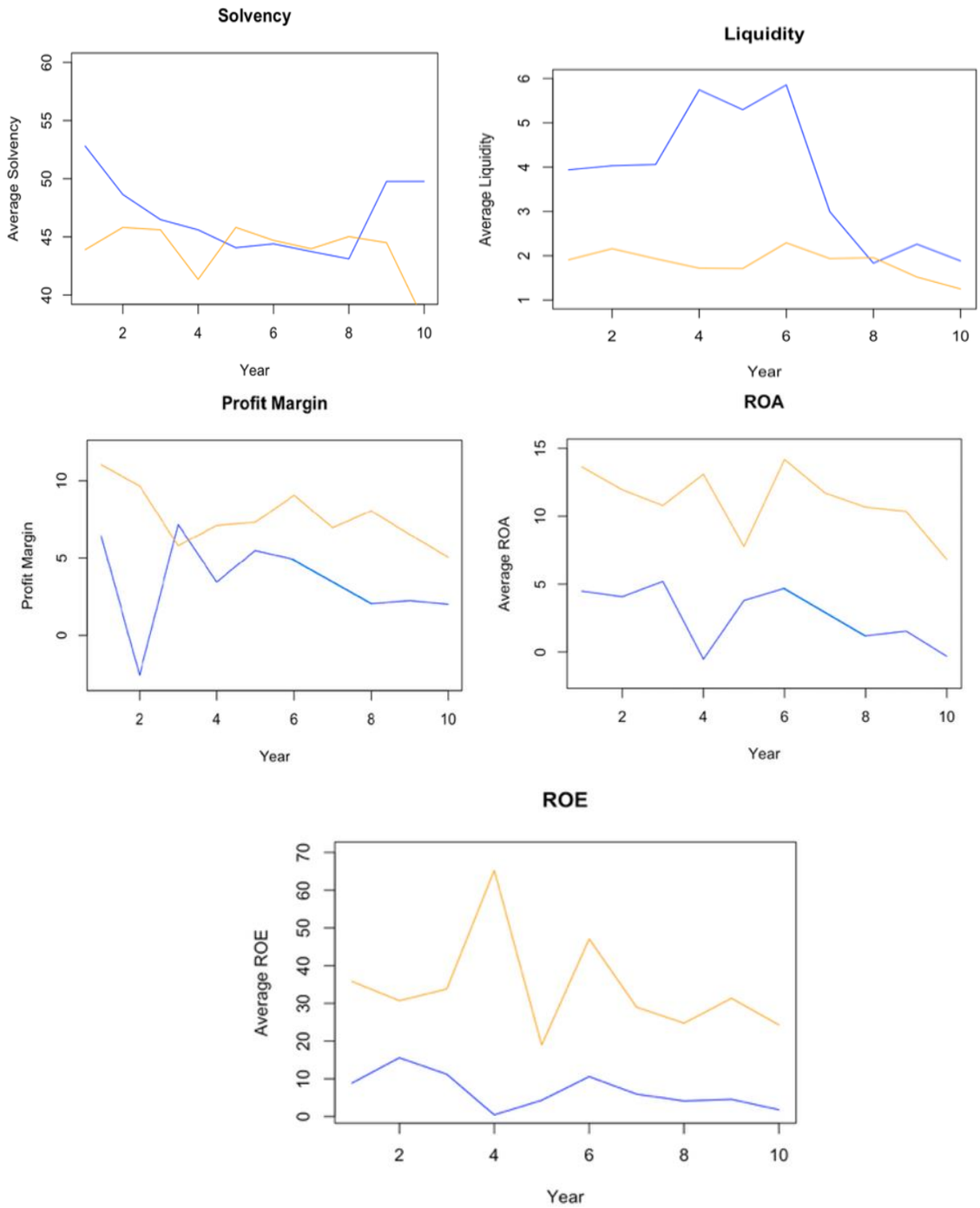


Figure 1. Solvency, liquidity, Profit margin, ROA, and ROE yearly means variation.

Figure 1 displays the yearly mean variations of listed (Blue) and unlisted (Orange) SMEs for the performance indicators Solvency, Liquidity, Profit Margin, ROA, and ROE from 2014 to 2023.

Table 2 and Figure 1 findings indicate that listed SMEs outperform unlisted SMEs in terms of Solvency and Liquidity, suggesting that access to unregulated stock markets improves EU SMEs solvency and liquidity, supporting the hypothesis that access to stock markets positively impacts enterprises' financial performance (European Commission, 2022a). Whereas, listed SMEs' profit margin, ROA, and ROE have considerably decreased compared to unlisted SMEs, putting forward the argument that listing has degraded SMEs' profitability (Pastusiak, Bolek, & Matuszewska-Janica, 2016; Wang, 2005).

To better understand the extent and significance of the impact that access to unregulated stock markets has on SMEs' financial performance, additional statistical analyses will be conducted.

Table 3. Median.

Median	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Listed SMEs solvency (x)	51.495	51.565	43.655	41.025	39.965	43.865	41.665	36.960	43.855	44.300
Unlisted SMEs solvency (x)	40.565	38.135	47.835	40.040	46.285	50.295	46.330	47.300	48.570	43.525
Listed SMEs liquidity (x)	1.220	1.095	1.250	1.265	1.450	0.750	1.260	0.825	0.985	1.145
Unlisted SMEs liquidity (x)	1.485	1.310	1.430	1.390	1.300	1.635	1.590	1.785	1.355	1.255
Listed SMEs profit margin %	8.095	7.850	7.110	7.490	7.765	5.270	5.270	1.855	0.570	1.065
Unlisted SMEs profit margin %	7.950	8.105	6.920	4.485	3.400	6.435	6.560	5.895	6.030	4.100
Listed SMEs ROA %	3.130	6.780	3.000	2.275	5.525	4.120	4.120	1.625	0.980	1.015
Unlisted SMEs ROA %	13.840	9.350	7.990	6.590	2.235	6.365	7.270	9.490	6.790	4.225
Listed SMEs ROE %	8.285	11.715	8.080	6.040	9.105	10.650	4.420	5.320	3.630	3.765
Unlisted SMEs ROE %	27.405	18.340	16.995	15.775	7.905	13.520	11.965	11.965	17.290	10.885

Table 3 presents the solvency, liquidity, profit margin, ROA, and ROE medians for listed and unlisted SMEs from 2014 to 2023. The results show that while the solvency medians of listed SMEs are higher than those of unlisted SMEs, their profit margin, ROA, and ROE medians are lower compared to the unlisted counterparts. However, the liquidity medians are relatively equal.

Table 4. Standard deviation.

Standard deviation	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Listed SMEs solvency (x)	26.711	29.850	19.183	19.205	26.151	26.766	25.965	26.407	29.407	29.461
Unlisted SMEs solvency (x)	16.004	21.855	23.511	24.690	25.418	23.581	21.126	21.357	18.939	17.996
Listed SMEs liquidity (x)	7.261	6.344	7.584	9.510	8.971	11.307	5.638	2.608	3.085	1.718
Unlisted SMEs liquidity (x)	1.235	1.830	1.271	1.055	1.019	1.741	0.931	1.044	0.365	0.336
Listed SMEs profit margin %	7.599	23.269	4.125	11.549	8.276	5.562	5.562	5.855	5.242	6.439
Unlisted SMEs profit margin %	11.634	9.260	9.487	9.792	7.742	8.138	5.070	8.238	5.748	4.827
Listed SMEs ROA %	8.053	23.270	5.083	10.348	8.002	6.577	6.577	5.150	5.210	5.032
Unlisted SMEs ROA %	10.713	11.741	15.551	17.093	11.598	16.730	12.721	11.989	12.710	10.542
Listed SMEs ROE %	12.749	16.132	10.238	25.741	39.796	18.548	6.100	12.119	7.921	12.050
Unlisted SMEs ROE %	41.396	30.948	54.698	152.930	23.265	90.979	57.329	43.810	49.559	42.141

Table 4 presents the solvency, liquidity, profit margin, ROA, and ROE standard deviation for listed and unlisted SMEs from 2014 to 2023. The results show that the variation in the standard deviation of unlisted SMEs is relatively high, especially under the ROE. This suggests that there is moderate variability in financial performance indicators following SMEs' listing.

Table 5. Kurtosis.

Kutosis	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Listed SMEs Solvency (x)	2.014	2.207	2.270	2.561	2.770	2.746	2.863	2.709	1.745	1.786
Unlisted SMEs Solvency (x)	2.289	1.938	1.407	1.842	1.975	2.848	2.769	3.032	3.435	2.254
Listed SMEs Liquidity (x)	7.264	3.238	7.562	3.311	5.524	6.344	7.921	7.117	6.925	4.253
Unlisted SMEs Liquidity (x)	4.082	3.045	2.715	4.130	5.568	3.162	2.317	1.959	1.744	3.377
Listed SMEs Profit Margin %	2.753	4.665	1.573	5.118	2.476	2.859	2.859	1.827	1.683	1.743
Unlisted SMEs Profit Margin %	4.665	2.595	3.191	2.785	2.725	2.299	2.363	1.860	3.524	4.637
Listed SMEs ROA %	4.665	2.595	3.191	2.785	2.725	2.299	2.363	1.896	3.524	4.637
Unlisted SMEs ROA %	1.659	2.468	2.208	5.026	3.486	2.564	2.964	3.414	4.068	7.498
Listed SMEs ROE %	2.315	3.903	2.565	4.810	4.889	4.050	2.113	5.766	2.314	4.986
Unlisted SMEs ROE %	5.510	3.963	4.365	7.982	2.159	7.739	7.259	6.642	7.253	6.844

Table 5 presents the solvency, liquidity, profit margin, ROA, and ROE kurtosis for listed and unlisted SMEs from 2014 to 2023. The results show that listed SMEs' kurtosis values are mostly <3, ranging from 1.7 to 2.8, indicating a platykurtic distribution. However, unlisted SMEs' values are mixed between leptokurtic distribution >3 and platykurtic distribution <3.

Table 6. Skewness.

Skewness	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Listed SMEs solvency (x)	0.17	-0.42	0.21	0.33	0.73	0.57	0.78	0.85	0.25	0.21
Unlisted SMEs solvency (x)	0.45	0.60	0.06	0.09	-0.22	-0.27	-0.68	-0.40	-1.15	-0.64
Listed SMEs liquidity (x)	2.42	1.49	2.51	1.49	1.97	2.19	2.61	2.36	2.30	1.46
Unlisted SMEs liquidity (x)	1.44	1.33	1.13	1.40	1.87	1.29	0.86	0.57	0.41	0.37
Listed SMEs profit margin	-0.87	-1.77	-0.09	-1.88	-0.81	-0.83	-0.83	0.03	0.32	0.03

Skewness	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Unlisted SMEs profit margin	1.59	0.87	-0.67	0.73	1.03	0.81	0.52	0.26	1.03	1.48
Listed SMEs ROA %	0.55	-0.73	0.78	-1.07	-1.39	-0.16	-0.16	-0.13	0.69	-0.91
Unlisted SMEs ROA %	1.66	2.47	2.21	5.03	3.49	2.56	2.96	3.41	4.07	7.50
Listed SMEs ROE %	-0.51	1.03	0.87	-1.17	-1.09	-0.67	0.23	-0.80	-0.09	-1.47
Unlisted SMEs ROE %	1.82	1.26	1.50	2.63	0.96	2.55	2.41	2.09	2.40	2.30

Table 6 presents the solvency, liquidity, profit margin, ROA, and ROE skewness for listed and unlisted SMEs from 2014 to 2023. The results show that listed SMEs with values around 0.2 to 0.8 are slightly positively skewed, whereas unlisted SMEs shift between slightly positive and negative skew.

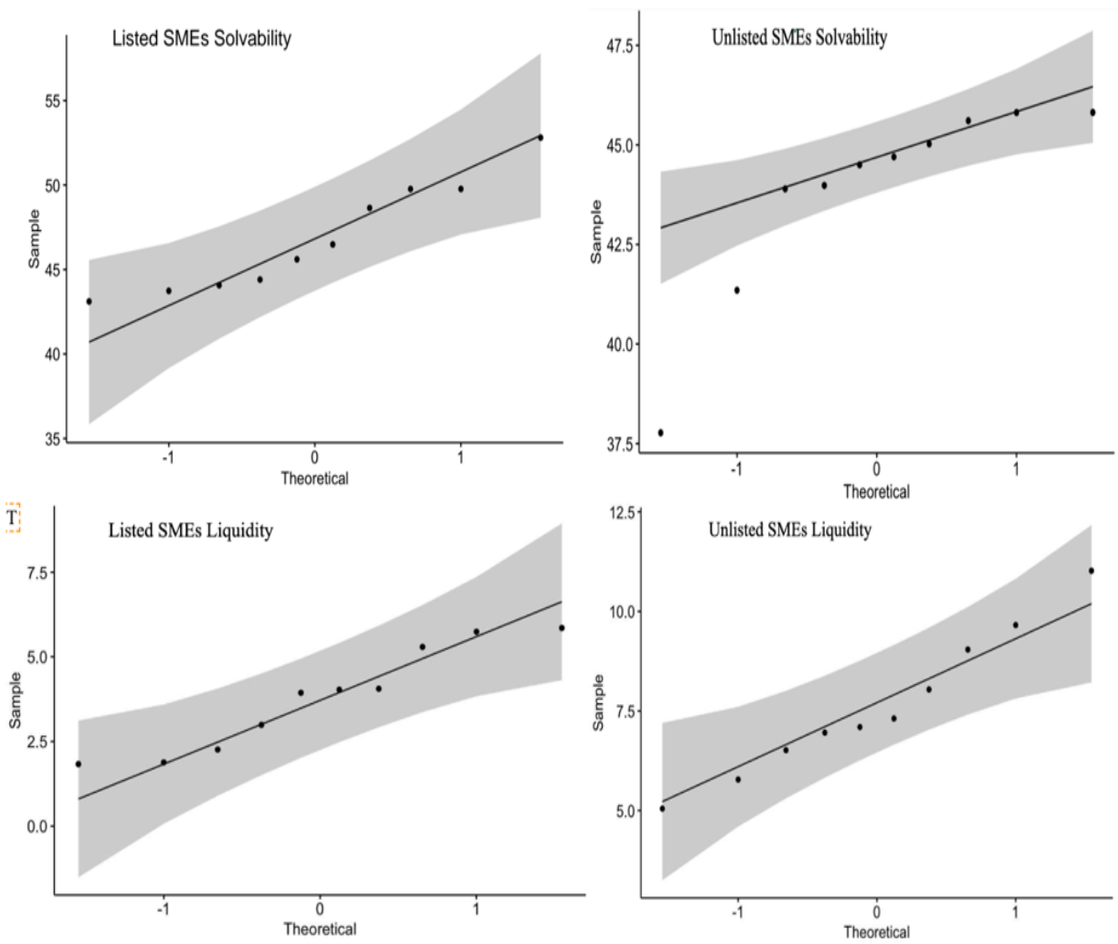
To ensure the robustness of our t-test, we used the Shapiro-Wilk test to verify the assumption of normality for the dataset being analyzed. This is necessary because the data must be approximately normally distributed for the results to be valid and reliable.

Table 7. Shapiro–Wilk test.

	W statistics	P-value	CI
Listed SMEs solvency (x)	0.92	0.334	95%
Unlisted SMEs solvency (x)	**0.076706***	**0.005759***	95%
Listed SMEs liquidity (x)	0.909	0.274	95%
Unlisted SMEs liquidity (x)	0.969	0.879	95%
Listed SMEs profit margin %	0.9278	0.466	95%
Unlisted SMEs profit margin %	0.969	0.879	95%
Listed SMEs ROA %	0.875	0.141	95%
Unlisted SMEs ROA %	0.939	0.537	95%
Listed SMEs ROE %	0.951	0.683	95%
Unlisted SMEs ROE %	0.858	0.072	95%

Table 7 presents the solvency, liquidity, profit margin, ROA, and ROE Shapiro-Wilk test results for listed and unlisted SMEs. The results indicate that, except for unlisted SMEs' solvency, which deviated significantly from a normal distribution ($W = 0$; $P < 0.05$), the other metrics produced a W value close to 1 with $P > 0.05$, suggesting that the dataset is normally distributed.

To further visualize the normality of the distribution, a Q–Q plot was generated using the ggqqplot() function from the ggpubr package in R. If the points lie approximately along the 45-degree reference line, it indicates that the metrics are likely normally distributed.



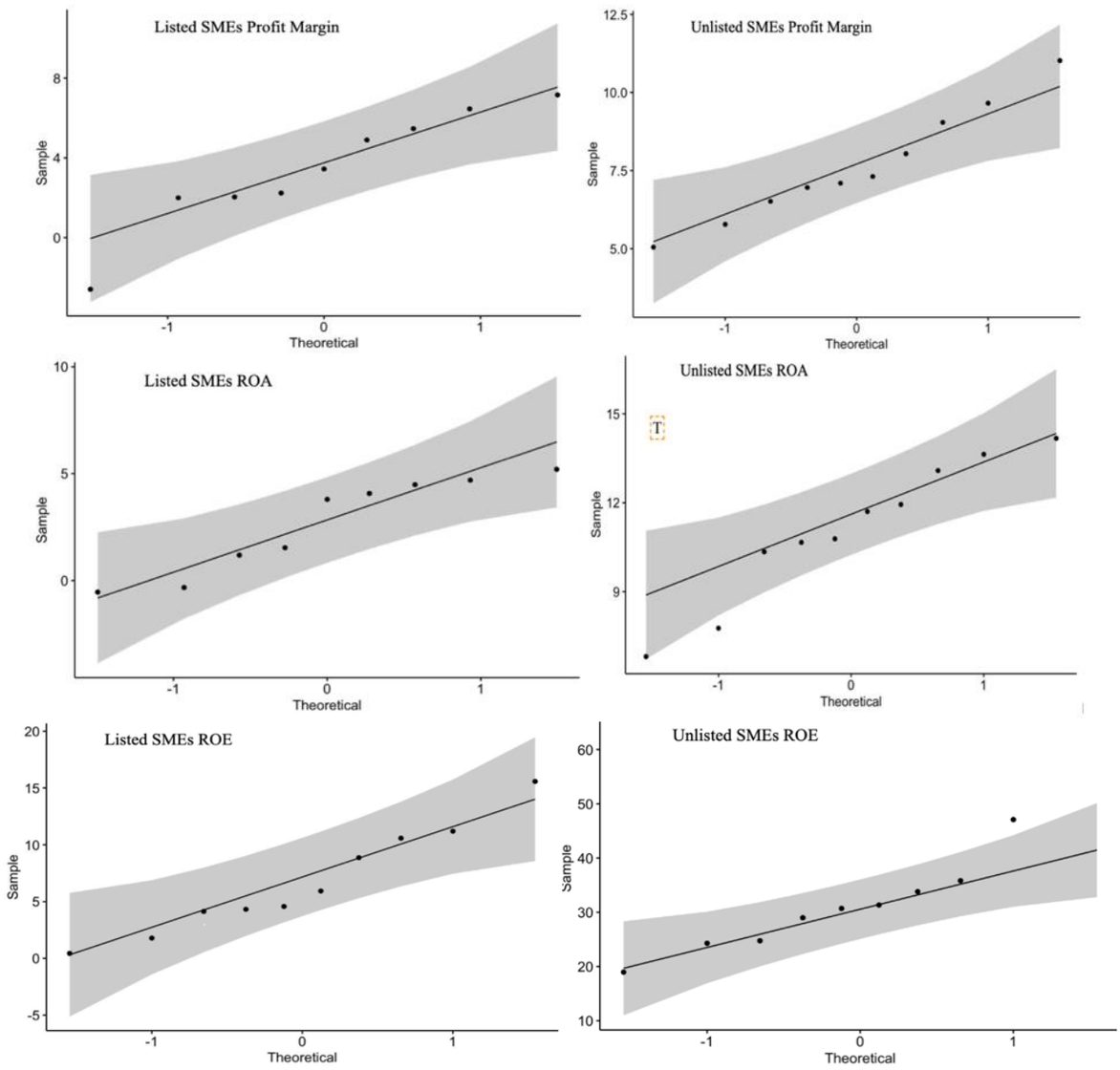


Figure 2. Distribution Q-Q plot.

Figure 2 displays Solvency, Liquidity, Profit Margin, ROA, and ROE density distributions for listed and unlisted SMEs. This reveals that, unlike unlisted SMEs' solvability, most other metrics' observations are clustered around the mean with fewer outliers, which suggests normality in the dataset.

Table 8. Unpaired Student's T-Test Results.

	T-value	Critical T-value	P-Value	Df	CI
Listed SMEs solvency - Unlisted SMEs Solvency (x)	2.309	2.111	0.034	16.921	95%
Listed SMEs liquidity - Unlisted SMEs Liquidity (x)	3.967	2.237	0.002817	9.707	95%
Listed SMEs profit margin - Unlisted SMEs Profit Margin %	-3.648	2.160	0.003	12.996	95%
Listed SMEs ROA - Unlisted SMEs ROA %	-7.9	2.1	4.041E-07	17.0	95%
Listed SMEs ROE - Unlisted SMEs ROE %	-6.1	2.2	6.957E-05	11.2	95%

Table 8 presents the Solvency, Liquidity, Profit Margin, ROA, and ROE t-test results for listed and unlisted SMEs. The results indicate that all the absolute t-values are superior to critical t-values, and the p-values are statistically significant ($p < 0.05$) for all the metrics, leading to the rejection of the null hypotheses (H01, H02, H03, H04, and H05). Furthermore, solvency and liquidity t-values are moderately positive; meanwhile, profit margin, ROA, and ROE t-values are considerably negative.

The t-test results suggest that access to the stock market has improved listed SMEs' solvency and liquidity, whereas profitability has significantly declined.

Without taking a definitive position on whether access to unregulated stock markets positively or negatively impacts SMEs' financial performance, our results align with existing literature indicating that listed SMEs tend to report improved solvency and liquidity (Boccaletti et al., 2025). Despite these benefits, listed SMEs' financial performance can be affected by factors such as equity dilution and heightened compliance costs, which can reduce profitability indicators such as return on assets (ROA) and return on equity (ROE) (Pastusiak et al., 2016). In the U.S. context, Mikkelson et al. (1997) found that many enterprises experience a decline in profitability post-IPO despite robust pre-IPO growth. Similarly, Pagano et al. (1998) observed that listing proceeds are not always immediately reinvested into operations, which may negatively impact post-listing financial performance. On a separate note, according to Lehmann (2023), EU enterprises are more prone to listing in the US stock markets than in Europe. Furthermore, Helbing, Lucey, and Vigne (2019) in their investigation of the determinants of IPO withdrawal, they found that venture capital or private equity involvement, the presence of negative news, CEO duality, or the intent to retire debt increases the probability of IPO withdrawal. In a nutshell, these findings highlight

a complex relationship between stock market access and SME financial performance that requires further investigation.

This study has some limitations. The relatively modest sample size may constrain broader generalizability of the findings. Additionally, the research did not consider contextual factors such as sector/industry, market conditions, or institutional support that could significantly impact SMEs' financial performance. Finally, acquiring sufficient precise financial data over time, particularly for unlisted SMEs, remains difficult because of limited reporting requirements and differences in disclosure practices.

Considering the critical contribution of SMEs to economic growth worldwide, future research should analyze larger and more diverse samples across various industries to better capture the nuanced financial effects of listing. Furthermore, better availability of SMEs' financial data through centralized databases or enhanced regulatory disclosure requirements could significantly improve the depth of future empirical studies.

5. Conclusion

Despite their significant contribution to the global economy, SMEs face numerous obstacles that hinder their full potential. The difficulty of obtaining sufficient financial resources is a substantial barrier to their development and growth. As an alternative solution, regulators and policymakers introduced the unregulated stock market to facilitate SMEs' access to equity funds.

With the success and controversy surrounding these stock markets, this paper aims to assess whether listing would significantly improve SMEs' financial performance by examining and comparing various financial metrics for both listed and unlisted SMEs.

Our empirical results present a nuanced but insightful view on how access to unregulated markets affects the financial performance of SMEs. Compared to unlisted SMEs, while listed SMEs' liquidity and solvability have improved, profitability indicators exhibit a significant decline.

Our paper contributes to the literature on SMEs issues and prospects by providing empirical evidence from the EU context. Although most of the existing literature focuses on large enterprises in non-European markets, particularly the US, this paper fills an important gap by providing an analysis of the differences in financial performance between listed and unlisted EU SMEs. It offers insights into how unregulated stock markets such as Euronext Growth, Euronext Access, and AIM Access may impact financial indicators such as solvency, liquidity, profit margin, ROA, and ROE. Our findings suggest that although listing may enhance liquidity and solvency, it can also impair SMEs' profitability. These insights are particularly relevant in light of the EU's initiative to facilitate SMEs' access to financing through stock markets.

Therefore, EU policymakers should reconsider their approaches to alleviating SMEs' financing challenges. Evidence indicates that government interventions, such as direct subsidies, can encourage SMEs to scale their operations, invest in product improvements, and adopt modern technologies (Wehinger & Nassr, 2016). These incentive effects help build long-term financial resilience. Additionally, capital structure theory, as developed by Modigliani and Miller (1958) and Modigliani and Miller (1963), highlights the preference for debt over equity due to tax advantages and reduced short-term risk. However, overdependence on debt can increase enterprises' weighted average cost of capital (WACC), ultimately necessitating a more balanced and mixed financing sources (Tarver, 2022).

To address the ongoing decline in IPOs and the rising SMEs' delisting rate, a broader and more diversified financing ecosystem is needed; a solution that goes beyond the creation of unregulated stock exchanges. Instruments such as EU-level funding schemes, innovation-focused grants, and strategic subsidies could help mobilize private investment. Complementary services such as post-IPO advisory programs could further support SMEs' post-IPO financial performance and lower the risk of delisting. According to the European Commission (2021), just 23% of all SMEs sell to other EU countries, and only 3% to non-EU ones, indicating that many EU SMEs remain largely domestically oriented. Hence, EU SMEs should take further advantage of the single market access to expand their activities to other European and global markets to improve their profitability.

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Appendix

This Table 1 presents the composition of the sample, distinguishing between listed and unlisted SMEs. The first group includes firms listed on unregulated stock markets, while the second group consists of comparable unlisted SMEs. These two groups form the basis of the statistical analyses conducted in the study.

Table 1. Listed EU SMEs.

Listed EU SMEs	Country	Year of Listing	Unregulated stock market
GIMV NV	BE	11/06/1997	Euronext Access (Brussels)
GIMV HEALTH & CARE PARTNERS (listed under GIMV)	BE	24/03/2014	Euronext Access (Brussels)
GIMV	BE	11/06/1997	Euronext Access (Brussels)
AKTIESELSKABET SCHOUW & CO.	DK	31/08/1987	Nasdaq Copenhagen (Small Cap)
PERSEIDA RENTA GESTION SOCIEDAD LIMITADA.	ES	13/12/2020	Euronext Access (Paris)
EVLI OYJ	FI	16/11/2015	Nasdaq Helsinki (Mid CAP)
COFACE S.A.	FR	27/06/2014	Euronext Access (Paris)
EVROPEISKOE OBSHCHESTVO SKOR E.O. (listed under SCOR SE)	FR	1989	Euronext Access
MOTODINAMIKI SA	GR	30/06/2005	Athens Stock Exchange (ATHEX)
MYTILINEOS S.A.	GR	1995	Athens Stock Exchange (ATHEX)
IVECO GROUP N.V.	IT	30/09/2013	Euronext Growth Milan
CAPITAL GROUP EMERGING MARKETS TOTAL OPPORTUNITIES (LUX)	LU	28/02/2017	SICAV

Listed EU SMEs	Country	Year of Listing	Unregulated stock market
NINETY ONE GLOBAL STRATEGY FUND - EMERGING MARKETS CORPORATE DEBT FUND	LU	15/04/2011	SICAV
FIAT CHRYSLER AUTOMOBILES NV	NL	13/10/2014	Euronext Access (Paris & Milan)
SIF MUNTENIA BUCURESTI	RO	01/11/1999	Bucharest Stock Exchange (ATS)
XANO GROUP AB	SE	05/12/1988	Nasdaq Stockholm (Mid Cap)
ARJO AB (PUBL)	SE	12/12/2017	Nasdaq Stockholm (Mid Cap)
VIAPLAY GROUP AB (PUBL)	SE	28/03/2019	Nasdaq Stockholm (Mid Cap)
ENAD GLOBAL 7 AB (PUBL)	SE	2019	Nasdaq First North Growth Market
VBG GROUP AB (PUBL)	SE	1987	Nasdaq Stockholm (Mid Cap)

Table 1 provides the list of listed EU SMEs based on our filter on Orbis. As per the platform, enterprises are classified as SMEs when they meet the following conditions: operating revenue less than 10 million EUR; total assets less than 20 million EUR; or fewer than 150 employees.

Table 2. List of Unlisted SMEs.

Unlisted Companies	Country	Creation Year
ACO - BOUWTEAM	BE	30/06/1993
FIXINOX	BE	1994
DOE-HET-ZELF SAFTI	BE	29/04/1977
H & M SPOL. S R.O.	CZ	24/10/1990
VARS BRNO A.S.	CZ	1995
CARGO MARKETING SPEDITION GMBH	DE	1997
ALKO ESPANA SAU	ES	26/05/1977
HOHNER AUTOMATION SOCIEDAD LIMITADA.	ES	14/06/1983
GTIE AMIENS	FR	15/12/1997
EMUGE - FRANKEN S.R.L.	IT	02/07/2001
KEB ITALIA S.R.L.	IT	11/02/1975
MOSCA DIRECT POLAND SP. Z O.O.	PL	05/12/2008
W-Z SP. Z O.O.	PL	07/04/2003
TONELI NUTRITION TITU SA	RO	30/11/1992
APTILO NETWORKS AB	SE	01/09/2001
BLUEBEAM AB	SE	2010
HOWDEN INSURANCE BROKERS AKTIEBOLAG	SE	26/10/1990
K A OLSSON & GEMS AKTIEBOLAG	SE	1950
NTI-SKOLAN AB	SE	1968
ZITO MALOPRODAJA D.O.O.	SI	23/05/1991

Table 2 provides the list of the randomly selected unlisted EU SMEs out of the 47,642 Moody scored enterprises based on our filter on Orbis. As per the platform, enterprises are SMEs when they meet the following conditions: operating revenue < 10 million EUR; total assets < 20 million EUR; or employees < 150.