Feasibility study for the creation of a CMU Equity Market Index Family

Final study

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Abstract

This is the final study of the 'Feasibility study for the creation of a CMU Equity Market Index Family' for the Directorate-General for Financial Stability, Financial Services and Capital Markets Union (DG FISMA).

The assessed CMU Equity Market Index Family covers 38 indices in total, including all share, ESG, SME Growth Market, sectoral, company size, and market size-based indices. These are calculated for both the most liquid stocks and less liquid stocks to promote convergence. For each of the indices the price, gross and net return rates are calculated.

The conclusion of the feasibility study is that there is some potential among investors for a CMU Equity Index Family. To some extent, the CMU All Share Index has potential as a benchmark for mutual fund, or to be tracked by ETFs, and this is especially the case for some of the sub-indices. Whether this potential is realised will depend largely on the quality of the index provider, pricing of the use of the indices and implementation strategy.

Résumé

Ceci est l'étude finale de « l'Etude de faisabilité pour la création d'une famille d'indices boursiers de l'UMC » pour la Direction Générale de la stabilité financière, des services financiers et de l'union des marchés des capitaux (DG FISMA).

La famille d'indices boursiers de l'UMC évaluée dans cette étude couvre au total 38 indices, y compris tous les indices basés sur les actions, les critères ESG, le marché de croissance des PME, ainsi que d'indices basés sur les secteurs, la taille des entreprises et la taille du marché. Ces indices sont calculés à la fois pour les actifs les plus liquides et les moins liquides afin de promouvoir la convergence. Pour chacun de ces indices, le prix et les taux de rentabilité brut et net sont calculés.

La conclusion de l'étude de faisabilité est qu'il existe un certain potentiel chez les investisseurs pour une famille d'indices boursiers de l'UMC.

L'indice « All Share » de l'UMC dans une certaine mesure, et plus particulièrement certains sous-indices ont un potentiel en tant que référence pour les fonds mutuels ou pour être suivis par des fonds négociés en bourse. Toutefois, la réalisation de ce potentiel dépendra en grande partie de la qualité du fournisseur de l'indice, de la tarification de l'utilisation des indices et de la stratégie de mise en œuvre.

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1 Introduction

The main motivation of the Capital Markets Union (CMU) is to provide companies, in particular SMEs, with enhanced access to capital markets financing. This feasibility study for the creation of a CMU Equity Market Index Family suggests how the fragmented liquidity can be channelled to bring savings to productive use through further integration and interconnectivity of capital markets across the EU. The Vienna Initiative CMU working group pointed to numerous shortcomings in many of the capital markets of EU Member States, in particular those from Central, Eastern, and South Eastern Europe (CESEE), and concluded that their capital markets had substantial catch-up potential. According to the working group, the CMU should enhance the cross-border investor pool to improve equity market liquidity and increase public awareness about the opportunities the CMU brings for issuers and investors.[1]

1.1 EU-listed companies excluded from indexes

At the moment, only a small number of EU-27-listed companies are included in the European equity indices of international index providers. These are predominantly large companies in certain of the larger EU Member States with longer capital market tradition, whereas most companies listed in recent years tend to be small- and medium-sized enterprises (SMEs) in smaller capital markets, such as those in the Baltic and CESEE states.

Indeed, some of the capital markets of the EU-27 Member States' are not classified at all by the large index providers such as MSCI and FTSE Russell. Although they meet the criteria required to be members of the European Union, Eurozone, NATO or OECD, they do not meet the quantitative criteria for developed markets set by large index providers. Such a situation deters most of the international institutional investors, in particular the passive funds, from taking positions in EU markets in, for example, Bulgaria, Croatia, Estonia, Latvia, Lithuania, Romania, Slovakia, and Slovenia.

A CMU Index Family could address two sets of important issues. First, the neglect of listed SMEs in the current index environment could be addressed by including them in a specific CMU index covering all EU-27-listed companies. Such a CMU index would then enable a set of sectoral or thematic sub-indices to be created (e.g. CMU Convergence Index, CMU SME Growth Markets Index, CMU ESG Index, and so on). This in turn could lead to larger local and foreign capital inflows from a broad range of investors, and better access to finance (in particular equity) for a larger pool of companies, with SMEs having most to gain. Second, addressing the overall neglect of several of these small markets would mitigate the different country classifications at EU Member State level, as investors would be able to perceive the markets as a single union. This can ultimately improve index weights for EU countries when compared to standard indices.

1.2 Objective of the study

The aim of the study is to assess the feasibility of creating a CMU Equity Market Index Family that would support the development and integration of capital markets in accordance with the CMU Action Plan. There are two specific objectives of the study, namely to:

- **Develop an index setup for a CMU Index Family** with the definition of the investible universe, the set of inclusion criteria and weighting, and discuss the structural, methodological and operational issues related to the index family. This entails the development of a methodology of an EU-wide CMU Equity Market Index, which

[1] The Vienna Initiative CMU Working Group report is available at: http://vienna-initiative.com/wp-content/uploads/2018/03/VI-CMU-Working-Group-Final-Report-March-2018.pdf

comprises companies listed on regulated markets within the European Union, including SMEs listed on growth markets, and a set of sub-indices (together constituting a CMU Index Family).

- **Assess the market potential of the CMU Index Family** and estimate the magnitude of the retail and institutional investor base expected to use it. Moreover, assessing the market potential would also encompass the assessment of the potential impact of such an index on the markets.

This could support the efforts of the DG FISMA to further develop the EU capital markets in line with the CMU strategic guidelines, improve SMEs' access to capital markets, and enhance the development and integration of local capital markets within the EU (Lannoo and Thomadakis, 2019).

1.3 Reading guide

Chapter 2 gives a brief overview of the methodologies used to assess the feasibility of the CMU Index Family. It describes the literature review, mapping of listed companies, indices and index-related investments, and interviews, survey, workshops and estimation method to determine the market potential. It also discusses the main limitations of the study and to what extent these have been mitigated.

Chapter 3 assesses the potential for the development of a CMU Index Family. The opportunities for the CMU All Share Index and sub-indices are identified, based on an assessment of the current investible universe, available indices and main index-related investments.

Based on this assessment and the EU policy objectives, Chapter 4 provides a strategy for the CMU Index Family. The strategy provides the set of requirements that the stocks need to meet to be acceptable and useful for the market participants. Most importantly, it provides the initial set of indices for the proposed launch (main, sectoral and thematic indices).

Chapter 5 provides the methodology for all the indices belonging to the CMU Index Family. This includes the index composition, weighting, balancing model specification, revision process and criteria for the CMU All Share Index and sub-indices.

Chapter 6 assesses the possibilities for the governance of the CMU Index Family. More specifically, it assesses three possible models: the European Commission sets the CMU Index Family up itself; the European Commission governs the CMU Index Family and an index provider undertakes the daily management; or the governance and management of the CMU Index Family are delegated entirely to an index provider.

Chapter 7 assesses the potential and market impact for the CMU Index Family, as well as the index composition and performance of the CMU All Share Index and sub-indices. Moreover, it provides a quantitative as well as qualitative assessment of the extent to which national, regional, European and global investors might be productively interested in investing in the CMU Index Family. It also discusses the main conditions to unlock these potential investments.

Chapter 8 provides an implementation roadmap, with the concrete actions and tools needed to realise the envisaged CMU Index Family. This includes the priorities and phasing of the actions, identification of the stakeholders and the key objectives for each phase of the strategy.

Chapter 9 draws the main conclusions regarding the feasibility of the creation of a CMU Market Index Family.

2 Methodology

The methodology of the feasibility study uses a combination of quantitative and qualitative data collection and stakeholder consultation tools. The various methods are discussed, including the literature review, mapping of EU-listed companies and indices, mapping of index-related investments, interviews, surveys, and scenario analysis and/or simulation. Finally, an overview of the main limitations is given.

2.1 Literature review

The main objective of the literature review is to take stock of the existing public knowledge about the benefits of indices for market development, integration and individual stock performance. The literature covers primary documents, academic publications and other secondary sources.

The results of the literature review are presented in section 3.1 and are used throughout the remainder of the study.

2.2 Mapping of listed companies and indices

The study takes stock of all companies listed on EU-regulated and SME Growth Markets. As of December 2019, there were 6 290 unique companies listed on EU-28 stock exchanges (4 405 excluding the UK). To get a better understanding of how well EU-listed companies are covered by equity indices, the index mapping identified a total 4 984 stock indices, including EU-28 listed companies.

For this exercise the two most important types of index providers are considered: stock exchanges and independent providers respectively.[2] The main difference between the stock exchanges and the independent providers is that for the stock exchanges, indices are traditionally a means to attract more investors for the companies listed on their exchange, while for the independent providers, the primary objective is to use the index for benchmarking purposes.

All EU Member States have a stock exchange (regulated market) located in their country. In some cases the stock exchanges form part of a multinational group that operates exchanges in several countries (e.g. Nasdaq Baltic has exchanges in Estonia, Latvia and Lithuania). There are 11 national stock exchanges and five multinational stock exchange groups operating exchanges in another 13 Member States. Some EU countries also have an SME Growth Market - a marketplace for small- and mid-sized companies with more relaxed requirements (Directive 2004/39/EC). There are three national SME Growth Markets and three multinational groups covering 12 EU Member States.

Independent providers are non-stock exchanges that calculate and/or distribute equity indices. Most often these independent providers are also companies that engage in research or analytics (e.g. IHS Markit) or financial data providers (e.g. Refinitiv). Of seven independent providers identified, three are located in EU-28 Member States: two in the UK and one in Germany. The other four providers have their headquarters outside the EU, with three in the US and one in Switzerland.

The distinction between stock exchanges and independent providers is not always clear-cut, because some cooperate. For example, FTSE Russell, a subsidiary of the London Stock Exchange Group (LSEG), is an official index provider for both the London Stock Exchange and Borsa Italiana, while Xetra and Stoxx are both subsidiaries of Deutsche Börse Group. In these situations the practical operations have been considered. This means that when

2 Financial institutions that engage in self-indexing (i.e. designing index for their own index-based products) were excluded.

the indices are branded as Deutsche Börse, LSE or Borsa Italiana, they are considered indices offered by national exchanges. Moreover, Xetra, Stoxx and FTSE Russell are operated quite independently, and are therefore treated separately, as stock exchange and independent providers respectively.

For all the stock exchanges, information on both the companies listed and the indices has been collected, whereas for the independent providers only information on the indices could be collected. The information is obtained from the public websites of respective index providers (fact sheets, indices rules, etc.). Only indices including EU-28-listed companies are covered, in other words, those indices that cover just EU-28-listed companies, as well as those covering both EU-28-listed and non-EU-28 listed companies. Those indices that only include non-EU-28-listed companies, as some globally active independent providers do (e.g. FTSE Russell, MSCI and S&P), are not covered. The all share indices (including the US) are analysed separately, from the point of view of a CMU All Share Index.

The stock exchanges and independent providers often use different calculation methods for the same group of companies (equal composition). For this study, indices with an identical composition but different calculation methods are considered as one index. For example, the value of the AEX-index (index covering the 25 largest companies listed on the Amsterdam stock exchange by market capitalisation) is calculated for price, net return and gross return, which in the context of this study are considered part of the same index.

For each of the stock indices, information on the number and market capitalisation of companies covered, size of the companies covered, sectoral coverage, geographical coverage, exchanges covered, and potential thematic coverage was obtained. Information on the index strategy and methodology was also obtained when available, including review frequency, currency of trading, constituents' weighting, calculation methods and so on.

For the analysis and presentation of the retrieved information, the indices have been classified by geographical location, development of the market, size of the companies and specialisation of the index. Geographical location is based on the exchange on which the company is listed. Three types of locations are considered respectively: national, regional and global indices. National indices include companies listed on one stock exchange (e.g. AEX, DAX, or FTSE 100). Regional indices include companies listed on two to five different exchanges or only listed on EU stock exchanges (e.g. South-East Europe Traded Index by Wiener Börse). Global indices cover more than five exchanges and companies listed outside the EU (MSCI All Countries World Index). All the indices for which geographical information about the stock exchanges covered was available are in one of the three categories.

Development of the market is based on the MSCI-classification[3] as of September 2019, which classifies the markets as developed, emerging or frontier. Where there was no MSCI-classification available, the classification of S&P was used. For most of the indices the location of the companies included was clear, but if not, the geographical region was used. This classification is important mainly to understand the share of companies that is not currently, or to a limited extent only, covered by indices.

The size classification follows the standard classification used for listed companies based on market capitalisation. The companies included in the index are classified as micro (less than EUR 100 million), small (between EUR 100 million and EUR 1 billion), mid (between EUR 1 billion and EUR 5 billion) and/or large caps (more than EUR 5 billion). A distinction is made between indices that aim to cover companies of a certain size and indices that do not stipulate size requirements for its constituents. The indices were classified by the index

[3] According to the MSCI market classification. Available at: https://www.msci.com/market-classification

name or index description. This means that the size in practice can sometimes deviate from the size classifications as defined above.

Specialisation of the indices distinguishes between customised, sectoral and thematic. Customised indices are designed by the index provider for a specific client that is not a national stock exchange. If known, the purchaser of a customised index was also recorded. Sectoral indices comprise only those enterprises that belong to one single sector (e.g. financial services). The various sectoral classifications used by the index providers have been translated to the NACE classification, allowing harmonised figures to be included. Thematic indices comprise only companies that meet specific index requirements. Based on the mapping, 11 broad types of thematic indices have been identified, including demographic development, diversity, energy and climate change, Environmental, Social and Corporate Governance (ESG), ethical, growth and innovation, luxury, religion, special ownership, sports and urbanisation. Indices are only considered for one or more of these categories when it is clear from the index methodology that the indices belong to those categories.

The results of the mapping of the listed companies and indices are presented in Chapter 3 and used throughout the remainder of the study.

2.3 Mapping of index-related investments

The mapping of index-related investments helps to obtain an overview of the main types of indices proposed, the respective market shares of the main players, and the market of indices users.

Index-related investments are identified using information on all ETFs and a selection of mutual funds traded in the EU or including EU-listed companies. Hence, in this exercise, only funds that invest more than 50% of their portfolio in equity were considered.[4] The information on the ETFs and mutual funds was retrieved between June and July 2019 from more than 40 public websites using a combination of automated web-scraping programs and manual data collection. The retrieved data covers ETFs traded in 30 EU and 18 non-EU stock exchanges as well as mutual funds marketed in 12 EU Member States.

The identification and investment information was collected for each of the ETFs and mutual funds. The identification information includes the name and ISIN of the fund, provider of the fund, date of incorporation, currency, country of residence and the countries in which the funds are marketed. The investment information includes the total investments in euros, benchmark index or indices, and regional and sectoral allocation of the fund.

Several of the collected indicators are incomplete or not in line with the criteria required for the analysis. When possible, the indicators have been completed or adjusted. Specifically, the information on the total investments for some equity funds was missing (approximately 13% of the equity funds). For these funds, the total investments are proxied by the investments of the largest sub-class of the fund available in the dataset. Moreover, information on regional allocation of the funds is available for geographical regions that do not match with the EU Member States. In fact, the European portfolio is divided into four regions: UK, Eurozone, Emerging Europe and West-Northern Europe. The last two regions include both EU and non-EU countries. For these, the share of the market capitalisation of the EU Member States in the region over the total market capitalisation of the region is used to estimate the amounts invested in the EU. This results in a 7% reduction of the total EU investments.

[4] Approximately 7% are excluded from the analysis either because information on the total investments' dates before 2018 (3%) or because benchmark index information is not available (4%).

For the purpose of the analysis, the funds have been classified in various categories to support the assessment of the market potential of the various indices belonging to the CMU Index Family. Based on the share of EU investments in the overall portfolio of the funds, the funds are classified as: i) non-EU funds if the share of EU investments is insignificant (less than 5%), ii) partial EU funds if the share of EU investments ranges between 5% and 95%, or iii) full EU funds if there are no – or an insignificant amount of – non-EU investments (more than 95%). Similarly, the indices are also classified as: i) non-EU indices if they do not contain any EU companies, ii) partial EU indices if they contain both EU and non-EU listed companies, and iii) full EU indices if they contain only EU-listed companies. The analysis also distinguishes three different types of fund providers, namely: i) domestic providers that issue funds marketable in only one EU Member State, ii) regional providers that offer their funds in between two and five EU Member States, and iii) global providers that are active in five or more EU Member States or also issue funds outside the EU.

The results of the mapping of the index-related investments are presented in Chapter 3 and used throughout the remainder of the study.

2.4 Interviews

The interviews with experts contribute to the understanding of the set of requirements that the indices belonging to the CMU Index Family need to meet to be acceptable and useful for the market participants. In particular, the interviews help explain what makes an index popular, the main motivations to invest in an index, the main challenges faced by this market, and why a CMU Index does not yet exist or is not popular.

Between 23 July and 1 October 2019, 35 experts were interviewed for this study (see Table 2.1). Twenty-six of the interviews were conducted over the phone, eight conducted in person and one in writing. The interviews involved a combination of policymakers and international financial institutions (3), stock exchanges and independent providers of indices (11), index users that provide ETFs based on indices (5), and investors that use indices for the allocation of their investments (16).

The index providers, users and investors covered a combination of national, regional and global institutions. As one of the objectives of the CMU Index Family is to improve the coverage of frontier and emerging markets that are currently not covered by the larger index providers, those index providers, users and investors active in frontier markets were over-represented.

Table 2.1 Overview of number of interviewees by stakeholder type

Overview	Interviews conducted
Policy makers & IFIs	3
Index providers	11
Index users	5
Index investors	16
Total	**35**

Source: CEPS (2020)

The questions were directed at identifying the opportunities, strategy, methodology and governance. They focused on the market demand for indices, market developments, potential composition and conceptual framework for a CMU Index Family, and business models for operating indices.

The results of the interviews are primarily used to define the CMU Index Family strategy in Chapter 4, methodology in Chapter 5 and governance mechanism in Chapter 6.

2.5 Surveys

The surveys among investors and index issuers assess the extent to which European and global institutional investors are effectively interested in and expected to use the new CMU Equity Market Index Family, and which issuers are willing to issue such an index. More specifically, it assesses the types of investors that are likely to invest effectively as well as elements that could encourage institutional and retail investors to invest in a CMU Index or sub-indices-related funds.

Between 23 December 2019 and 6 March 2020, 63 surveys were completed (see Table 2.2). The interviews involved a combination of investors and index issuers. Although the number of investors completing the survey (48) was substantially higher than the number of index issuers completing the survey (15), the response rate is substantially higher among index issuers (58%) than investors (20%). There are several (potential) reasons for the higher response rate among issuers, including the fact that they have a larger business interest and the responsible persons were easier to identify among the issuers.

Table 2.2 Overview of number survey responses by stakeholder type

Overview	Survey responses	Response rate
Investors	48	20%
Issuers	15	58%
Total	**63**	**24%**

Source: CEPS (2020)

The survey for investors covered questions on the potential for the (sub)indices of the CMU Equity Market Index Family, obstacles to investability and incentives to enhance the investability, tradability and replicability. The survey for issuers covered questions on the ability and willingness of the issuers to provide the indices. More specifically, questions on the ability to cover all EU exchanges, market potential and potential target groups, conditions to enhance investability and incentives that can enhance the attractiveness of the indices to investors.

The results of the surveys are primarily used to define the CMU Index Family strategy in Chapter 4, governance mechanism in Chapter 6 and market potential and market impact in Chapter 7.

2.6 Workshops

Three workshops with stakeholders aimed to verify the validity of the strategy, methodology, governance and implementation roadmap.

One workshop with technical experts was held on 22 October 2019 to present the findings and collect feedback on the index strategy and methodology. The results of the opportunity set for investors, index strategy and conceptual framework were validated. Twelve representatives from 10 different organisations participated in the workshop. The stakeholders included six representatives of stock exchanges and independent index providers, two issuers of index-linked products and three index investors.

Two validation workshops were held on 4 March 2020, with index providers and investors respectively. The workshop with index providers validated the governance, implementation and pricing strategy. Thirteen representatives from 12 different index providers participated. The investors' workshop validated the potential, implementation and pricing strategy, and six representatives from four different investors participated.

The workshop findings are primarily used to refine the CMU Index Family strategy in Chapter 4, governance mechanism in Chapter 6 and market potential and market impact in Chapter 7.

2.7 Simulation

In order to assess the performance, potential and impact, the indices included in the proposed CMU Index Family are replicated. For this the daily closing prices and trading volumes are obtained for all the domestic companies listed on EU-regulated markets and SME Growth Markets between 1 April 2015 and 31 March 2020. In addition, information on the market capitalisation, free float, cross-listings, dividends, sectors, activities, trading currency and trading status are obtained for 31 December 2019. Moreover, the standard dividend tax rates were obtained to calculate the net return indices.

The index method for the 38 (sub)indices forming part of the CMU Index Family is specified in the strategy in Chapter 4 and the methodology in Chapter 5. The indices are defined based on the information available on 31 December 2019. For each of the (sub)indices the price, gross return and net return values are calculated daily for the five-year period between 1 April 2015 and 31 March 2020. The replication helps to obtain a full understanding of the composition, performance and liquidity of the indices.

The data from the analysis of the asset management industry landscape and the survey are combined to assess the potential among investors and the market impact. In principle, the estimations on the potential provide the upper boundary of the potential among asset managers, and for fund managers in particular. The estimated potential is based on the maximum potential indicated for each of the indices by the asset managers that participated in the survey. The share of these asset managers, as well as those that indicated that no potential could be seen for the CMU Index Family in the total EU mutual fund and ETF investments, are used to estimate the total potential for the CMU Index Family. The maximum potential for each index is capped at the free-float market capitalisation of the companies included in the index.

The results of the simulation are primarily used for the fact sheets indicating the composition, performance, potential and impact in Annex 2 and the cross-index analysis in Chapter 7.

2.8 Limitations

The main limitation of the index mapping is that not all the information on investors using indices for their investments are publicly available. Proxies have therefore been used when possible to enhance the coverage.

Moreover, the interest in an index depends on many different factors and circumstances that can only be partially controlled (investability, replicability, pricing, performance, competition, etc.). This creates uncertainty among investors about the interests in the CMU Index Family.

3 Opportunity for the CMU Index Family

This chapter assesses the potential for the development of a CMU Index Family. The opportunities for the CMU Index Family are identified from an assessment of the existing literature, EU-listed companies, main index-related investments, index universe and the costs related to the use of indices.

3.1 Benefit of index-inclusion

There is an ample body of academic literature investigating effects of changes in index compositions. However, there is no significant academic literature investigating the success of indices or the motivations to set up and operate indices for index providers, and therefore we are not able to provide a literature review on these subjects.

Afego (2017) provides an extensive overview of the academic literature, both theoretical and empirical, regarding the effects of changes in stock index compositions. The empirical work on this topic first looked at the price impacts for stocks included in S&P 500 Index. Shleifer (1986) or Harris and Gurel (1986), for example, found positive abnormal returns (using the event study methodology). Many subsequent studies documented similar effects for S&P 500 Index, with somewhat different findings for other markets and market segments in terms of the size of the firms. What is perhaps even more important than just detecting the price effect is understanding the channels/determinants of such a price effect. Here, according to Afego (2017), we can group theoretical explanations into two sets: demand-based and information-based theories.

3.1.1 Theoretical underpinnings

Demand-based theories assume that increased demand by index-tracking investors for a newly added stock causes an upward pressure on the price of the stock, thus resulting in positive abnormal returns around its inclusion date (Harris & Gurel, 1986; Shleifer, 1986). The issue as to whether the effect is transitory or permanent in nature can be further distilled into price pressure hypothesis (where we expect to observe a transitory effect) and the imperfect substitute hypothesis (which would explain the permanent price effect). **The price pressure hypothesis** assumes that the demand curve for stocks is downward sloping in the short term. Thus, the prices will revert to their pre-inclusion levels once the short-term trading pressure (mostly due to investor rebalancing) dissipates (Vespro, 2006). **The imperfect substitute hypothesis** proposes that stocks have a long-term downward sloping demand curve – in effect, as the stocks added to an index have no close substitutes, the price effect of the inclusion of a stock is seen to be permanent (Shleifer, 1986).

The **information-based set of theories** is based on the premise that an inclusion of a stock in an index conveys new information about the stock (Chen, Noronha, & Singal, 2004). According to the **information hypothesis**, an inclusion is seen as a signal of a firm's position as an industry leader, a positive signal about the quality of the firm's management, or simply a more general signal about the good future prospects of a firm (Jain, 1987; Denis, McConnell, Ovtchinnikov, and Yu, 2003; Platikanova, 2008; Cai, 2007). Permanent positive price effects may stem from the improved liquidity of stocks, predominantly due to an increased coverage by financial analysts, which might reduce information asymmetries (risk). This, in turn, leads to higher volumes, liquidity and price/earnings ratio (Chen et al., 2004; Chung, McInish, Wood, & Wyhowski, 1995; Shleifer 1986). Alternatively, the **investor awareness hypothesis** explains that the addition of a firm to an index increases its visibility and incentivises managers to perform better (Denis, McConnell, Ovtchinnikov, and Yu, 2003). Chen et al. (2004) find that there is an asymmetry between addition and removal of a firm from an index. While addition might lead to a larger permanent price effect, removal has smaller transitory effect (based on findings for the S&P 500 Index). Finally, the **selection criteria hypothesis** assumes

that index providers select a stock based on a set of criteria (liquidity, profitability, etc) that lead to a positive selection bias and, thus, cherry pick the very best stocks for index additions. Hence, the positive price and other effects are conditional on the quality of the firms added to an index, which is not random. Petajisto (2008) argues that the impact of the index inclusion depends on index selection rules, in particular in terms of transparency.

3.1.2 Empirical findings

Empirical research on the impact of index inclusion (exclusion) has focused on several effects. Most research assesses price and trading volume impacts, followed by the effect on institutional ownership, operating efficiency and profitability of firms, and implications of index funds.

In terms of **price and volume impacts,** studies have mostly focused on the large cap US market segment – S&P 500 Index revision (see for example, Chen et al., 2004, Wurgler and Zhuravskaya, 2002, Becker-Blease and Paul, 2006). Other studies investigated other markets, such as Canadian (Masse, Hanrahan, Kushner, and Martinello, 2000), Italian (Rigamonti and Barontini, 2000), German (Deininger, Kaserer, and Roos, 2000, Wilkens and Wimschulte, 2005), UK (Gregoriou and Ioannidis, 2006, Mase, 2006), as well as indices covering multiple markets, such as MSCI (Chakrabarti, Huang, Jayaraman, and Lee, 2005). Generally speaking, all the studies find positive price effects, albeit seemingly permanent in some cases (in line with the imperfect substitute hypothesis), while in others they seem to be transitory (consistent with the price pressure hypothesis). The impact on volume (liquidity) is also positive. The converse holds for stock removals from an index, with lesser negative impact on price and volume (see for example, Claessens and Yafeh, 2012; Chan, Kot, and Tang, 2013; Schnitzler, 2018). A large number of studies focus on the large cap segment of the market, while there are only a few studies that looked at the small (and mid) cap market segments.

When it comes to **institutional ownership**, previous studies find a positive effect of the inclusion of a stock on institutional ownership (see for example, Biktimirov and Li, 2014; Chan et al., 2013; Chen et al., 2004; Li and Tan, 2015; Shankar and Miller, 2006). This means that the inclusion of a stock in an index increases share of total shares owned by institutional investors.

Some researchers (see for example, Chan et al., 2013; Kot, Leung, and Tang, 2015) have looked at the impact of index inclusion on **operating efficiency and profitability** and found no significant impact.

A more recent, although limited, strand of literature looked at the **impact of stock inclusions on the performance of index funds**. Since index funds replicate indices they track, they generally wait until the effective day of the inclusion and do not immediately act upon announcement (to minimise the tracking error). This gives rise to potential arbitrage opportunities to short-term speculators. Chen et al. (2006), for example, find that such arbitrageurs earn extra profits at the expense of index funds by trading on these announcements (studies on S&P 500 and Russell 2000 indices). There are currently no studies for non-US indices, so we cannot generalise these findings.

Finally, a strand of literature looks into **how differences in index rebalancing policies and selection criteria** affect the inclusion impact. Namely, stock indices differ when it comes to: 1) disclosure of the pool from which they draw stocks, 2) regular (scheduled) versus irregular (unscheduled) rebalancing, and 3) inclusion criteria. For example, for the S&P 500, the most studied index, the index provider does not disclose the replacement pool, rebalancing is irregular and inclusion criteria varies substantially. However, for the MSCI indices (actually, for most index providers) the pool is disclosed, and rebalancing is regular. This makes changes to S&P 500 hard to predict and consequently more difficult to exploit in terms of trading strategies (shorting the expected removals from an index and taking a long position in the expected additions). However, a specified pool and a clear

set of inclusion/removal rules facilitate transparency and could motivate firms to meet inclusion criteria.

Box 1. Small ETFs can contribute to development of equity markets

Under certain conditions, small funds can deliver a substantial contribution to the development of local equity markets. This is demonstrated by Expat Capital in Bulgaria, which contributes with small funds to the development of equity markets in Central and Eastern Europe (CEE). The CEE equity markets in general are much smaller in terms of market capitalisation than western European equity markets. Accessibility, liquidity, transaction costs, market infrastructure and quality are often considered as the main constraints for investors to participate in these markets.

Expat Capital has overcome some of these constraints with a family of very small ETFs. It has issued a family of 12 ETFs, tracking the main indices in 11 CEE countries. This includes the main indices of stock exchanges in nine EU countries (BG, CZ, EL, HU, HR, PL, SI, SK, RO) and two countries outside the EU (SB, MK). These ETFs are listed on at least one CEE exchange and at least one larger exchange (e.g. Xetra and LSE). For example, the largest fund, Expat SOFIX UCITS ETF is listed on both the Bulgarian stock exchange and Xetra in Germany. This allows both CEE and foreign investors to invest in the CEE markets.

Moreover, the ETFs of Expat Capital also unlock some market liquidity. The ETFs of Expat are very small in size with net asset value varying from EUR 0.1 million to EUR 10 million as of March 2020, compared to EUR 565 million for an average EU ETF. The ETFs of Expat Capital are small in size, but the CEE equity markets, such as the Bulgarian, are also relatively small in size (EUR 4.2 billion market capitalisation). Moreover, the liquidity provided through the ETFs makes the Bulgarian market more attractive to other investors, which increases the market liquidity further.

However, it is not necessarily easy to replicate the approach of Expat Capital. It is challenging to set up and maintain cross-listed ETFs for smaller equity markets. For example, it was not easy for Expat Capital to arrange the access to the foreign exchanges. The main obstacle was to arrange access to the local CSD for LSE. Euroclear refused, as responsible CSD, to liaise with a Bulgarian counterpart. Ultimately, Expat arranged access through a local broker and member of Euroclear. Moreover, despite higher fees, the revenues for the management of the ETFs are relatively limited.

3.1.3 Applying previous findings to small stocks and/or other markets

The main premise of the CMU Index Family development is that index inclusion promotes better liquidity of stocks, as well as increasing the visibility of included stocks. As we have already mentioned, previous studies find positive price and volume effects. However, there seem to be substantial differences when it comes to large versus small stocks (see for example, Docking and Dowen, 2006; Gowri Shankar and Miller, 2006; Biktimirow and Cowan, 2004, Biktimirow and Li, 2014), short-term (transitory) versus long-term effects (see for example, Gowri Shankar and Miller, 2006; Chen 2006), and developed versus emerging markets (see for example, Hacibedel and van Bommel, 2007, who find lower price impact for emerging markets). For example, while Gowri Shankar and Miller (2006) confirm the same effects (in terms of price, volume effects and institutional ownership), when it comes to index inclusion for small(er) stocks (S&P 600 Index), they find, contrary to studies for larger firms (S&P 500 Index), that the effects are transitory in nature and fully reversed within weeks of inclusion. In turn, Becker-Blease and Paul (2010) find that positive inclusion effects, in particular liquidity, have permanent effects even in the case of small- and medium-cap firms. Moreover, the effects seem to vary according to time. Petajisto (2011) for example, argues that price effects of inclusions seem to decline after 2000. Hence, it cannot be expected that the sole creation and offer of the CMU Index

Family would be able on its own to address some of the core issues underlying the CMU raison d'être: better and more diversified access to (equity) finance for companies (SMEs in particular) and better inclusion (more demand) for assets listed in frontier markets. At best, it could be a contribution.

3.2 EU-listed companies

There are nearly 6 290 unique companies listed in total on EU-28 capital markets.[5] Of these, more than two-thirds (4 329) are listed on regulated markets and one-third on SME Growth Markets (1 961). LSEG and the five Euronext exchanges (BE, FR, IE, NL and PT) collectively account for nearly half of the listed companies and more than half of the market capitalisation. LSEG lists 1 038 companies in the UK and 240 companies in Italy, which accounts for 35% of total EU-28 market capitalisation. Euronext has a total of 782 listed companies, which corresponds to 33% of total EU-28 market capitalisation. This means that post-Brexit, Euronext accounts for about half of the EU-27 market capitalisation.

3.2.1 Regulated markets

About three-quarters of the listed companies are listed at one of the 14 exchanges classified as developed by MSCI (see Table 3.1). The remaining quarter is listed on one of the four emerging markets (15%) or ten frontier markets (9%). The companies listed at emerging and frontier markets are in general smaller than in developed markets. Hence, the companies listed in emerging and frontier markets account for 1.7% and 0.5% of the market capitalisation respectively.

Table 3.1 Total listed companies and market capitalisation of EU regulated markets

Country	Provider	Type of market	Total number of companies listed	% of total EU-listed companies	Market capitalisation EUR billion	% of total EU market capitalisation
National stock exchanges						
DE	Deutsche Börse (DBG)	Developed	453	10.5	2 530.0	17.0
ES	Madrid Stock Exchange (BME)	Developed	125	2.9	800.0	5.4
LU	Luxembourg Stock Exchange (LuxSE)	Developed	14	0.3	38.0	0.3
EL	Athens Exchange Group (ATHEX)	Emerging	170	3.9	61.9	0.4
HU	Budapest Stock Exchange (BET)	Emerging	34	0.8	28.6	0.2
PL	Warsaw Stock Exchange (GPW)	Emerging	449	10.4	260.0	1.8
BG	Bulgarian Stock Exchange (BSO)	Frontier	65	1.5	4.2	0.0
CY	Cyprus Stock Exchange (CSE)	Frontier	65	1.5	1.9	0.0
MT	Malta Stock Exchange (MSE)	Frontier	24	0.6	4.7	0.0
RO	Bucharest Stock Exchange (BVB)	Frontier	82	1.9	37.8	0.3
SK	Bratislava Stock Exchange (BCPB)	Frontier	7	0.2	1.0	0.0
	Subtotal		**1 488**	**34.4**	**3 768.1**	**25.4**
Multinational stock exchanges						
	Euronext (ENX)	Developed	782	18.1	4 844.0	32.6
BE	Brussels (BEL)	Developed	127	2.9	335.0	2.3
FR	Paris (CAC)	Developed	471	10.9	3 250.0	21.9
IE	Dublin (ISEQ)	Developed	22	0.5	116.0	0.8
NL	Amsterdam (AEX)	Developed	123	2.8	1 080.0	7.3

[5] Regulated and SME Growth Markets.

Country	Provider	Type of market	Total number of companies listed	% of total EU-listed companies	Market capitalisation EUR billion	% of total EU market capitalisation
PT	Lisbon (PSI)	Developed	39	0.9	63.0	0.4
	London Stock Exchange Group (LSEG)	Developed	1 278	29.5	5 127.5	34.5
IT	Milan (BI)	Developed	240	5.5	733.0	4.9
UK	London (LSE)	Developed	1 038	24.0	4 394.5	29.6
	Vienna Stock Exchange Group (WBAG)	Developed	82	1.9	183.1	1.2
AT	Vienna (WBAG)	Developed	65	1.5	134.0	0.9
CZ	Prague (PSE)	Emerging	17	0.4	49.1	0.3
	Nasdaq Nordic (NDAQ)	Developed	661	15.3	1 581.3	10.6
DK	Copenhagen (OMXC)	Developed	132	3.0	428.0	2.9
FI	Helsinki (OMXH)	Developed	130	3.0	386.0	2.6
SE	Stockholm (OMXS)	Developed	337	7.8	760.0	5.1
	Nasdaq Baltic (OMXBB)	Frontier	62	1.4	7.3	0.0
EE	Tallinn (OMXT)	Frontier	18	0.4	2.8	0.0
LT	Vilnius (OMXV)	Frontier	26	0.6	3.7	0.0
LV	Riga (OMXR)	Frontier	18	0.4	0.8	0.0
	Zagreb Stock Exchange (ZSE)	Frontier	100	2.3	26.4	0.2
HR	Zagreb (ZSE)	Frontier	77	1.8	19.5	0.1
SI	Ljubljana (LJSE)	Frontier	23	0.5	6.9	0.0
	Subtotal		**2 903**	**67.1**	**11 762.3**	**79.2**
	Cross-listings		*(62)*	*(1.4)*	*(675.4)*	*(15.6)*
	Total		**4 329**	**100**	**14 855.0**	**100.0**
	Developed		*3 283*	*75.8*	*14 535.5*	*97.8*
	Emerging		*642*	*14.8*	*250.6*	*1.7*
	Frontier		*404*	*9.3*	*68.8*	*0.5*

Source: CEPS (2020)

The lower number of listings is reflected in a higher concentration on emerging and frontier markets (see Table 3.2). In the developed markets the 20 largest companies account on average for 63% of the total market capitalisation. However, there is a large variance, ranging between 47% at the LSE and 100% at the Luxembourg Stock Exchange, mainly due to a difference in the number of listed companies. The 20 largest companies on emerging markets account on average for 81% of the market capitalisation. Similarly, the largest 20 companies at frontier markets account for about 93% or more of the market capitalisation, with the exception of the Bulgarian Stock Exchange (BSO) with 72% market capitalisation for the 20 largest companies, which is partially due to a relatively large number of listed companies and the lack of larger listed companies.

Table 3.2 Market concentration of EU regulated markets

Country	Provider	Type of market	Top 5 stocks as % of market cap	Top 10 stocks as % of market cap	Top 20 stocks as % of market cap
National stock exchanges					
DE	Deutsche Börse (DBG)	Developed	25.8	42.7	60.5
ES	Madrid Stock Exchange (BME)	Developed	44.3	61.3	81.1
LU	Luxembourg Stock Exchange (LuxSE)	Developed	87.9	99.5	100.0
EL	Athens Exchange Group (ATHEX)	Emerging	45.7	64.8	82.2
HU	Budapest Stock Exchange (BET)	Emerging	91.3	96.5	99.0
PL	Warsaw Stock Exchange (GPW)	Emerging	46.2	60.8	78.1
BG	Bulgarian Stock Exchange (BSO)	Frontier	31.8	50.6	71.8
CY	Cyprus Stock Exchange (CSE)	Frontier	65.1	82.0	94.2
MT	Malta Stock Exchange (MSE)	Frontier	54.8	85.0	99.2
RO	Bucharest Stock Exchange (BVB)	Frontier	73.5	87.3	95.2
SK	Bratislava Stock Exchange (BCPB)	Frontier	99.0	100.0	100.0
	Subtotal		**33.1**	**49.8**	**67.6**
Multinational stock exchanges					
	Euronext (ENX)	Developed	35.3	51.3	69.1
BE	Brussels (BEL)	Developed	57.0	69.9	82.1
FR	Paris (CAC)	Developed	25.2	41.2	60.9
IE	Dublin (ISEQ)	Developed	70.6	93.1	99.1
NL	Amsterdam (AEX)	Developed	52.7	69.1	84.9
PT	Lisbon (PSI)	Developed	74.8	91.0	98.6
	London Stock Exchange Group (LSEG)	Developed	20.3	33.5	50.1
IT	Milan (BI)	Developed	33.0	49.5	66.7
UK	London (LSE)	Developed	18.2	30.8	47.4
	Vienna Stock Exchange Group (WBAG)	Developed	52.6	68.2	85.8
AT	Vienna (WBAG)	Developed	41.8	57.2	80.6
CZ	Prague (PSE)	Emerging	82.1	98.2	100.0
	Nasdaq Nordic (NDAQ)	Developed	36.3	54.0	70.7
DK	Copenhagen (OMXC)	Developed	50.2	70.1	85.5
FI	Helsinki (OMXH)	Developed	47.9	72.0	87.8
SE	Stockholm (OMXS)	Developed	22.1	35.5	53.4
	Nasdaq Baltic (OMXBB)	Frontier	73.2	89.4	99.2
EE	Tallinn (OMXT)	Frontier	75.9	93.9	100.0
LT	Vilnius (OMXV)	Frontier	66.9	83.9	98.4
LV	Riga (OMXR)	Frontier	91.9	98.7	100.0
	Zagreb Stock Exchange (ZSE)	Frontier	66.4	81.3	92.8
HR	Zagreb (ZSE)	Frontier	62.1	76.4	90.3
SI	Ljubljana (LJSE)	Frontier	78.8	95.1	100.0
	Subtotal		**29.2**	**44.2**	**61.4**
	Total		**30.5**	**45.9**	**63.0**
	Developed		*30.0*	*45.4*	*62.5*
	Emerging		*48.7*	*65.8*	*81.2*
	Frontier		*64.3*	*81.0*	*92.9*

Source: CEPS (2020)

Table 3.3 Companies listed on EU regulated markets by size

Country	Provider	Type of market	% of total listed companies					% of total stock exchange market capitalisation				
			Micro	Small	Mid	Large	Total	Micro	Small	Mid	Large	Total
National stock exchanges												
DE	Deutsche Börse (DBG)	Developed	34.7	30.5	16.3	18.5	100	0.2	2.2	7.2	90.1	100
ES	Madrid Stock Exchange (BME)	Developed	15.2	33.6	28.0	23.2	100	0.1	2.2	9.4	88.4	100
LU	Luxembourg Stock Exchange (LuxSE)	Developed	21.4	28.6	35.7	14.3	100	0.3	2.8	37.1	60.0	100
EL	Athens Exchange Group (ATHEX)	Emerging	72.9	18.8	7.1	1.2	100	4.5	21.5	44.9	29.1	100
HU	Budapest Stock Exchange (BET)	Emerging	64.7	23.5	5.9	5.9	100	2.7	8.7	17.6	71.3	100
PL	Warsaw Stock Exchange (GPW)	Emerging	74.6	17.8	4.7	2.9	100	2.9	9.7	19.6	67.7	100
BG	Bulgarian Stock Exchange (BSO)	Frontier	81.5	18.5	0.0	0.0	100	43.4	56.6	0.0	0.0	100
CY	Cyprus Stock Exchange (CSE)	Frontier	95.4	4.6	0.0	0.0	100	44.9	55.0	0.0	0.0	100
MT	Malta Stock Exchange (MSE)	Frontier	45.8	54.2	0.0	0.0	100	8.1	92.0	0.0	0.0	100
RO	Bucharest Stock Exchange (BVB)	Frontier	70.7	22.0	4.9	2.4	100	3.1	18.1	26.7	52.1	100
SK	Bratislava Stock Exchange (BCPB)	Frontier	57.1	42.9	0.0	0.0	100	4.5	95.2	0.0	0.0	100
	Subtotal		**57.0**	**23.7**	**10.3**	**9.0**	**100**	**0.6**	**3.5**	**9.7**	**86.1**	**100**
Multinational stock exchanges												
	Euronext (ENX)	Developed	30.7	34.0	17.3	18.0	100	0.2	2.2	6.8	90.9	100
BE	Brussels (BEL)	Developed	31.5	34.6	24.4	9.4	100	0.4	5.3	21.2	73.1	100
FR	Paris (CAC)	Developed	31.6	36.1	13.6	18.7	100	0.2	2.0	5.0	92.9	100
IE	Dublin (ISEQ)	Developed	4.5	45.5	13.6	36.4	100	0.1	5.7	4.4	89.7	100
NL	Amsterdam (AEX)	Developed	27.6	25.2	23.6	23.6	100	0.1	1.3	6.9	91.8	100
PT	Lisbon (PSI)	Developed	41.0	28.2	20.5	10.3	100	0.8	4.6	24.6	69.8	100
	London Stock Exchange Group (LSEG)	Developed	24.1	42.7	19.9	13.3	100	0.2	4.2	11.1	84.5	100
IT	Milan (BI)	Developed	26.3	39.6	19.2	15.0	100	0.3	4.3	14.5	81.0	100
UK	London (LSE)	Developed	23.6	43.4	20.0	12.9	100	0.2	4.2	10.5	85.1	100
	Vienna Stock Exchange Group (WBAG)	Developed	19.5	31.7	37.8	11.0	100	0.3	5.3	43.6	50.8	100
AT	Vienna (WBAG)	Developed	18.5	35.4	38.5	7.7	100	0.3	6.6	51.2	41.8	100
CZ	Prague (PSE)	Emerging	23.5	17.6	35.3	23.5	100	0.4	1.5	22.8	75.4	100
	Nasdaq Nordic (NDAQ)	Developed	34.6	38.4	16.2	10.7	100	0.6	6.1	16.7	76.6	100
DK	Copenhagen (OMXC)	Developed	42.4	26.5	18.2	12.9	100	0.4	2.6	14.3	82.5	100

Country	Provider	Type of market	% of total listed companies					% of total stock exchange market capitalisation				
			Micro	Small	Mid	Large	Total	Micro	Small	Mid	Large	Total
FI	Helsinki (OMXH)	Developed	36.2	38.5	12.3	13.1	100	0.5	5.4	9.4	84.7	100
SE	Stockholm (OMXS)	Developed	24.0	45.1	19.9	11.0	100	0.5	7.7	22.0	69.9	100
	Nasdaq Baltic (OMXBB)	Frontier	72.6	27.4	0.0	0.0	100	20.0	80.0	0.0	0.0	100
EE	Tallinn (OMXT)	Frontier	66.7	33.3	0.0	0.0	100	18.0	82.0	0.0	0.0	100
LT	Vilnius (OMXV)	Frontier	69.2	30.8	0.0	0.0	100	21.3	78.7	0.0	0.0	100
LV	Riga (OMXR)	Frontier	83.3	16.7	0.0	0.0	100	21.1	78.9	0.0	0.0	100
	Zagreb Stock Exchange (ZSE)	Frontier	64.0	29.0	7.0	0.0	100	5.7	35.0	59.4	0.0	100
HR	Zagreb (ZSE)	Frontier	67.5	26.0	6.5	0.0	100	6.6	31.4	62.1	0.0	100
SI	Ljubljana (LJSE)	Frontier	52.2	39.1	8.7	0.0	100	3.3	44.9	51.7	0.0	100
	Subtotal		**29.5**	**38.6**	**18.4**	**13.5**	**100**	**0.2**	**3.7**	**10.7**	**85.4**	**100**
	Total		**39.1**	**33.7**	**15.5**	**11.6**	**100**	**0.3**	**3.8**	**10.6**	**85.3**	**100**
	Developed		*28.0*	*38.1*	*19.1*	*14.8*	100	*0.2*	*3.4*	*10.2*	*86.3*	100
	Emerging		*74.5*	*17.8*	*5.5*	*2.3*	100	*4.4*	*15.5*	*32.5*	*47.8*	100
	Frontier		*73.5*	*23.5*	*2.7*	*0.2*	100	*10.5*	*44.4*	*37.4*	*7.7*	100

Source: CEPS (2020)

In terms of size of companies listed on regulated markets, large caps (market capitalisation above EUR 5 billion) represent the large majority of the market capitalisation (85% of market capitalisation). The share of the large caps is substantially higher for developed (86%) and emerging markets (48%), compared to frontier markets (8%). The mid caps (market capitalisation between EUR 1 billion and EUR 5 billion) account for 11% of the market capitalisation. The small caps (between EUR 100 million and EUR 1 billion market capitalisation) and micro caps (market capitalisation up to EUR 100 million) together account for less than 5% of the total market capitalisation. This is mainly because there are strict listing requirements on regulated markets. Indeed, the micro caps represent only a very small share of the market capitalisation for developed (0.2%) and emerging markets (4%), whereas they represent a significant share of the market capital of frontier markets (11%) (see Table 3.3).

The distribution of listed companies across sectors seems similar for all three types of markets (see Table 3.4). Most of the EU-listed companies are active in manufacturing (40%) and the financial services sector (18%). The companies active in information and communication (10%), mining and quarrying (7%), and energy (7%) also represent a substantial share of the market capital. The companies in other sectors represent a limited share of the market capitalisation (18%).

Overall, there are large differences in the listings of stock exchanges in the EU-28.

Table 3.4 Companies listed on EU regulated markets by sectors

Provider	Type of market	% of total stock exchange market capitalisation																			
		Agriculture, Forestry and Fishing	Mining and Quarrying	Manufacture	Electricity, Gas, Steam and Air Conditioning Supply	Water Supply; Sewerage; Waste Management, etc.	Construction	Wholesale and Retail Trade	Transporting and Storage	Accommodation and Food	Information and Communication	Financial and Insurance Activities	Real Estate	Professional, Scientific and Technical Activities	Administrative and Support Service Activities	Public Administration and Defence; Social Security	Education	Human Health and Social Work Activities	Arts, Entertainment and Recreation	Other Services Activities	Total
National stock exchanges																					
Deutsche Börse (DBG)	Developed	0.0	5.0	49.2	3.9	0.0	0.9	2.2	3.2	0.0	14.6	14.3	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0
Madrid Stock Exchange (BME)	Developed	0.0	20.3	31.5	0.0	0.0	9.3	0.0	0.0	0.3	10.7	18.7	2.2	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0
Luxembourg Stock Exchange (LuxSE)	Developed	0.0	48.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	20.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Athens Exchange Group (ATHEX)	Emerging	0.0	3.6	30.1	13.6	0.0	5.0	2.4	1.4	0.0	12.1	18.4	5.6	0.0	0.0	0.0	0.0	0.6	7.2	0.0	0.0
Budapest Stock Exchange (BET)	Emerging	0.0	25.5	13.5	3.6	0.0	0.1	0.0	0.2	0.0	5.7	49.7	1.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Warsaw Stock Exchange (GPW)	Emerging	0.1	11.9	9.6	6.6	0.1	0.7	0.3	0.2	1.5	7.8	57.9	2.8	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.1
Bulgarian Stock Exchange (BSO)	Frontier	0.0	1.2	29.1	6.7	0.5	1.2	3.7	3.6	2.4	1.0	40.5	9.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cyprus Stock Exchange (CSE)	Frontier	0.0	0.0	5.4	4.8	0.0	11.7	1.7	0.0	0.0	5.0	56.7	4.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0	0.0
Malta Stock Exchange (MSE)	Frontier	0.0	0.0	7.3	0.0	0.0	0.0	0.0	12.9	0.2	20.1	51.2	7.1	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0
Bucharest Stock Exchange (BVB)	Frontier	0.2	22.0	5.9	3.2	0.0	0.2	0.1	2.9	0.1	1.8	60.6	0.1	2.4	0.0	0.0	0.0	0.4	0.0	0.0	0.2
Bratislava Stock Exchange (BCPB)	Frontier	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0	0.0	22.5	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		**0.0**	**9.5**	**41.0**	**3.4**	**0.0**	**2.7**	**1.5**	**2.2**	**0.2**	**13.2**	**19.2**	**0.8**	**0.0**	**0.0**	**0.0**	**0.0**	**4.6**	**0.1**	**1.5**	**0.0**
Multinational stock exchanges																					
Euronext (ENX)	Developed	0.0	8.0	40.8	2.7	0.0	4.1	3.3	1.2	0.0	9.5	12.6	2.5	10.0	2.1	1.8	0.0	0.0	1.5	0.0	0.0
Brussels (BEL)	Developed	0.0	0.5	49.8	1.6	0.0	1.3	3.0	1.4	0.0	4.6	22.2	7.4	7.7	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Paris (CAC)	Developed	0.0	4.1	42.2	3.1	0.0	4.4	2.9	1.4	0.0	7.5	12.9	1.9	13.5	2.0	2.7	0.0	0.0	1.3	0.0	0.0
Dublin (ISEQ)	Developed	0.0	1.2	27.5	0.0	0.0	33.4	0.0	0.0	0.0	0.1	13.4	1.5	0.0	0.0	0.0	0.0	0.0	22.9	0.0	0.0
Amsterdam (AEX)	Developed	0.0	22.0	37.1	0.0	0.0	0.9	4.2	0.7	0.0	18.1	9.2	2.7	1.6	3.2	0.0	0.0	0.0	0.2	0.0	0.0
Lisbon (PSI)	Developed	0.0	18.4	10.6	39.9	0.0	0.9	17.5	0.8	0.0	5.6	5.2	0.0	0.2	0.0	0.0	0.0	0.0	0.9	0.0	0.0
London Stock Exchange Group (LSEG)	Developed	0.0	6.1	40.2	13.0	1.8	0.0	1.2	0.0	0.0	7.6	21.3	2.9	0.0	0.0	0.0	0.0	5.6	0.0	0.3	0.0
Milan (BI)	Developed	0.0	16.1	28.3	15.8	0.0	0.0	0.0	0.0	0.0	6.1	27.5	1.3	0.0	0.0	0.0	0.0	2.9	0.0	2.0	0.0
London (LSE)	Developed	0.0	4.5	42.2	12.5	2.1	0.0	1.4	0.0	0.0	7.8	20.2	3.2	0.0	0.0	0.0	0.0	6.1	0.0	0.0	0.0
Vienna Stock Exchange Group (WBAG)	Developed	0.0	12.5	14.2	11.8	0.0	2.1	0.0	1.3	0.0	8.4	45.6	3.9	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0

Provider	Type of market	% of total stock exchange market capitalisation																			
		Agriculture, Forestry and Fishing	Mining and Quarrying	Manufacture	Electricity, Gas, Steam and Air Conditioning Supply	Water Supply; Sewerage; Waste Management, etc.	Construction	Wholesale and Retail Trade	Transporting and Storage	Accommodation and Food	Information and Communication	Financial and Insurance Activities	Real Estate	Professional, Scientific and Technical Activities	Administrative and Support Service Activities	Public Administration and Defence; Social Security	Education	Human Health and Social Work Activities	Arts, Entertainment and Recreation	Other Services Activities	Total
Vienna (WBAG)	Developed	0.0	17.0	18.2	8.0	0.0	2.9	0.0	1.7	0.0	4.4	43.1	4.5	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Prague (PSE)	Emerging	0.0	0.0	3.3	22.2	0.0	0.0	0.0	0.0	0.0	19.2	52.5	2.4	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Nasdaq Nordic (NDAQ)	Developed	0.0	3.5	38.9	3.8	0.0	0.0	0.0	0.0	0.0	11.5	22.5	0.2	0.0	0.0	0.0	0.0	14.9	0.0	4.6	0.0
Copenhagen (OMXC)	Developed	0.0	4.8	25.7	9.1	0.0	0.0	0.0	0.0	0.0	1.7	15.5	0.0	0.0	0.0	0.0	0.0	42.8	0.0	0.5	0.0
Helsinki (OMXH)	Developed	0.0	6.2	42.4	5.0	0.0	0.0	0.0	0.0	0.0	25.6	15.6	0.0	0.0	0.0	0.0	0.0	2.3	0.0	2.8	0.0
Stockholm (OMXS)	Developed	0.0	1.4	44.7	0.0	0.0	0.0	0.0	0.0	0.0	10.0	30.1	0.3	0.0	0.0	0.0	0.0	5.7	0.0	7.8	0.0
Nasdaq Baltic (OMXBB)	Frontier	0.0	3.9	12.7	28.3	0.0	2.8	6.6	7.2	0.0	10.9	11.6	3.1	0.0	0.0	0.0	0.0	3.4	9.5	0.0	0.0
Tallinn (OMXT)	Frontier	0.0	0.0	6.5	8.4	0.0	7.2	13.0	18.8	0.0	0.9	15.7	6.0	0.0	0.0	0.0	0.0	0.0	23.5	0.0	0.0
Vilnius (OMXV)	Frontier	0.0	7.4	16.8	38.8	0.0	0.0	3.2	0.0	0.0	20.3	11.1	1.4	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
Riga (OMXR)	Frontier	0.0	1.8	15.5	48.7	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.6	0.0	0.0	0.0	0.0	30.6	0.0	0.0	0.0
Zagreb Stock Exchange (ZSE)	Frontier	0.0	2.9	33.7	0.0	0.0	0.1	3.5	4.9	9.7	9.0	30.9	0.0	4.9	0.0	0.0	0.0	0.0	0.4	0.1	0.0
Zagreb (ZSE)	Frontier	0.1	0.0	32.8	0.0	0.0	0.1	3.7	4.8	12.9	10.2	28.3	0.0	6.6	0.0	0.0	0.0	0.0	0.5	0.0	0.1
Ljubljana (LJSE)	Frontier	0.0	10.9	36.5	0.0	0.0	0.0	2.9	5.0	0.8	5.4	38.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Subtotal		**0.0**	**6.6**	**39.9**	**7.5**	**0.8**	**1.7**	**1.9**	**0.5**	**0.0**	**8.9**	**18.3**	**2.4**	**4.1**	**0.8**	**0.7**	**0.0**	**4.5**	**0.6**	**0.7**	**0.0**
Total		**0.0**	**7.4**	**40.3**	**6.7**	**0.6**	**2.0**	**1.9**	**1.0**	**0.0**	**9.6**	**17.8**	**2.0**	**3.3**	**0.7**	**0.6**	**0.0**	**4.7**	**0.5**	**1.0**	**0.0**
Developed		*0.0*	*7.2*	*40.8*	*6.6*	*0.6*	*2.0*	*1.9*	*1.0*	*0.0*	*9.5*	*17.5*	*2.0*	*3.3*	*0.7*	*0.6*	*0.0*	*4.8*	*0.5*	*1.0*	*100*
Emerging		*0.1*	*13.2*	*17.8*	*10.6*	*0.1*	*1.3*	*0.9*	*0.6*	*0.6*	*15.4*	*33.7*	*3.2*	*0.2*	*0.1*	*0.0*	*0.0*	*0.2*	*2.0*	*0.0*	*100*
Frontier		*0.2*	*13.7*	*20.0*	*5.3*	*0.0*	*0.8*	*2.4*	*5.3*	*4.0*	*7.2*	*34.0*	*1.5*	*3.3*	*0.3*	*0.0*	*0.0*	*0.7*	*1.4*	*0.0*	*100*

Source: CEPS (2020)

3.2.2 SME Growth Markets

Strict requirements of traditional regulated markets can prevent smaller companies from going public. The European Commission introduced SME Growth Markets in Directive 2004/39/EC to reduce the administrative burden on smaller companies and improve their access to public capital. SME Growth Markets are a new type of multilateral trading facilities (MTFs) with more relaxed listing and reporting requirements for issuers compared to regulated markets. For example, SMEs listed on SME Growth Markets have simplified prospectus and insider list disclosure regimes.

Compared to regulated markets that exist in virtually every country, there are far fewer SME Growth Markets. Just over half of the EU-27 Member States (13) and the UK have SME Growth Markets. In total, European SME Growth Markets enlist 1 961 companies (see Table 3.5), which is around a half of all companies listed on European regulated markets (see Table 3.1). Yet the market capitalisation of SME Growth Markets can barely compare to that of regulated markets. Total market capitalisation of SME Growth markets amounts to EUR 173 billion, which is slightly more than 1% of total regulated market capitalisation (EUR 14 866 billion).

Most of the operators of EU SME Growth Markets (11) are subsidiaries of the large multinational stock exchanges. For example Euronext Growth is part of Euronext, First North belongs to Nasdaq, and Alternative Investment Market (AIM) is a subsidiary of LSEG. These MTFs cover multiple countries.

There are also three national-only SME Growth Markets. New Connect belongs to Warsaw Stock Exchange and covers the Polish market. Beam is the subsidiary of the Bulgarian Stock Exchange. Although owning both the Ljubljana and Zagreb stock exchanges, the SME Growth Market Progress of the Zagreb Stock Exchange (ZSE) only covers the Croatian market.

Similarly to regulated markets, SME Growth Markets operated by multinational stock exchanges have more listings and account for a larger share of total market capitalisation. AIM London is the largest SME Growth Market in Europe. It lists somewhat less than half of all the companies (43%) and accounts for 75% of the total market capitalisation (see Table 3.5).

Table 3.5 Total listed companies and market capitalisation of EU SME Growth markets

Country	Provider	Type of market	Total number of companies listed	% of total EU-listed companies	Market capitalisation EUR billion	% of total EU market capitalisation
National stock exchanges						
PL	New Connect (GPW)	Emerging	375	19.1	2.3	1.3
BG	Beam (BSO)	Frontier	0	0.0	0.0	0.0
HR	Progress (ZSE)	Frontier	5	0.3	0.1	0.1
	Subtotal		**380**	**19.4**	**2.5**	**1.4**
Multinational stock exchanges						
	Euronext Growth (ENX)	Developed	237	12.1	18.4	10.7
BE	Brussels (BEL)	Developed	8	0.4	0.5	0.3
FR	Paris (CAC)	Developed	206	10.5	12.3	7.1
IE	Dublin (ISEQ)	Developed	21	1.1	5.6	3.2
PT	Lisbon (PSI)	Developed	2	0.1	0.0	0.0
	Alternative Investment Market (LSEG)	Developed	972	49.6	128.6	74.5
IT	Milan (BI)	Developed	125	6.4	6.2	3.6
UK	London (LSE)	Developed	847	43.2	122.4	70.9
	First North (NDAQ)	Developed	372	19.0	23.2	13.4
DK	Copenhagen (OMXC)	Developed	23	1.2	0.8	0.5
FI	Helsinki (OMXH)	Developed	32	1.6	2.2	1.3
SE	Stockholm (OMXS)	Developed	311	15.9	20.1	11.6
	First North Baltic (OMXBB)	Frontier	6	0.3	0.1	0.0
EE	Tallinn (OMXT)	Frontier	1	0.1	0.0	0.0
LT	Vilnius (OMXV)	Frontier	3	0.2	0.0	0.0
LV	Riga (OMXR)	Frontier	2	0.1	0.0	0.0
	Subtotal		**1 581**	**80.6**	**170.2**	**98.6**
	Total		**1 961**	**100.0**	**172.7**	**100.0**
	Developed		*1 575*	*80.3*	*170.1*	*98.5*
	Emerging		*375*	*19.1*	*2.3*	*1.3*
	Frontier		*11*	*0.6*	*0.2*	*0.1*

Source: CEPS (2020)

One-third of all companies are listed on Euronext Growth and First North. This corresponds to 20% of the total EU-28 market capitalisation. The remainder is distributed between Italian, Polish and Croatian SME Growth Markets. Progress is slower in Croatia, which has the smallest SME Growth Market, with only five listed companies.

Most SME Growth Markets (nine out of 15) cover developed countries. Together they account for nearly all SME Growth Market capitalisation (99%). New Connect in Poland is the only SME Growth Market covering an emerging market. Although it has around 20% of all SME Growth listings, New Connect only accounts for 1.3% of total market capitalisation. All frontier markets combined represent about 0.1% of total market capitalisation.

SME Growth Markets with more than 20 listed companies are less concentrated than regulated markets. Nonetheless, the concentration is still quite high, given that markets only include small and medium companies. For example, in Poland, the 20 largest companies (out of 375) account for half of the market capitalisation on the SME Growth Market. A similar situation can be found in Italy, France and Sweden. The least concentrated market is the AIM in the UK, with the top 20 companies accounting for only one-third of the total market capitalisation (see Table 3.6).

Table 3.6 Market concentration of EU SME Growth Markets

Country	Provider	Type of market	Top 5 stocks as % of market cap	Top 10 stocks as % of market cap	Top 20 stocks as % of market cap
National stock exchanges					
PL	New Connect (GPW)	Emerging	20.9	33.2	48.5
BG	Beam (BSO)	Frontier	N.A.	N.A.	N.A.
HR	Progress (ZSE)	Frontier	100.0	100.0	100.0
	Subtotal		**25.6**	**37.1**	**51.6**
Multinational stock exchanges					
	Euronext Growth (ENX)	Developed	39.7	57.2	69.5
BE	Brussels (BEL)	Developed	99.0	100.0	100.0
FR	Paris (CAC)	Developed	26.7	40.3	54.6
IE	Dublin (ISEQ)	Developed	62.8	90.5	99.8
PT	Lisbon (PSI)	Developed	100.0	100.0	100.0
	Alternative Investment Market (LSEG)	Developed	14.1	22.2	34.2
IT	Milan (BI)	Developed	24.4	37.1	53.7
UK	London (LSE)	Developed	13.6	21.5	33.2
	First North (NDAQ)	Developed	33.3	45.3	59.0
DK	Copenhagen (OMXC)	Developed	73.8	90.8	99.5
FI	Helsinki (OMXH)	Developed	51.4	77.0	95.0
SE	Stockholm (OMXS)	Developed	29.4	39.8	53.2
	First North Baltic (OMXBB)	Frontier	100.0	100.0	100.0
EE	Tallinn (OMXT)	Frontier	100.0	100.0	100.0
LT	Vilnius (OMXV)	Frontier	100.0	100.0	100.0
LV	Riga (OMXR)	Frontier	100.0	100.0	100.0
	Subtotal		**19.5**	**29.2**	**41.4**
	Total		**19.6**	**29.3**	**41.5**
	Developed		*19.5*	*29.1*	*41.4*
	Emerging		*20.9*	*33.2*	*48.5*
	Frontier		*100.0*	*100.0*	*100.0*

Source: CEPS (2020)

Nearly all companies listed on SME Growth Markets are micro- and small-cap companies. Micro caps constitute the bulk of listed companies (82%) but account for only 20% of the total market capitalisation. Nearly 17% of all listed companies are small caps, taking up slightly more than half of the total market capitalisation (55%).

Only 1% of all listed companies are mid caps. These are mostly listed on large multinational SME Growth Markets such as Euronext Growth, AIM and First North. Although very few in number, mid-sized companies account for exactly 25% of the market capitalisation (see Table 3.7).

Sectoral distribution of companies listed at SME Growth Markets is similar to regulated markets, with the largest sectors being financial services, manufacture and ICT. However, distribution of market capitalisation between these sectors is different. For regulated markets the bulk of market capitalisation was concentrated in manufacturing (40%), followed by financial services (18%) and ICT (10%) (see Table 3.4). For SME Growth Markets most of the market capitalisation (43%) is concentrated in financial services, followed by manufacture (22%) and ICT (10%) (see Table 3.8).

Table 3.7 Companies listed on EU SME Growth Markets by size

Country	Provider	Type of market	% of total listed companies					% of total stock exchange market capitalisation				
			Micro	Small	Mid	Large	Total	Micro	Small	Mid	Large	Total
National stock exchanges												
PL	New Connect (GPW)	Emerging	99.5	0.5	0.0	0.0	100	88.6	11.4	0.0	0.0	100
BG	Beam (BSO)	Developed	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
HR	Progress (ZSE)	Developed	80.0	20.0	0.0	0.0	100	26.5	73.5	0.0	0.0	100
	Subtotal		**99.2**	**0.8**	**0.0**	**0.0**	**100**	**84.9**	**15.1**	**0.0**	**0.0**	**100**
Multinational stock exchanges												
	Euronext Growth (ENX)	Developed	82.3	17.3	0.4	0.0	100	26.9	67.3	5.8	0.0	100
BE	Brussels (BEL)	Developed	87.5	12.5	0.0	0.0	100	40.1	59.9	0.0	0.0	100
FR	Paris (CAC)	Developed	85.9	13.6	0.5	0.0	100	36.6	54.7	8.7	0.0	100
IE	Dublin (ISEQ)	Developed	42.9	57.1	0.0	0.0	100	3.7	96.3	0.0	0.0	100
PT	Lisbon (PSI)	Developed	100.0	0.0	0.0	0.0	100	100.0	0.0	0.0	0.0	100
	Alternative Investment Market (LSEG)	Developed	74.2	24.0	1.9	0.0	100	15.6	54.3	30.1	0.0	100
IT	Milan (BI)	Developed	87.2	12.8	0.0	0.0	100	52.3	47.7	0.0	0.0	100
UK	London (LSE)	Developed	72.3	25.6	2.1	0.0	100	13.7	54.6	31.6	0.0	100
	First North (NDAQ)	Developed	86.3	13.2	0.5	0.0	100	33.6	51.6	14.8	0.0	100
DK	Copenhagen (OMXC)	Developed	87.0	13.0	0.0	0.0	100	44.1	55.9	0.0	0.0	100
FI	Helsinki (OMXH)	Developed	75.0	25.0	0.0	0.0	100	31.6	68.4	0.0	0.0	100
SE	Stockholm (OMXS)	Developed	87.1	12.2	0.6	0.0	100	33.1	49.8	17.1	0.0	100
	First North Baltic (OMXBB)	Frontier	100.0	0.0	0.0	0.0	100	100.0	0.0	0.0	0.0	100
EE	Tallinn (OMXT)	Frontier	100.0	0.0	0.0	0.0	100	100.0	0.0	0.0	0.0	100
LT	Vilnius (OMXV)	Frontier	100.0	0.0	0.0	0.0	100	100.0	0.0	0.0	0.0	100
LV	Riga (OMXR)	Frontier	100.0	0.0	0.0	0.0	100	100.0	0.0	0.0	0.0	100
	Subtotal		**78.2**	**20.4**	**1.3**	**0.0**	**100**	**19.3**	**55.3**	**25.4**	**0.0**	**100**
	Total		**82.3**	**16.6**	**1.1**	**0.0**	**100**	**20.2**	**54.8**	**25.0**	**0.0**	**100**
	Developed		*78.2*	*20.5*	*1.3*	*0.0*	*100*	*19.2*	*55.4*	*25.4*	*0.0*	*100*
	Emerging		*99.5*	*0.5*	*0.0*	*0.0*	*100*	*88.6*	*11.4*	*0.0*	*0.0*	*100*
	Frontier		*90.9*	*9.1*	*0.0*	*0.0*	*100*	*48.0*	*52.0*	*0.0*	*0.0*	*100*

Source: CEPS (2020)

Table 3.8 Companies listed on SME Growth Markets by sectors

Country	Provider	Type of market	% of total stock exchange market capitalisation																			
			Agriculture, Forestry and Fishing	Mining and Quarrying	Manufacture	Electricity, Gas, Steam and Air Conditioning Supply	Water Supply; Sewerage; Waste Management, etc.	Construction	Wholesale and Retail Trade	Transporting and Storage	Accommodation and Food	Information and Communication	Financial and Insurance Activities	Real Estate	Professional, Scientific and Technical	Administrative and Support Service Activities	Public Administration and Defence: Social	Education	Human Health and Social Work Activities	Arts, Entertainment and Recreation	Other Services Activities	Total
National stock exchanges																						
PL	New Connect (GPW)	Emerging	0.7	0.5	18.2	13.8	3.5	0.9	2.8	1.6	0.3	28.7	14.5	2.9	9.9	0.0	0.0	0.0	1.3	0.5	0.0	100
BG	Beam (BSO)	Frontier	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
HR	Progress (ZSE)	Frontier	0.0	0.0	91.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	2.3	0.0	0.0	0.0	0.0	0.0	0.0	100
	Subtotal		**0.7**	**0.5**	**22.6**	**12.9**	**3.3**	**0.8**	**2.7**	**1.5**	**0.3**	**27.0**	**13.6**	**3.1**	**9.5**	**0.0**	**0.0**	**0.0**	**1.2**	**0.4**	**0.0**	**100**
Multinational stock exchanges																						
	Euronext Growth (ENX)	Developed	0.0	0.9	32.5	0.7	0.0	2.6	6.6	0.4	0.0	22.6	8.4	1.2	12.9	4.5	0.3	0.0	0.0	6.4	0.0	100
BE	Brussels (BEL)	Developed	0.0	0.0	59.9	0.0	0.0	0.0	0.0	0.0	0.0	12.5	12.4	0.0	15.0	0.1	0.0	0.0	0.0	0.1	0.0	100
FR	Paris (CAC)	Developed	0.0	0.9	30.7	1.0	0.0	3.9	5.3	0.7	0.0	26.0	0.5	0.9	15.0	5.1	0.5	0.0	0.0	9.6	0.0	100
IE	Dublin (ISEQ)	Developed	0.0	1.0	34.2	0.0	0.0	0.0	10.0	0.0	0.0	16.0	25.0	2.0	8.1	3.8	0.0	0.0	0.0	0.0	0.0	100
PT	Lisbon (PSI)	Developed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	86.6	13.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
	Alternative Investment Market (LSEG)	Developed	0.0	3.7	16.4	3.0	1.3	0.0	4.8	0.0	0.0	8.1	52.9	6.5	0.0	0.0	0.0	0.0	2.9	0.0	0.5	100
IT	Milan (BI)	Developed	0.0	3.8	44.5	2.0	0.0	0.0	0.0	0.0	0.0	13.6	15.2	0.0	0.0	0.0	0.0	0.0	10.5	0.0	10.4	100
UK	London (LSE)	Developed	0.0	3.7	15.0	3.1	1.3	0.0	5.0	0.0	0.0	7.8	54.8	6.8	0.0	0.0	0.0	0.0	2.5	0.0	0.0	100
	First North (NDAQ)	Developed	0.0	5.4	41.6	0.2	0.0	0.0	0.3	0.0	0.0	11.1	16.1	0.2	0.0	0.0	0.0	0.0	14.7	0.0	10.4	100
DK	Copenhagen (OMXC)	Developed	0.0	0.0	47.2	0.0	0.0	0.0	0.0	0.0	0.0	11.1	9.1	0.0	0.0	0.0	0.0	0.0	1.7	0.0	30.9	100
FI	Helsinki (OMXH)	Developed	0.0	0.8	45.8	0.0	0.0	0.0	0.0	0.0	0.0	25.7	10.1	0.0	0.0	0.0	0.0	0.0	9.5	0.0	8.0	100
SE	Stockholm (OMXS)	Developed	0.0	6.2	40.8	0.2	0.0	0.0	0.4	0.0	0.0	9.5	17.1	0.2	0.0	0.0	0.0	0.0	15.8	0.0	9.8	100
	First North Baltic (OMXBB)	Frontier	0.0	0.0	70.4	0.0	0.0	0.0	9.8	0.0	0.0	0.7	19.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
EE	Tallinn (OMXT)	Frontier	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
LT	Vilnius (OMXV)	Frontier	0.0	0.0	28.0	0.0	0.0	0.0	24.4	0.0	0.0	0.0	47.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
LV	Riga (OMXR)	Frontier	0.0	0.0	98.6	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
	Subtotal		**0.0**	**3.6**	**21.6**	**2.4**	**0.9**	**0.3**	**4.4**	**0.0**	**0.0**	**10.0**	**43.0**	**5.1**	**1.4**	**0.5**	**0.0**	**0.0**	**4.2**	**0.7**	**1.8**	**100**
	Total		**0.0**	**3.6**	**21.6**	**2.5**	**1.0**	**0.3**	**4.3**	**0.1**	**0.0**	**10.3**	**42.6**	**5.0**	**1.5**	**0.5**	**0.0**	**0.0**	**4.2**	**0.7**	**1.8**	**100**
	Developed		*0.0*	*3.6*	*21.6*	*2.4*	*0.9*	*0.3*	*4.4*	*0.0*	*0.0*	*10.0*	*43.1*	*5.1*	*1.4*	*0.5*	*0.0*	*0.0*	*4.2*	*0.7*	*1.8*	*100*
	Emerging		*0.7*	*0.5*	*18.2*	*13.8*	*3.5*	*0.9*	*2.8*	*1.6*	*0.3*	*28.7*	*14.5*	*2.9*	*9.9*	*0.0*	*0.0*	*0.0*	*1.3*	*0.5*	*0.0*	*100*
	Frontier		*0.0*	*0.0*	*85.4*	*0.0*	*0.0*	*0.0*	*2.9*	*0.0*	*0.0*	*0.2*	*5.6*	*4.3*	*1.6*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*100*

Source: CEPS (2020)

Overall, EU SME Growth Markets are much smaller both in number and size when compared to regulated markets. Although they list nearly half as many companies as regulated markets, in terms of size they constitute only 1% of the total market capitalisation.

The largest EU SME Growth Markets are subsidiaries of the large multinational stock exchanges (i.e. Euronext Growth, AIM, and First North). These MTFs already existed and operated long before the introduction of SME Growth Markets but received the SME Growth Market status after implementation of the Directive.

SMEs from emerging and frontier markets remain under-represented, as most SME Growth Markets cover developed countries. The results also indicate a certain reluctance among SMEs to list their stock. SME Growth Markets covering frontier markets have very few to virtually no SME listings.

SME Growth Markets have similar patterns to regulated markets when it comes to their concentration, size or sectoral distribution. Larger well-established companies take up the bulk of market capitalisation. For instance, top 20 stocks on all SME Growth Markets, except for AIM in the UK, account for at least half of the market capitalisation on the respective MTF. Nearly half of the market capitalisation on EU SME Growth Markets is generated by companies active in the financial sector.

3.3 Current coverage of EU equity indices

Stock exchanges and independent providers currently offer around 5 000 indices covering EU-listed companies (see Table 3.9). About a fifth of the indices is provided by stock exchanges (1 136 or about 23% of all indices). On average, a stock exchange in the EU provides around 37 different stock indices. But there is large variation, with some exchanges providing just one index (SI and SK) to 310 (DE). Indeed, many emerging and frontier markets have substantially fewer indices, compared to the developed markets. The only exception is Warsaw Stock Exchange in Poland, which offers 37 different stock indices including ESG-driven.

Table 3.9 EU equity indices provided by stock exchanges and independent providers

Country	Provider name	Type of market	Total number of indices	% of total EU indices
Stock exchanges				
National stock exchanges				
DE	Deutsche Börse (DBG)	Developed	310	6.2
ES	Madrid Stock Exchange (BME)	Developed	30	0.6
LU	Luxembourg Stock Exchange (LuxSE)	Developed	3	0.1
EL	Athens Exchange Group (ATHEX)	Emerging	27	0.5
HU	Budapest Stock Exchange (BET)	Emerging	3	0.1
PL	Warsaw Stock Exchange (GPW)	Emerging	37	0.7
BG	Bulgarian Stock Exchange (BSO)	Frontier	4	0.1
CY	Cyprus Stock Exchange (CSE)	Frontier	8	0.2
MT	Malta Stock Exchange (MSE)	Frontier	2	0
RO	Bucharest Stock Exchange (BVB)	Frontier	6	0.1
SK	Bratislava Stock Exchange (BCPB)	Frontier	1	0
	Subtotal		**431**	**8.6**
Multinational stock exchanges				
	Euronext (ENX)	Developed	238	4.8
NL	Group (ENX)	Developed	77	1.5
BE	Brussels (BEL)	Developed	25	0.5
FR	Paris (CAC)	Developed	69	1.4
IE	Dublin (ISEQ)	Developed	5	0.1
NL	Amsterdam (AEX)	Developed	40	0.8

Country	Provider name	Type of market	Total number of indices	% of total EU indices
PT	Lisbon (PSI)	Developed	22	0.4
	London Stock Exchange Group (LSEG)	Developed	96	1.9
IT	Milan (BI)	Developed	26	0.5
UK	London (LSE)	Developed	70	1.4
	Vienna Stock Exchange Group (WBAG)	Developed	60	1.2
AT	Vienna (WBAG)	Developed	58	1.2
CZ	Prague (PSE)	Emerging	2	0.0
	Nasdaq Nordic (NDAQ)	Developed	329	6.6
SE	Group (NDAQ)	Developed	86	1.7
SE	Stockholm (OMXS)	Developed	54	1.1
FI	Helsinki (OMXH)	Developed	55	1.1
DK	Copenhagen (OMXC)	Developed	76	1.5
	Baltic (OMXBB)	Developed	29	0.6
EE	Group (OMXBB)	Frontier	26	0.5
EE	Tallinn (OMXT)	Frontier	1	0.0
LT	Vilnius (OMXV)	Frontier	1	0.0
LV	Riga (OMXR)	Frontier	1	0.0
	Zagreb Stock Exchange (ZSE)	Frontier	11	0.2
HR	Zagreb (ZSE)	Frontier	10	0.2
SI	Ljubljana (LJSE)	Frontier	1	0.0
	Subtotal		**705**	**14.1**
Independent providers				
CH	Stoxx (DBG)		1 575	31.6
DE	Solactive		276	5.5
UK	Financial Times Stock Exchange Group (FTSE Russell)		289	5.8
UK	IHS Markit		298	6.0
US	Morgan Stanley Capital International (MSCI)		848	17.0
US	Morningstar		257	5.2
US	Standard & Poor's (S&P)		305	6.1
	Subtotal		**3 848**	**77.2**
	Total		**4 984**	**100.0**

Source: CEPS (2020)

The majority of EU indices are provided by independent providers (3 848 or 77%). Stoxx and MSCI are the largest providers, with 1 575 and 848 indices respectively. The three EU independent providers (Solactive, FTSE Russell, IHS Markit) account for about one-fifth of the indices offered by independent providers. The independent providers offer about 550 indices on average. This is more than 15 times more than an average EU stock exchange. This might be explained by the fact that the indices form the core business for the independent providers and their indices cover companies from more than one exchange, which gives them many more options for indices.

The differences between stock exchanges and independent providers persist also when looking at the different types of indices provided (see Table 3.10). Nearly half of all indices (49%) provided by European stock exchanges are sectoral (i.e. only include companies from one specific sector). This is more than one and a half times the share of independent providers, which only have one-third of all indices dedicated to specific sectors. Among stock exchanges, the largest share of sectoral indices per provider was observed in Germany (61%), Poland (49%), and Nordic (71%) and Baltic (76%) countries.

Thematic indices are slightly less popular among providers. Only around one-tenth of all indices provided by stock exchanges are based on a theme, but there are large differences between providers. Some stock exchanges such as Euronext have half of all their indices theme driven and some, such as the stock exchanges in Hungary, Romania and Croatia, do not provide any thematic indices. In turn, nearly all independent providers (except IHS

Markit) have more than one-tenth of their indices dedicated to a specific theme. Solactive stands out, with nearly a quarter (24%) of all indices theme driven.

The share of customised indices in all EU indices is marginal, with only 1% for stock exchanges and 0.5% for independent providers. Most requests for new indices are addressed by new indices that are not customised, which also allows other providers of index-related products to use the index for their products (funds, derivatives, etc.).

Only a few exchanges issue customised indices. DBG and Euronext are the largest providers, with six and five customised indices respectively. DBG's customised indices are licensed by various institutional investors. Euronext develops indices jointly with non-profit organisations (Ethibel, FAS) and institutional investors (Mirova).

At least half of all indices provided by stock exchanges and around two-thirds by independent providers do not cover sectoral, thematic or customised indices. This includes indices that cover a particular geographical region or company size (micro, small, mid and large).

Table 3.10 Sectoral, thematic and customised EU indices

Country	Provider name	Number of indices			% of total indices per provider		
		Sectoral	Thematic	Customised	Sectoral	Thematic	Customised
Stock exchanges							
National stock exchanges							
BG	Bulgarian Stock Exchange (BSO)	1	0	0	25.0	0	0
CY	Cyprus Stock Exchange (CSE)	2	0	0	25.0	0	0
DE	Deutsche Börse (DBG)	188	15	6	60.6	4.8	1.9
EL	Athens Exchange Group (ATHEX)	16	3	0	59.3	11.1	0
ES	Madrid Stock Exchange (BME)	3	3	0	10.0	10.0	0
HU	Budapest Stock Exchange (BET)	0	0	0	0	0	0
LU	Luxembourg Stock Exchange (LuxSE)	0	1	0	0	33.3	0
MT	Malta Stock Exchange (MSE)	0	1	0	0	50.0	0
PL	Warsaw Stock Exchange (GPW)	18	3	1	48.6	8.1	2.7
RO	Bucharest Stock Exchange (BVB)	2	0	0	33.3	0	0
SK	Bratislava Stock Exchange (BCPB)	0	0	0	0	0	0
	Subtotal	**230**	**26**	**7**	**53.4**	**6.0**	**1.6**
Multinational stock exchanges							
	Euronext (ENX)	53	50	5	22.3	21.0	2.1
NL	Group (ENX)	14	38	3	18.2	49.4	3.9
BE	Brussels (BEL)	10	0	0	40.0	0	0
FR	Paris (CAC)	10	12	2	14.5	17.4	2.9
IE	Dublin (ISEQ)	0	0	0	0	0	0
NL	Amsterdam (AEX)	9	0	0	22.5	0	0
PT	Lisbon (PSI)	10	0	0	45.5	0	0
	London Stock Exchange Group (LSEG)	15	20	0	15.6	20.8	0
IT	Milan (BI)	0	9	0	0	34.6	0
UK	London (LSE)	15	11	0	21.4	15.7	0
	Vienna Stock Exchange Group (WBAG)	11	3	2	18.3	5.0	3.3
AT	Vienna (WBAG)	11	3	2	19.0	5.2	3.4
CZ	Prague (PSE)	0	0	0	0	0	0
	Nasdaq Nordic (NDAQ)	235	5	0	71.4	1.5	0
SE	Group (NDAQ)	71	0	0	82.6	0	0
SE	Stockholm (OMXS)	44	0	0	81.5	0	0
FI	Helsinki (OMXH)	47	1	0	85.5	1.8	0

Country	Provider name	Number of indices			% of total indices per provider		
		Sectoral	Thematic	Customised	Sectoral	Thematic	Customised
DK	Copenhagen (OMXC)	51	4	0	67.1	5.3	0
	Baltic (OMXBB)	22	0	0	75.9	0	0
	Group (OMXBB)	22	0	0	84.6	0	0
EE	Tallinn (OMXT)	0	0	0	0	0	0
LT	Vilnius (OMXV)	0	0	0	0	0	0
LV	Riga (OMXR)	0	0	0	0	0	0
	Zagreb Stock Exchange (ZSE)	5	0	0	45.5	0	0
HR	Group (ZSE)	5	0	0	50.0	0	0
SI	Ljubljana (LJSE)	0	0	0	0	0	0
	Subtotal	**319**	**78**	**7**	**45.2**	**11.1**	**1.0**
Independent providers							
CH	Stoxx (DBG)	455	190	4	28.9	12.1	0.3
DE	Solactive	71	67	2	25.7	24.3	0.7
UK	Financial Times Stock Exchange Group (FTSE Russell)	66	39	0	22.8	13.5	0
UK	IHS Markit	223	0	0	74.8	0	0
US	Morgan Stanley Capital International (MSCI)	133	86	6	15.7	10.1	0.7
US	Morningstar	88	34	0	34.2	13.2	0
US	Standard & Poor's (S&P)	118	46	9	38.7	15.1	3.0
	Subtotal	**1 154**	**462**	**21**	**30.0**	**12.0**	**0.5**
	Total	**1 703**	**566**	**35**	**34.2**	**11.4**	**0.7**

Source: CEPS (2020)

Box 2. All Share, European and Euro-indices

There are several indices that cover a substantial share of the listed companies across the globe or Europe, as the CMU All Share Index is intended to do. Five indices in total have been identified that have substantial similarities with the envisaged CMU All Share Index:

MSCI World All Cap Index features about 12 000 companies of different sizes across 23 developed markets. The **MSCI All Country World Index (ACWI) All cap** index has a more extensive universe and also features stocks from 26 emerging markets, increasing its number of constituents to about 15 000 companies. The sectoral distribution in these two indices is very similar with information and communication, financial services and healthcare forming the largest sectors. In terms of country distribution, both indices are dominated by stocks from the US, Japan and the UK.

Stoxx Global Total Market Index includes about 9 000 companies covering a total of 64 developed and emerging markets. Stocks meeting the minimum requirements are eligible. The index aims to cover 95% of the global free-float market capitalisation. The **Stoxx Europe Total Market Index** covers about 1 500 companies of all sizes from 16 EU Member States and Switzerland. Its universe serves as a basis for four indices: Euro Stoxx Total Market, Stoxx Europe excluding UK Total Market, Stoxx Nordic Total Market and Stoxx Europe ex-Eurozone Total Market indices. **Euro Stoxx Total Market Index** also represents stocks of all sizes, although the index universe is limited to euro area countries only. The index includes about 650 companies, which is said to cover around 95% of the free-float market capitalisation in the euro area. Prevailing sectors are manufacturing, information and communication, and healthcare. The stocks from France, Germany and the Netherlands form the largest weights in the index.

Wilshire 5000 Index covers all US-listed companies (about 3 500). The prevailing sectors are information and communication, financial services and healthcare. The index is calculated under three different methodologies: full market capitalisation weighted, free-float adjusted market capitalisation weighted, and equally weighted.

In practice, none of the share indices, except the Wilshire 5000 Index, include all shares in the respective market, such as the envisaged CMU All Share Index. Indeed, the global indices exclude frontier markets. Moreover, some all cap indices do not necessarily include all stocks from eligible equity universe. For example, the MSCI ACWI All Cap Index covers developed and emerging countries, but only includes micro caps from developed countries. Unlike Stoxx, MSCI do not have all cap indices for the EU. The European (MSCI AC Europe) and euro area (MSCI EMU) indices only cover large and mid caps. Moreover, the bottom 5% of companies are usually excluded from indices because of their relatively small size.

Additionally, the indices also have other more company-specific minimum requirements for inclusion, such as free-float adjusted market capitalisation, liquidity, foreign inclusion factor, length of trading, and so on. To be included in most MSCI indices, companies would have to trade for at least three months before the Index Review and be sufficiently liquid. MSCI determines liquidity of stocks based on the 'annual traded value ratio'[6] and 'frequency of trading'.[7] This ensures short- and long-term liquidity. Stoxx and Wilshire mitigate illiquidity of constituents by setting a threshold on maximum number of non-trading days. Securities that were not trading cumulatively for more than 10 days (Stoxx)

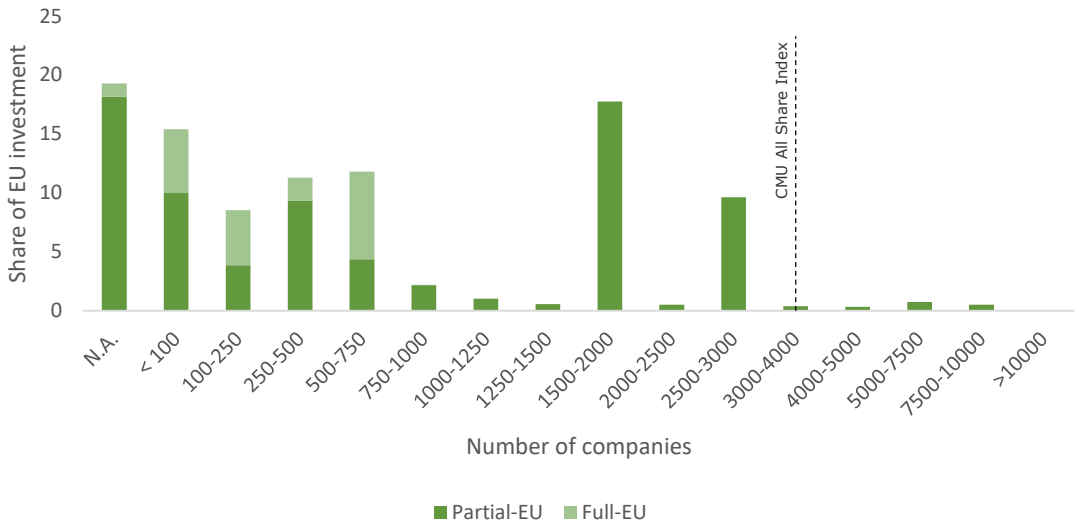
[6] Ratio of stock's monthly median traded value to its free-float market capitalisation.
[7] Ratio of number of days equity is traded to maximum possible number of trading days.

or 20 days (Wilshire) during the three-month period before the scheduled review are removed from the index, except suspended stocks.[8]

The main difference between MSCI all share indices and Stoxx and Wilshire indices is that MSCI does not aggregate different securities of the same company for the assessment, but rather evaluates them separately. Indeed, the inclusion of one security to the index does not necessarily lead to an automatic inclusion of other securities of the same company (and vice versa). Moreover, a security should not have market capitalisation less than 50% of the company's full market value. This means that, in practice, maximum one security of a company is included.

For investment channelled into all share indices (see Table 3.11), it appears that large all cap (i.e. MSCI World All Cap, Stoxx Global TMI) indices attract marginal share of capital and investors. However, when the equity universe is limited to large- and mid-cap stocks (i.e. MSCI World, Stoxx Europe 600, Euro Stoxx), the number of funds using the index and their respective investment are significantly larger. These indices represent nearly half of all EU investment devoted to MSCI (40%) and Stoxx (42%). As the index rules are the same for the different index issuers, the difference in investments is due to the exclusion criteria. Indeed, there are much larger investments in indices that cover only larger, more liquid shares than all share indices.

Figure 3.1 Index-related investment by number of companies



Source: CEPS (2020)

From the breakdown of all EU index-related investment (see Figure 3.1) it is clear that most popular indices are those with less than 750 companies. However, with the MSCI World (about 1 650 companies) and MSCI ACWI (about 3 000) there are two indices with substantially more companies covered that attract significant investments, around 15% and 7% of the total index-linked EU investments respectively. The distribution in number of funds follows a similar pattern, though the funds investing in large companies are on average larger in size.

[8] For Stoxx, companies that were suspended due to corporate actions are eligible. Wilshire evaluates suspended stocks individually.

Table 3.11 All Share, European and Euro-indices

Index name	Companies	Region	Excluded	Investments							
				EU mutual funds		EU ETFs		Total EU		Non-EU ETFs	
				NR	EUR bn	NR	EUR bn	NR	EUR bn	NR	EUR bn
MSCI ACWI All Cap	14 825	23 Developed & 26 Emerging Markets	Micro caps in Emerging Markets	-	-	-	-	-	-	-	-
MSCI ACWI	3 050	23 Developed & 26 Emerging Markets	Small and micro caps	677	223.5	8	3.9	685	227.4	13	10.6
MSCI World All Cap	11 768	23 Developed Markets	-	1	0.1	-	-	1	0.1	-	-
MSCI World	1 646	23 Developed Markets	Small and micro caps	1 092	426.8	21	61.4	1 113	488.2	14	2.8
MSCI AC Europe	507	15 Developed & 6 Emerging Markets	Small and micro caps	1	0.5	-	-	1	0.5	-	-
MSCI EMU	243	10 Developed Markets	Small and micro caps	193	66.4	6	9.1	199	75.6	2	5.3
% of total MSCI				*40.3*	*41.8*	*7.6*	*30.1*	*37.5*	*40.3*	*7.2*	*3.6*
Stoxx Global Total Market	9 069	25 Developed, 21 Emerging & 19 Frontier Markets	-	1	0.0	-	-	1	0.0	-	-
Stoxx Europe Total Market	1 437	17 Developed Markets	-	2	0.7	-	-	2	0.7	-	-
Stoxx Europe 600	600	17 Developed Markets	Micro caps	206	29.9	8	10.0	214	39.9	-	-
Euro Stoxx Total Market	633	11 Developed Markets	-	2	0.1	-	-	2	0.1	-	-
Euro Stoxx	305	11 Developed Markets	Micro caps	125	26.4	2	2.0	127	28.4	-	-
% of total Stoxx				*42.3*	*57.2*	*10.4*	*18.5*	*35.9*	*41.9*	*-*	*-*
Wilshire 5000	3 538	USA	-	-	-	-	-	-	-	-	-
% of total Wilshire				-	-	-	-	-	-	-	-
Total				**2 300**	**774.5**	**45**	**86.5**	**2 345**	**860.9**	**29**	**18.8**
% of total				***19.8***	***20.8***	***3.9***	***15.2***	***18.4***	***20.1***	***1.3***	***0.6***

Source: CEPS (2020)

Stock exchanges and independent providers follow a somewhat similar approach in design of sectoral indices (see Table 3.12). Indeed, the manufacturing sector is the most important for both in number of indices, but the share of sectoral indices in manufacture (15%) is almost twice as high as that of independent providers (8%). The second most popular sector is information and communication, which accounts for about 8% of all indices provided by the stock exchanges and 4% of all indices provided by independent providers. It is closely followed by the financial and real estate sectors, which in total account for 4% and 3% of all EU indices respectively.

Table 3.12 EU indices by sector

Sector name	Number of indices			% of total indices		
	Stock exchanges	Independent providers	Total	Stock exchanges	Independent providers	Total
Agriculture, Forestry and Fishing	3	5	8	0.3	0.1	0.2
Mining and Quarrying	18	112	130	1.6	2.9	2.6
Manufacture	166	314	480	14.6	8.2	9.6
Electricity, Gas, Steam and Air Conditioning Supply	42	59	101	3.7	1.5	2.0
Water Supply; Sewerage; Waste Management and Remediation Activities	18	45	63	1.6	1.2	1.3
Construction	19	19	38	1.7	0.5	0.8
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	22	37	59	1.9	1.0	1.2
Transporting and Storage	15	48	63	1.3	1.2	1.3
Accommodation and Food Service Activities	1	-	1	0.1	-	0.0
Information and Communication	91	156	247	8.0	4.1	5.0
Financial and Insurance Activities	60	134	194	5.3	3.5	3.9
Real Estate	31	116	147	2.7	3.0	2.9
Professional, Scientific and Technical Activities	13	6	19	1.1	0.2	0.4
Administrative and Support Service Activities	4	18	22	0.4	0.5	0.4
Public Administration and Defence; Compulsory Social Security	2	5	7	0.2	0.1	0.1
Education	-	-	-	-	-	-
Human Health and Social Work Activities	21	50	71	1.8	1.3	1.4
Arts, Entertainment and Recreation	12	20	32	1.1	0.5	0.6
Other Services Activities	11	10	21	1.0	0.3	0.4
Non-sectoral indices	587	2 694	3 281	51.7	70.0	65.8
Total	**1 136**	**3 848**	**4 984**	**100**	**100**	**100**

Source: CEPS (2020)

The most popular thematic indices are ESG, with about 4% of stock exchange-provided indices and 8% of all indices provided by independent providers (see Table 3.13). The second most popular theme is Growth and Innovation with 3% of indices for stock exchanges and 1% of all indices of independent providers. Other thematic indices do not exceed 1% of all indices. Finally, unlike independent providers, stock exchanges have no indices devoted to religious or urbanisation themes.

Table 3.13 EU indices by theme

Theme	Number of indices			% of all indices provided		
	Stock exchanges	Independent providers	Total	Stock exchanges	Independent providers	Total
Demographic Development	-	9	9	-	0.2	0.2
Diversity	1	11	12	0.1	0.3	0.2
Energy and Climate Change	7	9	16	0.6	0.2	0.3
ESG (Environmental, Social and Corporate Governance)	45	315	360	4.0	8.2	7.2
Ethical	4	36	40	0.4	0.9	0.8
Growth and Innovation	39	48	87	3.4	1.2	1.7
Luxury	2	1	3	0.2	0.0	0.1
Religion	-	26	26	-	0.7	0.5
Special Ownership	5	1	6	0.4	0.0	0.1
Sports	1	1	2	0.1	0.0	0.0
Urbanisation	-	3	3	-	0.1	0.1
Non-thematic indices	1 032	3 388	4 420	90.8	88.0	88.7
Total	**1 136**	**3 848**	**4 984**	**100**	**100**	**100**

Source: CEPS (2020)

For most of the indices, both the price and (net and/or gross) return values or only the (gross and/or net) return values are calculated.[9] However, there are different practices between stock exchanges and independent index providers. Most of the stock exchanges calculate both the price and (gross and/or net) return indices (68% of stock exchange-issued indices), while the practice of independent providers is less pronounced. The indices of the independent providers are mostly only provided as (gross and/or net) return indices (38% of independent provider issued indices), while just price (25%) or a combination of price and return values (29%) are not uncommon either (see Table 3.14). Price indices seem to be presented primarily for historic reasons – according to the interviews, the main demand of investors is currently net return indices.

Table 3.14 Total EU indices by calculation type

Calculation type	Number of indices			% of all indices provided		
	Stock exchanges	Independent providers	Total	Stock exchanges	Independent providers	Total
Price	80	974	1 054	7.0	25.3	21.1
Return	202	1 452	1 654	17.8	37.7	33.2
Both price and return	768	1 126	1 894	67.6	29.3	38.0
Other	86	296	382	7.6	7.7	7.7
Total	**1 136**	**3 848**	**4 984**	**100**	**100**	**100**

Source: CEPS (2020)

[9] Most indices are calculated based on price and (gross and/or net) return methodologies. Price indices are usually calculated as weighted average of constituents' stock prices. Return indices take besides the share price and the dividend payouts are considered and reinvested. The returns before withholding tax are gross return and after withholding tax are net return.

Overall, the mapping of the existing index providers and indices shows that in terms of index 'supply', the market, in general, seems well covered, perhaps even to the point of being relatively saturated. However, there are significant differences in coverage between independent providers and stock exchanges. National markets are better covered by stock exchanges, while sectors and themes are better covered by independent providers. This might well be related to the commercial interest in various index-related products, where most index users and investors base their investment strategies on well-diversified (markets and sectors) and portfolios based on factors (themes). A further important factor when it comes to CMU Index Family is geographical coverage by stock exchanges and independent providers. Independent providers focus mostly on the coverage of global and developed markets, with some limited coverage of emerging markets, while completely 'ignoring' frontier markets. By their very function, however, stock exchanges provide indices that cover frontier markets as well (i.e. stock exchanges located in frontier countries providing indices for their own markets). Some larger stock exchanges also offer indices covering frontier markets (e.g. Vienna Stock Exchange has a family of indices covering CEE). Finally, the mapping of the coverage of market segments also shows that: 1) there seems to be a certain 'home-bias' effect when it comes to the market coverage – for example, Stoxx (a Swiss-based company) as independent provider tends to include more European stocks in its indices; and 2) micro-cap firms are hardly covered by any index provider.

Box 3. Size and thematic indices

There are many indices that cover a certain set of listed companies based on specific characteristics. Among them are indices with similarities between sub-indices of the CMU Index Family covering micro caps, small caps, small national capital markets, mid-sized national capital markets and ESG indices (see Table 3.15). This box focuses on the top three indices by investments from EU investors for each of index type with at least one share included.[10]

Micro cap indices only include companies with a low market capitalisation (up to EUR 500 million or less depending on the index provider) from all or a selection of developed markets. **MSCI World Micro Cap Index** covers all developed markets worldwide (23) and includes the largest number of companies - about 5 750. The **MSCI Europe Micro Cap Index** includes 1 425 companies from 15 European developed markets (12 EU-27 countries, CH, NO and UK), while the **MSCI EMU Micro Cap Index** includes 642 companies from 10 euro area developed markets. The investor interest is limited, with only 18 mutual funds, representing about 0.3% of EU index-related investments,[11] using the micro-cap indices as a benchmark.

Small cap indices only include companies with a low market capitalisation (up to EUR 5 500 million or less depending on the index provider), excluding micro caps. Like the micro cap indices, the identified indices included small caps of all or a sub-set of developed markets. The **MSCI World Small Cap Index** covers more than 4 000 small caps on developed markets worldwide (23). The **MSCI EAFE Small Cap Index** has the same universe of eligible small caps but excludes American and Canadian companies, which almost halves the number of included small caps, to about 2 300. The **MSCI Europe Small Cap Index** features 964 small caps from 15 developed markets in Europe (12 EU-27 countries, CH, NO and UK). Small cap indices attract about ten times more investments than the micro cap indices. Small cap indices are used as a benchmark and tracked by about 366 EU mutual funds and ETFs, which attract about EUR 77 billion in investments,

[10] Indices were identified as belonging to a specific category based on the full index name.
[11] Total investment by EU institutional investors in full EU and partial EU indices.

or about 3.0% of EU index-related investments. The top three small cap indices described above account for about a third of these investments.

Emerging and frontier markets indices include only large and mid caps from markets classified as emerging or frontier by the index provider. The market classification differs from provider to provider and the thresholds often also differ between market classifications.

Frontier markets indices are usually combined with other market categories. For example **MSCI ACWI and Frontier Markets Index** includes over 3 000 companies from all developed, emerging and frontier markets. **MSCI Emerging and Frontier Markets Index** has around 1 500 constituents from 26 emerging and 28 frontier markets. In turn, **MSCI Select Emerging and Frontier Markets Access Index** strictly limits the number of companies to 200, with three-quarters coming from emerging markets and the rest from frontier markets. Frontier market indices seem to attract limited investments with only four mutual funds, with about EUR 1 billion in investments, having the indices as a benchmark.

Turning to the emerging markets indices, the **MSCI Emerging Markets IMI Index** covers all markets classified as emerging (26) by the MSCI, and includes over 3 000 companies. The **FTSE Emerging Markets Index** covers 24 emerging markets with a total of 1 792 companies. The **MSCI Emerging Markets Europe Index** covers six European emerging markets (four EU-27 countries, RU and TR) with a total of only 70 companies. However, the latter is responsible for the lion's share of the investments. About three-quarters of the funds linked to an emerging markets index are following the MSCI Emerging Markets Europe Index (489 out of 654). The index is responsible for EUR 225 billion out of EUR 271 billion emerging market index-linked investments. The total emerging market indices-linked investments account for about 10% of EU index-related investments.

The ESG indices use sustainability as well as geographical and size criteria to select and adjust the weight of companies included in the index. Every index provider has their own methodology to evaluate ESG performance of companies and exclude those that do not comply. The **MSCI World ESG Leaders Index** includes 780 companies from all developed markets (23). **MSCI Emerging Markets ESG Leaders Index** covers 457 companies from 26 emerging markets. The **MSCI World Custom ESG Index** covers 343 companies from all developed markets (23) as specified by Northern Trust. The ESG segment is relatively small but rapidly growing. This is reflected in the launching of many indices and funds. The total EU investment in the ESG indices is around EUR 19 billion, which accounts for about 1% of all EU index-related investments.

Table 3.15 Size and thematic indices

Index name	Companies	Region	Investments							
			EU mutual funds		EU ETFs		Total EU		Non-EU ETFs	
			NR	EUR bn	NR	EUR bn	NR	EUR bn	NR	EUR bn
Micro cap indices										
MSCI Europe Micro Cap Index	1 425	15 Developed markets	13	1.6	-	-	13	1.6	-	-
MSCI EMU Micro Cap Index	642	10 Developed markets	4	0.1	-	-	4	0.1	-	-
MSCI World Micro Cap Index	5 748	23 Developed markets	1	0.0	-	-	1	0.0	-	-
Total Micro Cap			**18**	**1.7**	**-**	**-**	**18**	**1.7**	**-**	**-**
Small cap indices										
MSCI Europe Small Cap Index	964	15 Developed markets	77	14.2	4	1.0	81	15.2	1	0.1
MSCI World Small Cap Index	4 280	23 Developed markets	28	9.5	2	1.1	30	10.6	1	0.0
MSCI EAFE Small Cap Index	2 325	21 Developed markets (excl. US and CA)	1	0.0	-	-	1	0.0	1	8.4
Other Small Cap Indices (43)			238	48.2	16	2.6	254	50.8	14	12.5
Total Small Cap			**344**	**71.9**	**22**	**4.7**	**366**	**76.6**	**17**	**21.0**
Frontier markets indices										
MSCI ACWI and Frontier Markets Index	3 140	23 Developed, 26 Emerging and 28 Frontier markets	1	0.3	-	-	1	0.3	-	-
MSCI Emerging and Frontier Markets Index	1 497	26 Emerging and 28 Frontier markets	3	0.3	-	-	3	0.3	-	-
MSCI Select Emerging and Frontier Markets Access Index	200	26 Emerging and 28 Frontier markets (excl. BR, RU, IN, CN, KR, TW)	-	-	-	-	-	-	1	0.02
Total Frontier Markets			**4**	**0.6**			**4**	**0.6**	**1**	**0.02**
Emerging markets indices										
MSCI Emerging Markets Europe Index	70	6 Emerging markets	474	204.5	15	20.9	489	225.4	12	29.4
MSCI Emerging Markets IMI Index	3 053	26 Emerging markets	6	1.3	1	11.7	7	13.0	4	52.5
FTSE Emerging Markets Index	1 792	24 Emerging markets	8	8.2	1	1.7	9	9.9	4	5.2
Other Emerging Markets Indices (69)			121	18.6	28	4.2	149	22.9	53	76.7
Total Emerging Markets			**609**	**232.6**	**45**	**38.5**	**654**	**271.2**	**73**	**163.8**
ESG indices										
MSCI World ESG Leaders Index	780	23 Developed markets	4	4.2	-	-	4	4.2	-	-
MSCI Emerging Markets ESG Leaders Index	457	26 Emerging markets	5	3.0	-	-	5	3.0	1	0.01
MSCI World Custom ESG Index	343	23 Developed markets	1	2.7	-	-	1	2.7	-	-
Other ESG Indices (33)			15	8.4	16	1.0	31	9.4	10	1.89
Total ESG			**25**	**18.3**	**16**	**1.0**	**41**	**19.3**	**11**	**1.9**

Source: CEPS (2020)

3.4 Current index-related investments

This section shows the mapping of index-related investments based on 15 039 equity funds responsible for EUR 7 310 billion investments. The majority of the funds are mutual funds (77% of total funds) offered in the EU and the remainder are ETFs traded on EU (7%) and non-EU (15%) stock exchanges (see Table 3.16). EU mutual funds and non-EU ETFs account for 51% and 41% of the total investments respectively, compared to 8% of EU ETFs.

Most of these funds either track an index (ETFs) or use the index as a benchmark (mutual funds). In fact, about 80% of the equity funds use an index to track or benchmark. This means that nearly all the ETFs follow an index, whereas there is a substantial share of mutual funds that is – albeit not officially – using an index for benchmarking.

There is a difference in the importance of EU indices between mutual funds and ETFs. Two-thirds of the funds are equally divided between indices covering non-EU stocks (i.e. non-EU indices) and indices covering both EU and non-EU stocks (i.e. partial EU indices). About one-fifth of the funds are benchmarked to indices covering only EU stocks (i.e. full EU indices). There is a home bias with the majority of the EU mutual funds and ETFs using partial or full EU indices, whereas most of the non-EU funds are linked to non-EU indices.

Table 3.16 Number of funds and total investments by type

Type of index / Type of fund	Not indexed		Non-EU index		Partial-EU index		Full-EU index		Total	
	NR	%	NR	%	NR	%	NR	%	NR	%
EU mutual funds	2 807	24.2	2 667	23.0	4 557	39.3	1 561	13.5	**11 592**	**100**
EU ETF	10	0.9	491	42.6	437	37.9	215	18.6	**1 153**	**100**
Total EU	**2 817**	**22.1**	**3 158**	**24.8**	**4 994**	**39.2**	**1 776**	**13.9**	**12 745**	**100**
Non-EU ETF	107	4.7	1 708	74.5	436	19.0	43	1.9	**2 294**	**100**
Total	**2 924**	**26.8**	**4 866**	**99.3**	**5 430**	**58.2**	**1 819**	**15.8**	**15 039**	**100**
	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%
EU mutual funds	509	13.7	936	25.1	1 742	46.8	535	14.4	**3 722**	**100**
EU ETFs	1	0.2	258	45.3	207	36.3	104	18.2	**570**	**100**
Total EU	**510**	**11.9**	**1 194**	**27.8**	**1 949**	**45.4**	**639**	**14.9**	**4 292**	**100**
Non-EU ETFs	5	0.2	2 371	78.5	626	20.7	18	0.6	**3 019**	**100**
Total	**515**	**12.1**	**3 565**	**106.3**	**2 575**	**66.1**	**639**	**15.5**	**7 311**	**100**

Source: CEPS (2020)

The total EU investments amount to EUR 1 814 billion or about a quarter of the total investments of the funds. Most of the investments are from EU mutual funds, while EU ETFs and non-EU ETFs account for 10% and 12% of the total investments respectively (see Table 3.17).

For the types of indices, about half of the EU investments originate from funds benchmarked to partial EU indices, while one-third of them are related to full EU ones. Finally, EU investments from non-indexed funds and non-EU indices account cumulatively for 18.5% of the total.

Table 3.17 Total EU investments by type

Type of index / Type of fund	Not indexed		Non-EU index		Partial-EU index		Full-EU index		Total	
	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%
EU mutual funds	191	13.5	113	8.0	619	43.7	492	34.8	**1 415**	**100**
EU ETFs	0	0.0	7	4.0	71	40.6	96	54.9	**175**	**100**
Total EU	**191**	**12.0**	**120**	**7.5**	**690**	**43.4**	**588**	**37.0**	**1 590**	**100**
Non-EU ETFs	0	0.0	24	10.7	183	81.3	17	7.6	**225**	**100**
Total	**191**	**12**	**144**	**18.2**	**873**	**124.7**	**605**	**44.6**	**1 815**	**100**

Source: CEPS (2020)

3.4.1 Fund providers

The c15 000 funds assessed in this study are established by 1 148 different providers, of which most are either active domestically (42%) or globally (31%), while the share of regional providers is limited (12%).

Most of the funds are established by global providers (79%), while domestic and regional providers are responsible for the establishment of 15% and 6% of the funds respectively (see Table 3.18).[12] Differences across providers are even more pronounced when considering the overall investments, as global providers account for 92% of the total.

Looking at the distribution across types of indices, global providers tend to focus more on non-EU and partial EU indices. Moreover, funds benchmarked to non-EU and partial EU indices are on average larger than those linked to full EU ones.

Table 3.18 Number of funds and total investments by provider

Type of index / Provider	Not indexed		Non-EU index		Partial-EU index		Full-EU index		Total	
	NR	%	NR	%	NR	%	NR	%	NR	%
Domestic	639	4.2	358	2.4	763	5.1	448	3.0	**2 208**	**14.7**
Regional	363	2.4	125	0.8	277	1.8	103	0.7	**868**	**5.8**
Global	1 922	12.8	4 383	29.1	4 390	29.2	1 268	8.4	**11 963**	**79.5**
Total	**2 924**	**19.4**	**4 866**	**32.3**	**5 430**	**36.1**	**1 819**	**12.1**	**15 039**	**100**
	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%
Domestic	72	1.0	73	1.0	148	2.0	107	1.5	**400**	**5.5**
Regional	52	0.7	32	0.4	72	1.0	34	0.5	**190**	**2.6**
Global	390	5.3	3 460	47.3	2 354	32.2	516	7.1	**6 720**	**91.9**
Total	**514**	**7.0**	**3 565**	**48.7**	**2 574**	**35.2**	**657**	**9.1**	**7 310**	**100**

Source: CEPS (2020)

Global providers account for most of the EU investments, which is primarily due to their substantially larger total investments. Domestic and regional providers account for less than one-fifth of total EU investments, even though the share of EU investments over their total investments of domestic (53%) and regional providers (43%) is higher compared to global providers (23%).

In terms of the type of indices, almost half of the total EU investments is generated by funds from global providers using indices with some EU companies. In comparison, investments of global providers in full EU indices account for 26% of the total EU investments (see Table 3.19).

[12] Domestic and regional providers are relevant only for mutual funds. The ETF segment is dominated by global providers, as there are only 10 funds established by domestic or regional providers.

Table 3.19 Total EU investments by provider

Type of index / Provider	Not indexed		Non-EU index		Partial-EU index		Full-EU index		Total	
	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%
Domestic	34	1.9	19	1.0	61	3.4	97	5.3	**210**	**11.6**
Regional	21	1.2	6	0.3	23	1.3	31	1.7	**81**	**4.5**
Global	137	7.5	120	6.6	790	43.5	477	26.3	**1 523**	**83.9**
Total	**192**	**10.6**	**145**	**7.9**	**874**	**48.2**	**605**	**33.3**	**1 814**	**100**

Source: CEPS (2020)

Among the top fund providers, five global institutions generate approximately 27% of the total EU investments (see Table 3.20). BlackRock ranks first among all providers, accounting for 14% of the total EU investments. Vanguard, Amundi, Schroders and Invesco constitute the remaining top five providers, each of them accounting for a share of total EU investments between 2% and 5%.

Table 3.20 Top five fund providers

Rank	Provider Name	EU Investments	Number of funds	% of EU investments
		EUR bn	NR	%
1	BlackRock	259.1	791	14.3
2	Vanguard	93.2	172	5.1
3	Amundi	52.3	296	2.9
4	Schroders	43.6	218	2.4
5	Invesco	39.4	383	2.2
	Total top 5	**488**	**1 860**	**26.9**

Source: CEPS (2020)

The top 10 domestic providers account cumulatively for 6% of the total EU investments (see Table 3.21). This share increases to 7% when considering the top 20 domestic providers. The top 10 regional providers account cumulatively for 3% of the total EU investments. When considering the top 20 regional providers, the cumulative share of EU investment registers only a small increase (4%). The picture changes rapidly for global providers. In fact, the top 10 and 20 global providers account for 36% and 48% of the total EU investments respectively.

Table 3.21 Top 10 providers by type of provider

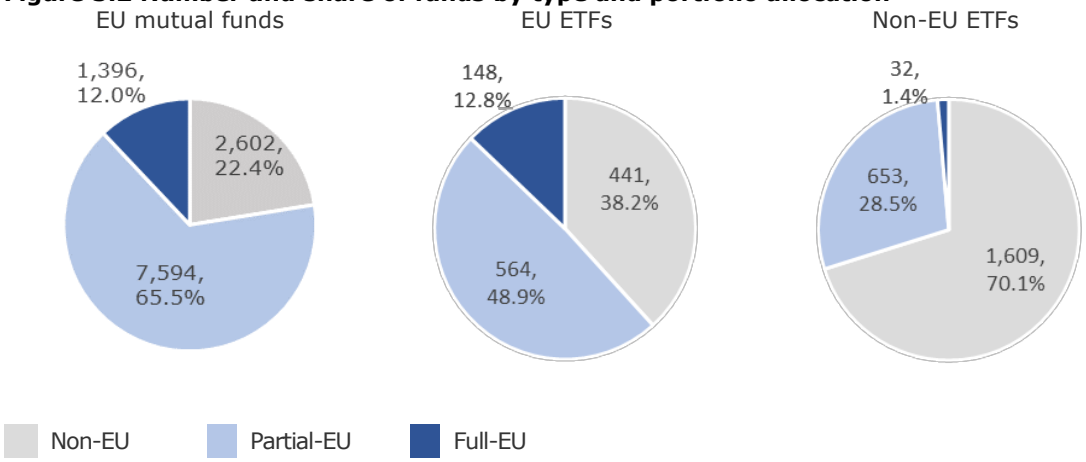
Rank	Provider name	Number of funds	% of funds	EU Investments	% of EU investments
		NR	%	EUR bn	%
Domestic providers					
1	Scottish Widows (UK)	72	0.5	27	1.5
2	Royal London (UK)	28	0.2	19	1.0
3	HBOS (UK)	14	0.1	15	0.8
4	Livingbridge (UK)	35	0.2	13	0.7
5	Marlborough (UK)	20	0.1	5	0.3
6	AG2R La Mondiale Gestion d'Actifs (FR)	9	0.1	5	0.3
7	OP-Rahastoyhtiö Oy (FI)	37	0.2	5	0.2
8	Covea Finance (FR)	30	0.2	4	0.2
9	Virgin (UK)	6	0.0	4	0.2
10	GLG Partners (UK)	5	0.0	4	0.2
	Total top 10	**256**	**1.7**	**101**	**5.6**
	Total top 20	**452**	**3.0**	**129**	**7.1**
Regional providers					
1	Lindsell Train (UK)	3	0.0	12	0.6
2	Liontrust (UK)	18	0.1	10	0.5
3	CM-CIC Asset Management (FR)	52	0.3	8	0.4
4	Mediolanum (IT)	33	0.2	7	0.4
5	Anima (IT)	51	0.3	6	0.4
6	Woodford (UK)	2	0.0	4	0.2
7	Troy Asset Management (UK)	6	0.0	3	0.2
8	SEI (IE)	14	0.1	3	0.2
9	Seven Investment Management (UK)	13	0.1	2	0.1
10	Sarasin & Partners (UK)	27	0.2	2	0.1
	Total top 10	**219**	**1.5**	**57**	**3.1**
	Total top 20	**370**	**2.5**	**69**	**3.8**
Global providers					
1	BlackRock (US)	791	5.3	259	14.3
2	Vanguard (US)	172	1.1	93	5.1
3	Amundi (FR)	296	2.0	52	2.9
4	Schroders (UK)	218	1.4	44	2.4
5	Invesco (US)	383	2.5	39	2.1
6	Fidelity (US)	206	1.4	36	2.0
7	BNP Paribas (FR)	253	1.7	35	1.9
8	DWS Investment (DE)	157	1.0	35	1.9
9	Allianz (DE)	212	1.4	34	1.9
10	Lyxor (FR)	196	1.3	30	1.7
	Total top 10	**2 884**	**19.2**	**657**	**36.2**
	Total top 20	**4 236**	**28.2**	**875**	**48.2**

Source: CEPS (2020)

3.4.2 Geographical allocation of the funds

Most EU funds invest partially or fully in the EU, while most non-EU funds invest almost exclusively outside the EU (see Figure 3.2).

Figure 3.2 Number and share of funds by type and portfolio allocation



Source: CEPS (2020)

Overall, approximately two-thirds of the funds invest a portion of their portfolio in the EU, while one-third invest almost exclusively outside the EU. In comparison, full EU funds account for about one-tenth of the total number of funds (see Table 3.22).

Approximately half of total investments originates from non-EU funds, while partial EU funds (42%) and full EU funds (6%) account for the remainder.

A strong correlation exists between the portfolio and the indices used by the funds. Non-EU funds tend to be linked to non-EU indices and full EU funds are mostly benchmarked to full EU indices. Nevertheless, 8.5% of the funds are linked to non-EU indices although they invest a portion of their portfolio in the EU. Finally, 4.6% of the funds are linked to partial EU indices but they invest almost exclusively outside the EU. Indeed, the funds that benchmark or track a certain index do not necessarily also need to invest the full amount in the underlying investment pool. This is because of active management, but also the use of derivatives (tracking a certain index based on a swap instead of physically replicating the tracked index).

Table 3.22 Number of funds and total investments by portfolio composition

Type of index / Portfolio Composition	Not indexed		Non-EU index		Partial-EU index		Full-EU index		Total	
	NR	%	NR	%	NR	%	NR	%	NR	%
Non-EU	368	2.4	3 587	23.9	694	4.6	3	0.0	**4 652**	**30.9**
Partial-EU	2 287	15.2	1 185	7.9	4 570	30.4	769	5.1	**8 811**	**58.6**
Full-EU	269	1.8	94	0.6	166	1.1	1 047	7.0	**1 576**	**10.5**
Total	**2 924**	**19.4**	**4 866**	**31.8**	**5 430**	**36.1**	**1 819**	**12.1**	**15 039**	**100**
	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%
Non-EU	40	0.6	3 234	44.2	486	6.6	1	0.0	**3 761**	**51.4**
Partial-EU	446	6.1	306	4.2	2 068	28.3	277	3.8	**3 097**	**42.4**
Full-EU	28	0.4	25	0.3	22	0.3	378	5.2	**453**	**6.2**
Total	**514**	**7.1**	**3 565**	**48.7**	**2 576**	**35.2**	**656**	**9**	**7 311**	**100**

Source: CEPS (2020)

Approximately half of the EU investments originate from partial EU funds benchmarked to partial EU indices (see Table 3.23). In comparison, 20% of EU investments are related to full EU funds benchmarked to full EU indices, for a total investment of EUR 368 billion. Finally, about 18% of the EU investments are related to non-EU indices or non-indexed funds.

Table 3.23 Total EU investments by type portfolio composition

Type of index / Portfolio composition	Not indexed		Non-EU index		Partial-EU index		Full-EU index		Total	
	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%	EUR bn	%
Non-EU	0	0.0	17	0.9	7	0.4	0	0.0	**24**	**1.3**
Partial-EU	163	9.0	104	5.7	845	46.6	237	13.0	**1 349**	**74.3**
Full-EU	28	1.5	24	1.3	22	1.2	368	20.3	**442**	**24.4**
Total	**191**	**10.5**	**145**	**7.9**	**874**	**48.2**	**605**	**33.3**	**1 815**	**100**

Source: CEPS (2020)

3.4.3 Geographical allocation indices

Information on the regional composition of the indices is available for partial and full EU indices and for approximately 40% of the funds (see Table 3.24). These funds account for a comparable share of total investments and for approximately 75% of the total EU investments.

Overall, almost half of the funds are benchmarked either to developed markets or to all market indices. By comparison, approximately 5% of the funds are benchmarked to emerging market indices, while very few funds cover frontier market indices. The picture remains the same when looking at the total investments, as investments in developed markets and all market indices account for approximately one-third of the total investments.

Table 3.24 Number of funds and total investments by market development of the indices

Type of indices / Index region	Partial-EU index		Full-EU index		Total	
	NR	%	NR	%	NR	%
All	2 768	18.4	26	0.2	**2 794**	**18.6**
Developed	1 751	11.6	2 014	13.4	**3 702**	**24.6**
Emerging	772	5.1	11	0.1	**783**	**5.2**
Emerging and frontier	8	0.1	N.A.	N.A.	**8**	**0.1**
Frontier	N.A.	N.A.	7	0.0	**7**	**0.1**
Unknown	1 067	7.1	3	0.0	**8 857**	**58.9**
Total	**5 586**	**37.1**	**2 035**	**13.5**	**15 039**	**100**
	EUR bn	%	EUR bn	%	EUR bn	%
All	1 204	16.5	2	0.0	**1 206**	**16.5**
Developed	589	8.1	664	9.1	**1 253**	**17.1**
Emerging	443	6.1	2	0.0	**444**	**6.1**
Emerging and frontier	0	0.0	N.A.	N.A.	**0**	**0.0**
Frontier	N.A.	N.A.	0	0.0	**0**	**0.0**
Unknown	327	4.5	0	0.0	**4 406**	**60.3**
Total	**2 563**	**35.1**	**668**	**9.14**	**7 310**	**100**

Notes: the sum of the number of funds by types of index and by index region does not match with the total number of the funds, as some funds are linked to more than one index. Figures on total investments are adjusted for the respective share of each underlying index.

Source: CEPS (2020)

Overall, most of the EU investments originate from funds benchmarked to developed markets indices. Most of them cover only EU companies. Funds linked to emerging market indices generate less than 1% of the total EU investments, while investments related to frontier markets indices are marginal (see Table 3.25).

Table 3.25 Total EU investment by market development of the indices

Type of indices / Index region	Partial-EU index		Full-EU index		Total	
	EUR bn	%	EUR bn	%	EUR bn	%
All	301	16.6	1	0.1	**302**	**16.6**
Developed	416	22.9	611	33.7	**1 028**	**56.7**
Emerging	11	0.6	1	0.1	**12**	**0.7**
Emerging and frontier	0	0.0	N.A.	N.A.	**0**	**0.0**
Frontier	N.A.	N.A.	0	0.0	**0**	**0.0**
Unknown	136	7.5	0	0.0	**473**	**26.1**
Total	**865**	**47.7**	**614**	**33.8**	**1 814**	**100**

Source: CEPS (2020)

3.4.4 Investment by company sizes

Information on the composition and the market capitalisation requirements of the indices is collected for approximately 10% of the funds. The latter are benchmarked against partial or full EU indices and account for approximately one-tenth of the total investments and for one-third of the EU investments. As indices can target companies with different sizes, the analysis distinguishes between all shares indices, mixed indices[13] and pure indices (i.e. covering one size category).

Of the funds for which information is available, most are benchmarked to pure large cap indices (see Table 3.26). However, most of the investments are related to all share indices. Pure small and pure mid cap indices account for approximately 2% of the total investments, while pure micro cap indices remain marginal, both in terms of number of funds and total invested amounts.

Most of the funds benchmarked to full EU indices cover all share or large cap, while most of the funds using partial EU indices focus purely on small caps. Nevertheless, considering the limited coverage of the information at this stage, these figures may not represent the distribution of the entire population.

Table 3.26 Number of funds and total investments by market cap requirements

Types of index / Market cap requirements	Partial-EU index		Full-EU index		Total	
	NR	%	NR	%	NR	%
Purely micro cap	14	0.1	4	0.0	**18**	**0.1**
Purely small cap	247	1.4	85	0.5	**332**	**1.9**
Purely mid cap	53	0.3	42	0.3	**95**	**0.6**
Purely large cap	100	0.6	650	4.1	**751**	**4.7**
Mixed	53	0.3	38	0.2	**90**	**0.5**
All share	83	0.5	590	3.5	**672**	**3.9**
Unknown	5 082	33.8	677	4.5	**13 416**	**88.2**
Total	**5 586**	**37.1**	**2 035**	**13.5**	**15 039**	**100**
	EUR bn	%	EUR bn	%	EUR bn	%
Purely micro cap	2	0.0	0	0.0	**2**	**0.0**
Purely small cap	79	1.1	9	0.1	**88**	**1.2**
Purely mid cap	65	0.9	5	0.1	**70**	**1.0**
Purely large cap	25	0.3	151	2.1	**176**	**2.4**

[13] Mixed indices refer to indices with certain size requirements (e.g. mid and large cap only) while all share indices include all size classes.

Types of index / Market cap requirements	Partial-EU index		Full-EU index		Total	
Mixed	21	0.3	4	0.1	**24**	**0.3**
All share	183	2.5	298	4.1	**481**	**6.6**
Unknown	2 189	29.9	202	2.8	**6 470**	**88.5**
Total	**2 563**	**35.1**	**668**	**9.1**	**7 310**	**100**

Notes: the sum of the number of funds by types of index and by market cap requirement does not match with the total number of the funds, as some of them are linked to more than one index. Figures on total investments are adjusted for the respective share of each underlying index.

Source: CEPS (2020)

Overall, almost one-fifth of the total EU investments originates from funds benchmarked to all share indices (see Table 3.27). The majority of these investments are related to full EU indices. For the pure indices, approximately 9% of the EU investments is related to large cap, nearly 3% to small cap and just over 2% to mid cap indices. Finally, EU investments from funds benchmarked to micro cap indices account for 0.1% of the total.

Table 3.27 Total EU investments across by market cap requirements

Type of index / Market cap requirements	Partial-EU index		Full-EU index		Total	
	EUR bn	%	EUR bn	%	EUR bn	%
Purely micro cap	*1*	*0.1*	*0*	*0.0*	***1***	***0.1***
Purely small cap	*43*	*2.4*	*9*	*0.5*	***51***	***2.8***
Purely mid cap	*33*	*1.8*	*4*	*0.2*	***38***	***2.1***
Purely large cap	*14*	*0.8*	*142*	*7.8*	***156***	***8.6***
Mixed	*14*	*0.8*	*4*	*0.2*	***18***	***1.0***
All share	49	2.7	269	14.8	**318**	**17.6**
Unknown	709	39.1	186	10.3	**1 231**	**67.9**
Total	**865**	**47.7**	**614**	**33.8**	**1 814**	**100**

Source: CEPS (2020)

3.4.5 Investment by theme, sector and customisation

Information on the category of partial and full EU indices was collected. About 5% of the used indices are grouped in thematic, sectoral and customised indices. Sectoral indices cover one specific sector, while thematic ones focus on companies satisfying certain requirements. Finally, customised indices are created by the provider based on ad hoc request by the client.

Overall, 4% of funds are benchmarked to purely sectoral indices, 1% to thematic and 0.1% to customised indices. Some funds fall in more than one category: for instance, six instruments are benchmarked to indices that are thematic customised indices, while another seven funds are benchmarked to indices that are sectoral as well as thematic (see Table 3.28).

Table 3.28 Number of funds and total investments by type of index

Type of index / Category	Partial-EU index		Full-EU index		Total	
	NR	%	NR	%	NR	%
Purely thematic	140	0.8	*31*	0.2	**171**	**1.0**
Purely sectoral	653	4.1	29	0.2	**681**	**4.3**
Purely customised	18	0.1	N.A.	N.A.	**18**	**0.1**
Mixed	7	0.0	7	0.0	**14**	**0.1**
General	4 813	32.0	1 982	13.2	**14 222**	**94.6**
Total	**5 586**	**37.1**	**2 035**	**13.5**	**15 039**	**100**
	EUR bn	%	EUR bn	%	EUR bn	%
Purely thematic	35	0.5	3	0.0	**39**	**0.5**
Purely sectoral	178	2.4	6	0.1	**184**	**2.5**
Purely customised	2	0.0	N.A.	N.A.	**2**	**0.0**
Mixed	6	0.1	1	0.0	**8**	**0.1**
General	2 341	32.0	659	9.0	**7 078**	**96.8**
Total	**2 563**	**35.1**	**668**	**9.1**	**7 310**	**100**

Notes: the sum of the number of funds by types of index and by market cap requirement does not match with the total number of the funds, as some of them are linked to more than one index. Figures on total investments are adjusted for the respective share of each underlying index.

Source: CEPS (2020)

In terms of investment, funds benchmarked to these three categories of indices represent 3% of the total investment and 3% of EU investment. As for the share of number of instruments, the largest category of indices contributing is the sectoral (EUR 184 billion in total investment), of which EUR 44 billion is in EU-listed companies (see Table 3.29).

Table 3.29 Total EU investments by type

Type of index / Category	Partial-EU index		Full-EU index		Total	
	EUR bn	%	EUR bn	%	EUR bn	%
Purely thematic	11	0.6	3	0.2	14	0.8
Purely sectoral	39	2.2	5	0.3	44	2.4
Purely customised	0	0.0	N.A.	N.A.	0	0.0
Mixed	2	0.1	1	0.1	3	0.2
General	812	44.8	605	33.3	1 753	96.6
Total	**865**	**47.7**	**614**	**33.8**	**1 814**	**100**

Source: CEPS (2020)

3.4.6 Investment by sector

Sectoral information was obtained for approximately 70% of the total investments. Hence, the allocation could often only be determined for the main sectors to which the funds were allocated. This is primarily an issue for broad indices of which the investments are spread across many different sectors.

Most equity investments are in four sectors, namely: manufacturing (21%), financial and insurance activities (15%), information and communication (15%) and human health (8%), which collectively represent 59% of the total investment (see Table 3.30).

The ranking is consistent across the index categories, except for instruments that follow a full EU index. In fact, the third sector in terms of investment is public administration and defence (which ranks fifth overall) followed in fourth place by information and communication (which ranks third overall). Human health, which is the fourth sector for investment overall, falls even further below in the ranking, in seventh position for instruments that follow a full EU index, while electricity and gas supply climbs to fifth.

In comparison, the underlying distribution of listed companies by share of market capitalisation confirms the top three sectors in the overall distribution of sectoral investment. Instead, electricity and gas supply is the fourth sector in the distribution of listed companies by share of market capitalisation, thus more in line with the distribution by share of investment for instruments with a full EU index. The same is not observable for public administration and defence.

Table 3.30 Total investment by sector and index type

Sector	Not indexed			Non-EU index			Partial-EU index			Full-EU index			Total		
	NR	EUR bn	%	NR	EUR bn	%	NR	EUR bn	%	NR	EUR bn	%	NR	EUR bn	%
Manufacturing	2 391	110	21.5	3 769	747	20.9	4 412	521	20.2	1 569	165	25.2	12 141	1 543	21.1
Financial and insurance activities	1 996	71	13.8	3 460	511	14.3	3 868	424	16.5	1 372	110	16.8	10 696	1 116	15.3
Info and communication	2 029	70	13.6	3 328	623	17.5	3 573	351	13.6	920	40	6.1	9 850	1 084	14.8
Human health	1 543	43	8.4	1 986	299	8.4	3 008	217	8.4	686	23	3.5	7 223	582	8.0
Public administration and defence	606	15	2.9	1 487	110	3.1	1 725	148	5.8	713	49	7.5	4 531	322	4.4
Wholesale and retail trade	653	13	2.5	1 134	48	1.3	1 246	63	2.4	611	30	4.6	3 644	154	2.1
Electricity, gas supply	313	7	1.4	617	34	1.0	875	58	2.2	502	37	5.7	2 307	136	1.9
Real estate activities	246	5	1.0	696	48	1.3	353	24	0.9	107	4	0.6	1 402	81	1.1
Water supply and waste management	230	4	0.8	316	22	0.6	330	15	0.6	208	4	0.6	1 084	45	0.6
Mining and quarrying	-	-	-	7	0	0.0	15	0	0.0	0	-	0.0	22	0	0.0
Unknown	2 914	176	34.2	4 847	1 124	31.5	5 402	755	29.3	1 818	192	29.3	14 981	2 247	30.7
Total	**2 924**	**514**	**100**	**4 866**	**3 565**	**100**	**5 430**	**2 575**	**100**	**1 819**	**656**	**100**	**15 039**	**7 310**	**100**

Notes: Sectors in descending order of total investment. Unknown refers to instruments for which sectoral information is not available and those for which a share of the sectoral investment cannot be assigned to a specific sector. Total refers to all instruments.

Source: CEPS (2020)

Table 3.31 EU investment by sector and index type

Sector	Not indexed			Non-EU index			Partial-EU index			Full-EU index			Total		
	NR	EUR bn	%	NR	EUR bn	%	NR	EUR bn	%	NR	EUR bn	%	NR	EUR bn	%
Manufacturing	2 267	45	23.5	2 184	30	20.4	4 358	207	23.8	1 568	154	25.4	10 377	436	24.0
Financial and insurance activities	1 893	25	13.0	2 027	21	14.3	3 809	130	14.9	1 370	102	16.8	9 099	277	15.3
Info and communication	1 923	22	11.3	1 897	14	9.8	3 518	76	8.7	919	36	6.0	8 257	148	8.2
Human health	1 479	14	7.3	1 379	10	6.7	2 977	90	10.3	684	20	3.2	6 519	133	7.3
Public administration and defence	582	6	3.2	776	6	3.9	1 678	68	7.8	712	46	7.6	3 748	126	6.9
Wholesale and retail trade	609	6	3.0	577	5	3.5	1 236	20	2.3	611	29	4.7	3 033	59	3.3
Electricity, gas supply	296	3	1.8	326	3	2.3	865	14	1.6	501	35	5.8	1 988	56	3.1
Real estate activities	217	2	1.2	373	2	1.0	349	6	0.7	107	4	0.6	1 046	13	0.7
Water supply and waste management	220	2	1.1	182	1	0.8	325	6	0.7	208	4	0.6	935	13	0.7
Mining and quarrying	0	0	0.0	4	0	0.0	15	0	0.0	0	0	0.0	19	0	0.0
Unknown	2 759	66	34.6	2 874	54	37.3	5 335	257	29.4	1 799	176	29.1	12 767	553	30.5
Total	**2 769**	**191**	**100**	**2 883**	**145**	**100**	**5 363**	**873**	**100**	**1 800**	**605**	**100**	**12 815**	**1 814**	**100**

Notes: Sectors in descending order of total investment. Unknown refers to instruments for which sectoral information is not available and those for which a share of the sectoral investment cannot be assigned to a specific sector. Total refers to all instruments investing in the EU.

Source: CEPS (2020)

For the EU equity investments only, the results are largely similar to those reported for overall investment (see Table 3.31). There are some small differences, such as the share of investment of the top four sectors, which is slightly lower (55% compared to 59%), and which suggests a lower sectoral concentration for the EU investment. In fact, significant changes in share of overall investment can be seen for manufacturing that increases (24% EU investments instead of 21% in total investments), and information and communication of which the share almost halves (8% instead of 15%). Furthermore, the share of public administration and defence increases (from 4% to 7% when focusing on EU investment).

Table 3.32 Role of purely sectoral indices among sectoral investment

Sector	Total investment			EU investment		
	NR	EUR bn	%	NR	EUR bn	%
Mining and quarrying	0	0	0	0	0	0
Manufacturing	178	9.3	0.6	175	1.9	0.5
Electricity, gas supply	54	3.8	2.8	54	0.8	1.5
Water supply and waste management	36	3.9	8.6	36	0.7	5.1
Wholesale and retail trade	62	3.8	2.5	62	0.8	1.3
Info and communication	148	17.1	1.6	145	1.6	1.1
Financial and insurance activities	77	3.0	0.3	74	0.5	0.2
Real estate activities	69	12.8	15.8	67	2.1	15.4
Public administration and defence	44	1.4	0.4	43	0.3	0.2
Human health	69	2.5	0.4	68	0.5	0.3
Total	**737**	**57.6**	**33.0**	**724**	**9.2**	**25.6**

Source: CEPS (2020)

Finally, the role of instruments that use a purely sectoral index in sectoral investment appears to be very limited for most sectors (see Table 3.32), particularly for the top four in overall investment: the share of investment produced by these instruments overcomes the 1% threshold (1.6% for total investment and 1.1% for EU investment) only for information and communication. The highest shares of total investment produced by instruments following a purely sectoral index are of real estate activities (16%), and water supply and waste management (9%).

When focusing on EU investment, the share falls further below for all sectors, with an average decrease of 33% with respect to the total investment scenario, except for the real estate activities sector, for which the decrease is marginal.

Overall, for both total and EU investment, the share attributable to instruments with a purely sectoral index is below 1%.

3.4.7 Conclusion

Mapping of index-related investments (those investing in EU equities) reveals that by far the largest type of index-related investments are from mutual funds, of which around 40% of the assets under management is invested in EU stocks. The two other index-related investment categories are EU and non-EU ETFs, where EU ETFs account for about EUR 200 billion in EU stocks (approximately 30% of their overall investments) and non-EU ETFs invest about EUR 263 billion in EU stocks (approximately 7% of their overall investments).

Overall, EUR 1 814 billion (about 37%) is invested in the EU, of which EUR 1 523 billion (about 84%) is invested by global investors, EUR 81 billion (about 5%) by regional and EUR 210 billion (about 12%) by domestic providers. There are 10 EU ETFs at a regional or domestic level, while global EU ETFs account for about 9.2% of overall investment in EU stocks. Global EU mutual funds provide 62% of the overall investment in EU stocks, with 5% from regional EU mutual funds and 12% from domestic EU mutual funds.

3.5 Current pricing of the use of indexes

Most index providers charge financial service providers and data service providers for using their indices. For example, the ETF providers are charged for the use of the index in the name of their products, fund managers are charged for using the name of the index as a benchmark in the prospectus for their mutual funds and data service providers are charged for price information on the indices.

However, there are some differences in the pricing strategies of stock exchanges and independent providers. Although most index providers charge for using their indices, some of the EU stock exchanges (e.g. Romania and Croatia) provide their indices free of charge.

To be able to use the index, the financial service provider must conclude a licence agreement with the index provider.[14] The charges for the use of indices included in these licence agreements are in most cases not public. Index providers generally indicate the procedure and provide contacts of sales team (Vienna Stock Exchange, Deutsche Börse, Warsaw Stock Exchange, Euronext, MSCI, FTSE, etc.).

In the interviews, market experts noted how licence pricing differs across providers, investors and indices. Index providers usually have multiple arrangements and packages for their customers and often tie up several products in a bundle. The final price is often subject to negotiation and the users are not allowed to disclose the prices.

Common pricing methodologies employed by index providers are fixed fees charged per year, a percentage of the assets under management (AUM) or a combination of the two. The amount of a fixed fee varies depending on provider, but often span tens of thousands of euros per year. Pricing based on basis points fluctuates between 1 and 3 basis points of AUM. According to some of the interviewees, the index users are charged the most for the usage of indices used for funds sold to retail investors. This is in line with the reports in specialised finance media that fees range between 1 and 10 basis points (i.e. below 0.10% of the size of the fund per annum). The larger the fund and the more renown the index, the higher the fee in basis points. According to Bloomberg,[15] MSCI Inc. charged around 3.05 basis points on average in the third quarter of 2017. This would mean that a EUR 10 billion fund would pay around EUR 3 million to officially use the MSCI index as a benchmark.

Index providers also supply financial data on their indices and respective constituents. This is usually done in the form of a subscription and costs up to EUR 10 000 per annum, depending on the data provider and coverage.

A customised index can already be developed for EUR 10 000 per annum, according to some of the interviewees. However, the price depends on the complexity of a methodology and the market potential. Hence, several of the independent providers do not provide customised indices but will create indices at request when they consider that there is enough market potential.

For some asset managers, the costs are reason to change the index used as a benchmark. For example, some UK asset managers choose to change to less well-known indices that can be used at lower costs.[16] Licensing fees play a limited role in the popularity of an

[14] Vienna Stock Exchange and Deutsche Börse. Available at: https://www.wienerborse.at/en/indices/conditions-of-use/index-licence/; https://www.deutsche-boerse.com/dbg-en/products-services/ps-indices/ps-licensing; https://www.dax-indices.com/article-detail?articleId=INDEX-LICENCING

[15] Bloomberg, 07/12/2017. Available at: https://www.bloomberg.com/news/articles/2017-12-07/fund-fee-wars-face-new-twist-as-index-rules-set-to-increase-cost

[16] Investment Week, 08/06/2017. Available at: https://www.investmentweek.co.uk/investment-week/news/3011594/managers-reconsider-use-of-index-providers-amid-eye-watering-costs

index.[17] Against this background, Euronext together with Morningstar have decided to design and launch a new selection of Morningstar European indices. They provide investors with access to index benchmarks and relevant market data via low-cost licences. For the moment, Morningstar and Euronext only offer two indices in collaboration: Morningstar Eurozone 50 Index and Morningstar Developed markets Europe 100 Index.

[17] Reuters, 02/10/2012. Available at: https://www.reuters.com/article/us-vanguard-indexes/vanguard-dumps-msci-indexes-from-22-funds-to-cut-costs-idUSBRE8910PY20121002

4 CMU Index Family strategy

This chapter provides the strategy for the CMU Index Family. It defines a new index family that covers, as much as possible, the whole investible universe of the European Union, thereby including both small EU markets and issuers.

4.1 Key inputs to strategy

The approach to developing the strategy is based on several inputs.

First, the market landscape was taken into consideration from several perspectives, including mapping of existing indices, mapping of index-related investment products, and mapping of the listings of stock exchanges in EU Member States.

Second, and very importantly, insights from interviews conducted with a selection of various stakeholders were considered (index users, index providers, index investors and policymakers) to assess the needs and the best way of introducing the CMU Index Family.

Third, insights into the design of the CMU Index Family included: i) current market situation in terms of the generally low interest rate environment, **ii) potential diversification benefits** of investing in 'neglected' markets and stocks, and **iii) institutional factors, liquidity issues, and potential price impact of very small stocks.**

One of the main inputs in terms of formulating what was believed to be the most effective CMU Index Family strategy - predominantly from the perspective of addressing the equity financing issues of frontier markets and SMEs - is **the insight obtained from the interviews conducted with selected index users, index investors, index providers and policymakers**. In regard to indices, it seems that investors from developed markets are more likely to use those provided by independent index providers (MSCI, Stoxx, S&P), while investors from emerging and frontier markets seem to rely more on regional/local index providers (exchanges). Part of the explanation for this difference relates to the investment focus of these investors, where investors from emerging and frontier markets invest a larger share of their portfolios in these very markets, compared to investors from developed markets.

The other part of the explanation seems to be related to the price/cost of using indices of independent index providers. Namely, indices provided by local exchanges are often free of charge, while independent index providers charge a fee for their products. This price sensitivity can also be explained by typically smaller amounts of assets under management of investors from emerging and frontier markets, which makes such 'fixed' costs relative to the fees charged for asset management relatively high. Their counterparts from developed markets with larger amounts of assets under management face less of a constraint in this respect.

A similar divide exists when it comes to investing in frontier markets and SMEs. While investors from developed markets in principle seem to ignore frontier markets, investors from emerging and frontier markets do seem to invest part of their portfolios, while at the same time trying to keep them sufficiently diversified. Most of the decisions on where and how to invest seem to be driven by client demand, but many interviewees also state important institutional features (market openness, limits on capital flows, fixed costs per market, etc.), unfamiliarity with a particular market (risk), and market characteristics (free float and liquidity) as factors that make investing in frontier markets and/or small-cap companies relatively unattractive. When asked about the need to create the CMU Index Family, not many investors considered that such a family of indices is needed and/or would be instrumental in addressing the issues of investing in frontier markets and/or SMEs. However, investors from emerging and frontier markets, and policymakers, seem more in

favour of such an initiative, because it would attract investors' interest and trust and thus benefit such markets (and investors) the most.

When it comes to future developments in the financial industry and potentials in indexing, most of the interviewees see the largest developments related to two main themes: i) further rise of passive investing, and ii) increased interest in ESG (also green and sustainable) investments. With the creation of the CMU Index Family we also aim to enable investors from developed markets to invest seamlessly across all EU markets, therefore reaching smaller market segments (as well as some national markets as a whole) that are currently neglected. Such a result would on the one hand yield to higher quality of invested portfolios, and on the other provide needed capital in those segments (and markets) for new business activities and value creation.

Finally, special attention was paid to current and short-term market conditions, diversification benefits, and other market-related factors that affect investments in emerging and frontier markets and/or SMEs. Current and short-term market conditions seem relatively challenging, with extremely low (zero or even negative) interest rates expected to persist for some time. These expectations have become even more stringent with the outbreak of Covid-19 and the sudden stop of the economy. Apart from the extreme increase in uncertainty, central banks are again pulling all the stops in terms of the monetary support to the economy. The expectation that current conditions might persist for some time affects equity valuations but more importantly, creates difficulties for particular types of investors (e.g. life insurance companies and pension insurers) that rely more heavily on investing in fixed-income products. Such investors have become more active in seeking alternative investment vehicles to provide their clients with competitive returns and/or maintain their profits. Hence, we believe that this represents an opportunity at the EU level for neglected (mostly smaller, emerging and frontier) markets and SME equity, as long as the risk-return profile is acceptable. In combination with large and mid cap portfolios, the latter mostly comes from the added diversification benefits such investments create. Given that business cycles of developed and emerging/frontier markets are not fully synchronised, specifically that recoveries and recessions hit these markets at different points in time, we expect that such benefits do exist – withstanding, of course, the regulatory framework of financial institutions.

In addition to diversification benefits, listed companies in this segment also offer relatively high dividend return that does not necessarily decrease the price return proportionally due to market inefficiency. At the same time, as pointed out by the interviewees, there are institutional and market micro-structure characteristics that have to be considered and that represent barriers to investing. Here, we refer mainly to low liquidity in these markets and/or proportion of free float in relation to total number of issued stocks (concentration of ownership, large blocks of shares owned by national or local governments) and potential price impact of investing in such markets and/or stocks. While many of these can be addressed with current methodological approaches to index construction (namely, setting liquidity and free-float minimum requirements), the existing indices would not change the current indexing landscape. Many markets and/or companies would remain un- or under-represented.

4.2 Main considerations

With all these elements in mind, **deriving the most efficient indexing strategy while creating the new CMU index family has found that:**

- There is a clear division between the interests of mid- and large-sized companies, and micro and small-capitalisation companies.
- There is a relatively clear divide between large and small(er) asset managers, as well as a divide between investors from developed and emerging/frontier markets. Large investors from developed markets are predominantly focused on investing in mid to large cap companies in developed and emerging markets, while smaller investors from emerging and frontier markets are more likely to invest in their 'home' markets or related emerging/frontier markets.
- Large investors (i.e. ETF providers) are more likely to use fee-based index services of independent index providers, while smaller investors typically revert to free of charge index services provided by national exchanges or included in information/trading platforms such as Bloomberg or Reuters.
- One can reasonably expect the emergence of (local) boutique asset managers, who will specialise in CMU- (i.e. this study) targeted segments of the EU. The CMU index family will foster higher visibility to foreign investors and thus better business opportunities for such boutique asset managers. In the starting phase, one can expect large international investors to invest through specialised local boutique asset managers. Specifically, it will still be relatively more uncertain for them to invest directly in the underlying stocks, despite possible institutional improvements. With the creation of a broad CMU index (CMU All Share Index), boutique asset managers from less-developed capital markets are expected to fill the missing allocation towards the thus far neglected stocks.
- Most of the investors agree that they prefer independent index providers, as they have the most developed know-how (specialisation) in indexing, databases and the best reputation (as well as the track record) in managing and maintaining indices (accounting for all corporate events, transparency, quality, etc.).
- Most of the investors we interviewed do not see a real need for the creation of a CMU Index Family, as they are satisfied with the current indexing landscape. If anything, they would give priority to quality over the number of indices (i.e. quantity).
- Most interviewed investors saw potential in the further rise of index-based passive investment products and increased interest in ESG (also green and sustainable) investments.
- When it comes to investing in frontier markets and/or SMEs, the major 'deal-breakers' for investors are: very limited liquidity (i.e. major price impact when trading), issues with free float (concentration of stock holdings), various institutional aspects (market openness, limits on capital flow, specific local regulatory and infrastructural barriers etc.), and unfamiliarity with markets and/or companies (risk and risk perception). For large investors, the differences that exist throughout the EU capital markets are just too big to be seen as a homogenous market landscape.

4.3 CMU All Share Index

First of all, the CMU Index Family should include a broadly defined index, bringing all the EU-listed companies on board, regardless of the level of local capital market development, and regardless of the market segment (i.e. both stocks traded in regulated markets and SME Growth Markets). The index is based on 27 Member States since the UK left the EU. Such a broad index should be constructed in a way that truly represents EU equity capital markets as a whole. However, such an EU-wide index, comprising about 3 600 stocks, would be good for research and education,[18] and would perhaps serve as an underlying for some derivatives.

Conversely, such an index might be rather difficult to invest and costly as a basis for investment products. If one cannot trade the constituent stocks, the index is not investible. Despite the attractiveness of a broad definition of the index, de facto exclusions are highly likely. All index providers apply certain screening criteria that lead to the absence of certain EU markets from the index universe. Special caution is needed, as the inclusion of additional (and large number of) stocks in the broader index adds little to the total market capitalisation nor to overall performance of the total index. Both portfolio managers and ETF sponsors risk only a small departure (i.e. tracking error) from the index performance by not selecting the smallest stocks to form the portfolio. Including fewer stocks to their portfolios, however, brings the benefits of incurring lower transaction costs. That being said, index replication procedures applied by portfolio managers and ETF sponsors aimed at replicating a particular index at lowest possible cost (by use of various sampling techniques, quadratic optimisation techniques, etc.), might systematically exclude newly added (i.e. smallest) constituent stocks as they will not add much value within such 'tracking error – construction cost' trade-off portfolio decisions.

Currently, no indices that include all stocks from all EU regulated markets exist. We suggest creating the CMU All Share Index, including the total universe of stocks listed in any of the EU markets (including SME Growth Markets), regardless of the market capitalisation, development classification (i.e. developed, emerging and frontier) and liquidity.[19] According to the situation as of the end of 2019 in the capital markets, the CMU All Share Index includes approximately 3 600 companies across all EU markets, with a total market capitalisation exceeding EUR 5.3 billion (see Table 4.1).

Table 4.1 CMU All Share Index

Index	Developed		Emerging		Frontier		Total	
	NR	EUR bn	NR	EUR bn	NR	EUR bn	NR	EUR bn
CMU All Share	2 741	5 255	584	107	245	21	3 570	5 384

Source: CEPS (2020)

Because of its distinctive character, the CMU All Share Index is the only index from the CMU Index Family that is not defined by being based on the liquidity filtering (except for the EUR 1 000 threshold). For all the other indices, the daily liquidity threshold of EUR 50 000 is applied.[20]

To master the challenge of (non)investability, it's proposed that sub-indices are created, as well as an additional mechanism for providing liquidity to the currently overlooked stocks in some of the EU markets.

[18] Would show the economic development in all EU Member States.
[19] In fact, we use a lower threshold condition of EUR 1 000 average daily liquidity over the recent six-month period.
[20] See Chapter 5 for details.

4.4 CMU ESG Index

There is a growing demand for ESG investing. It is already a well-established trend. As less-developed capital markets in the EU are lagging behind the more developed markets, CMU ESG Index should contribute to higher information quality and higher transparency in such markets. For example, the launch in 2019 of WIG ESG Index by Warsaw Stock Exchange clearly demonstrates the demand and the need for such benchmarks (withstanding the liquidity and minimum size requirements), making companies in the Polish market more interesting for cross-border investors looking for further diversification into more sustainable businesses.

The CMU ESG Index is constructed by adjusting this weighting scheme. First, companies that meet the criteria for baseline and activity exclusions, and also companies that obtain more than 1% of their revenues from coal, 10% from oil, 50% from natural gas or 50% from electricity production with carbon intensity of lifecycle GHG emissions above 100g CO2 per kWh, are excluded from the ESG thematic index. Second, individual constituent stocks receive the ESG weight adjustment factor based on their sector carbon-intensity classification.

See Annex 1 for the detailed methodology for the CMU ESG Index.

Table 4.2 CMU ESG Index[21]

Index	Developed		Emerging		Frontier		Total	
	NR	EUR bn	NR	EUR bn	NR	EUR bn	NR	EUR bn
CMU ESG	1 682	4 584	148	82	33	10	1 863	4 677

Source: CEPS (2020)

4.5 CMU Small and Micro Cap indices

To prevent a scenario whereby smaller stocks and stocks with low(er) liquidity are avoided (both such types of stock included in the CMU All Share Index would be considered to be within the tolerance of a tracking error), the conceptual framework was built around broadly and well-defined small cap and even micro cap CMU indices. Creation of such indices will improve the visibility of smaller stocks regardless of their domicile market (and classification to developed, emerging and frontier). Broadly defined small (and micro) cap-only indices should bring liquidity and benefits of listings to the issuers (capital raise when needed), should define a new asset class, foster specialisation of the portfolio management profession, run down the cost of capital of stock issuers, and lower reliance of SMEs on bank financing.

The main purpose of this study is to place some EU countries with particularly small national capital markets on the EU investment landscape. In Europe today, some small cap stock indices exist (e.g. MSCI Europe Small Cap Index or S&P Europe Small Cap Index). They (each) represent only a small part of the total market capitalisation of the selected eligible national capital markets. The problem is that such indices only cover or include the most established (developed) capital markets. With this orientation in mind, one should aim at the CMU goal of establishing further integration among EU capital markets. Given the nature of a particular instrument (market cap, average turnover, etc.), the stock of SMEs will be put on the radar screen of investors regardless of the selected national market. A CMU Small Cap Index that will include stocks from all the Member States based (predominantly) on size and liquidity criteria should be created.[22] One should be cautious here as, market cap-wise, there is a big difference between countries, e.g. small in CEE

[21] All indices have liquidity filter of average daily liquidity (volume times market prices) of at least EUR 50 000.

[22] A limited number of stocks from some of the targeted countries today take part in the emerging market stock indices (e.g. MSCI Emerging market small cap index), but their weighting is small so that such stocks are not visible to investors.

countries such as Romania might be considered micro in Germany (or any other developed EU market). This study follows the generally accepted definition of small capitalisation stock, and uses the range of 100 million EUR to 1 billion EUR market cap.

In line with the argument for introducing a small cap index (and not only including small cap stocks into a broader index) as a separate index, similar logic is applied to include even smaller, more specific and homogenous stock segment, i.e. stocks with micro market capitalisation size (market caps from 10 million EUR to 100 EUR million). Such a CMU Micro Cap Index would include stocks within the size range, again regardless of the national capital market. Altogether, micro caps make up a tiny segment of capital markets (as measured by market capitalisation).

Creating separate size segments (small caps and micro caps) would further establish more visible sub-asset classes, also with different risk/return profiles and correlations. In general, both small caps and micro caps yield higher returns, and have low (and distinct) correlation to large/mid cap stock universe; small caps typically around 0.75, micro cap around 0.5 and even as low as 0.25.

Table 4.3 CMU Micro and Small Cap indices[23]

Index	Developed		Emerging		Frontier		Total	
	NR	EUR bn	NR	EUR bn	NR	EUR bn	NR	EUR bn
CMU Micro Cap	298	9	47	1	4	0	349	10
CMU Small Cap	697	153	74	12	24	6	795	171

Source: CEPS (2020)

4.6 CMU SME Growth Markets Index

To distinguish the high growth potential of some listed companies, it is suggested that a CMU SME Growth Markets Index be created.[24] Such an index could have important benefits for private equity funds (PE) active in the least developed capital markets throughout the EU. Namely, such a market segment – when successfully implemented – would enable PEs to exit their investments by conducting IPOs more frequently (versus the alternative of finding a strategic buyer). This index comprises only stocks from special SME growth segments of stock exchanges throughout the EU.

Table 4.4 CMU SME Growth Markets Index[25]

Index	Developed		Emerging		Frontier		Total	
	NR	EUR bn	NR	EUR bn	NR	EUR bn	NR	EUR bn
CMU SME Growth Markets	230	17.4	6	0.1	-	-	236	17.5

Source: CEPS (2020)

4.7 CMU Small and Mid National Capital Markets indices

With the aim of making small and micro capitalisation stocks even more visible and thus improve their liquidity, it's suggested that a CMU Small National Capital Markets Index and a CMU Mid National Capital Markets Index are launched. There are three distinct size clusters of national capital markets. Markets beyond EUR 100 billion are – with the exception of the Polish market, which has a market capitalisation of roughly 260 billion EUR and is classified as an emerging market – all classified developed markets. As the smallest cluster (small), all the national capital markets with total market capitalisations up to 15 billion EUR are considered. Such markets (in Eur billions) are Latvia (1), Slovakia (1), Cyprus (2), Estonia (3), Lithuania (4), Bulgaria (4), Malta (5), and Slovenia (7). The

[23] All indices have liquidity filter of daily liquidity (volume times market prices) of at least EUR 50 000.
[24] See CMU High-Level Forum (2020).
[25] All indices have liquidity filter of daily liquidity (volume times market prices) of at least EUR 50 000.

second (mid) size cluster comprises national markets with total market capitalisations above 15 billion EUR and below 100 billion EUR. Such markets are Croatia (20), Hungary (29), Romania (38), Luxemburg (38), Czech Republic (49), Greece (62), and Portugal (63).

Table 4.5 CMU Small and Mid National Capital Markets indices[26]

Index	Developed		Emerging		Frontier		Total	
	NR	EUR bn	NR	EUR bn	NR	EUR bn	NR	EUR bn
CMU Small National Capital Markets	-	-	-	-	13	4	13	4
CMU Mid National Capital Markets	18	28	69	48	23	9	110	85

Source: CEPS (2020)

4.8 CMU sectoral indices

There is a lack of indices constructed by sector, for example, as Oil and Gas Index or Energy Index, Manufacturing Index, and so on. Furthermore, sectoral indices in the separate national markets do not make much sense as there are not enough listed companies.

Various sectors can be defined, for example, CMU Transportation, CMU Banks, CMU Insurance, CMU Finance, CMU Construction, CMU ICT, CMU Real estate, besides the above-mentioned Oil and Gas Index or Energy Index, Manufacturing Index and so on. Indices with some exclusions could also be offered, such as CMU Finance Markets excluding Banks. With such a construction, EU capital markets would be much more accessible, allowing investors exposure to the desired sector(s) of the capital markets across the EU.

The creation of the following sectoral CMU indices is suggested:

CMU Manufacturing Index, CMU Banks & Financial Services (excl. Insurance) Index, CMU Insurance Index, CMU ICT Index, CMU Energy Index, CMU Services Index, CMU Health & Social Services Index, CMU Construction Index, CMU Utility Index, CMU Trade Index, CMU Real Estate Index, and CMU Logistics Index.

Table 4.6 CMU sectoral indices[27]

Index	Developed		Emerging		Frontier		Total	
	NR	EUR bn	NR	EUR bn	NR	EUR bn	NR	EUR bn
CMU Manufacturing	646	2 103	39	13	5	2	690	2 117
CMU Energy	68	403	23	24	5	3	96	429
CMU Utility	23	168	5	1	-	-	28	169
CMU Construction	57	163	12	2	-	-	69	165
CMU Trade	37	113	3	1	1	0	41	114
CMU Logistics	19	66	3	0.4	2	1	24	67
CMU ICT	241	609	25	15	4	1	270	625
CMU Banks & Financial Services (excl. insurance)	212	673	31	38	9	3	252	714
CMU Insurance	30	281	3	5	1	0.2	34	287
CMU Real Estate	82	104	9	1	1	1	92	107
CMU Health and Social Services	141	205	1	0	1	0	143	205
CMU Services	198	327	12	4	6	1	216	332

Source: CEPS (2020)

[26] All indices have liquidity filter of daily liquidity (volume times market prices) of at least EUR 50 000.
[27] All indices have liquidity filter of average daily liquidity (volume times market prices) of at least EUR 50 000.

4.9 CMU convergence indices

Based on the interviews conducted with selected index users, index investors, index providers and policymakers, it can be concluded that some investors will be very interested in well-defined indices (and offered products based on them) spanning smaller (regional) EU capital markets. Others have expressed reservations about putting two disproportionate markets together (i.e. western European and southeast European markets, in other words, the most developed and the least developed markets) in one index as market capitalisation-based index would predominantly consist of companies (even SME index) from larger countries/markets (if the same definition for SME is used across the board). The two types of markets differ in many ways: economic development, market technical maturity, liquidity, and so forth.

Currently, there are two initiatives to bring the CEE region together. The first fosters cooperation among Hungarian, Czech and Romanian capital markets. The idea behind this is to include the biggest companies from those markets to create an index that would represent something that foreign investors can invest in. In Romania, there are 15 to 16 stocks with daily liquidity of EUR 1 million minimum (on average) – but as a separate market as it is still not investible on a stand-alone basis. With cooperation, this might change, so that local markets will become more visible for foreign investors. The second initiative is the CEEplus (the Three Seas initiative connecting the Visegrad countries of Slovenia, Croatia and Romania). Index launch was announced in the 29th Economic Forum.[28]

Having structured the CMU indices above, however, we have to admit that many markets are not investible for large international investors (EU & US). Many of the companies included in indices in the CEE region have liquidity issues, making those indices hard to invest in or replicate. Including such stock in a broader universe of stock families is unlikely, by itself, to significantly increase liquidity any time soon.

One of the index providers argued in the interview: "Our indices also include a liquidity filter, which could lead to a vicious circle for smaller caps: they cannot be included in the index because they're illiquid and they are illiquid because they are not included in the index."

The common observation regarding access to finance through the market (stock exchange) mechanism is as follows: as large caps concentrate on larger and more popular stock exchanges, traders also then tend to concentrate on larger stock exchanges and more companies choose to list on these exchanges. This results in the uneven development of capital markets across the EU. This contradicts the main goal of the CMU index exactly, that is, to increase liquidity and investability in smaller national exchanges.

With the aim of increasing visibility to create higher liquidity in the least liquid capital markets, we suggest creating a set of 'convergence' indices that are overcoming the currently predominant labelling of capital markets (developed, emerging, frontier). Our convergence set of indices is built on average liquidity reading for separate stock (defined as daily turnover between EUR 1 000 and EUR 50 000), regardless of the national market they trade in.[29] CMU convergence indices are a very important first step from the current development and level of integration of local (less developed) capital markets, towards fully integrated capital markets across the EU; in other words, the main goal of the CMU endeavours. These indices are also a sub-set of the broad CMU All Share Index.

[28] See https://www.prnewswire.com/news-releases/gpw-in-cooperation-with-three-seas-exchanges-launches-ceeplus-index-300911732.html

[29] The only two indices that are exceptions from the purely technical liquidity rule of liquidity are mid and small national capital markets, where liquidity is much more of an issue compared to larger national capital markets. These two indices should be additionally beneficial in terms of bringing smaller markets closer up to speed with larger and more liquid capital markets.

This kind of construction approach also allows further construction of sub-indices, for example sectoral, because in the separate national markets there are simply not enough companies from a particular industry. Individual indices – and their importance – are listed in Table 4.7.

Table 4.7 CMU convergence indices[30]

Index	Developed		Emerging		Frontier		Total	
	NR	EUR bn	NR	EUR bn	NR	EUR bn	NR	EUR bn
Main Index								
CMU Convergence	987	40	417	5	209	8	1 613	52
Thematic index								
CMU ESG Convergence	970	34	407	4	202	7	1 579	46
Size indices								
CMU Micro Cap Convergence	777	11	365	2	137	2	1 279	15
CMU Small Cap Convergence	172	11	43	2	67	5	282	18
CMU SME Growth Markets Convergence	419	6	91	0.2	-	-	510	6
CMU Small National Capital Markets Convergence	-	-	-	-	126	5	126	5
CMU Mid National Capital Markets Convergence	20	2	92	1.5	83	2.5	195	6
Sectoral Indices								
CMU Manufacturing Convergence	345	14	139	2	62	2	546	18
CMU Energy Convergence	28	1	32	0.2	6	0.1	66	1
CMU Utility Convergence	11	5	5	0.1	4	0.2	21	5
CMU Construction Convergence	12	0.2	23	0.1	8	0.3	43	0.6
CMU Trade Convergence	25	1.3	17	0.2	19	0.4	51	2
CMU Logistics Convergence	9	0.3	8	0.1	17	0.6	34	1
CMU ICT Convergence	177	3	58	0.5	10	0.4	245	4
CMU Banks & Financial Services (excl. insurance) Convergence	133	9	32	0.5	44	2	209	12
CMU Insurance Convergence	-	-	2	0	4	0.4	6	0.4
CMU Real Estate Convergence	59	2	35	0.4	13	0.4	107	3
CMU Health and Social Services Convergence	73	1.2	9	0.1	3	0.1	85	1.4
CMU Services Convergence	115	2	54	0.4	27	1	196	4

Source: CEPS (2020)

[30] All 'convergence' indices have liquidity filter of average daily liquidity (volume times market prices) between EUR 1 000 and EUR 50 000.

5 CMU Index Family methodology

This chapter provides the conceptual framework concerning the methodological approach for index composition, weighting, balancing model specification, revision process and criteria.

The optimal methodology has been proposed by reviewing existing methodologies used by several independent index providers: MSCI, FTSE Russell, Refinitiv, Stoxx, S&P, and Wilshire. Some stock exchanges, for example Wiener Boerse, provide more details. The existing methodologies represent the best practices adopted by markets (index providers and investors) over time and there is no need to reinvent these. In addition, investor interview responses regarding the index return choices, adjustments, rebalancing, and frequency of calculation, have been taken into account. Finally, the most important points regarding the CMU Index Family strategy have also been considered. All CMU indices are based on purely technical eligibility criteria with the aim of facilitating broader inclusion of listed stocks regardless of the national capital market. The methodology contains the following essential elements:

- Eligibility (inclusion) criteria (size, liquidity, free-float adjusted capitalisation, size of the national capital market)
- Construction
  - Market definition - industry/thematic/size/
  - Limits – maximum weights/'capping'
- Calculation
  - Total versus price returns
  - Taxation adjustments
- Adjustments/rebalancing/maintenance
  - Corporate actions
  - Scheduling

The detailed methodology depends on: 1) the ultimate composition of the CMU Index Family, and 2) the practical implementation of the CMU Index Family. The second point refers to the model (and governance) of providing the index: commercial (independent index provider in potential cooperation with the European Commission) versus non-commercial (a particular stock exchange in potential cooperation with the European Commission).

5.1 Index composition

The proposed family of indices covers listed equities – common stock of companies registered (headquartered)[31] in one of the EU Member States and listed in one of the EU stock exchanges. Depending on a particular sub-index of the CMU Index Family, a specific coverage criteria is applied, whether from the perspective of business cycle phase, industry specific, firm-size specific (large, mid, small or micro cap), or thematic (such as ESG, green, sustainable, or factor based), and convergence character. In addition, a particular size (market cap), liquidity, and free-float adjustment to market capitalisation minimum requirement will be set so a particular issuer can enter the constituent list of an index.

Liquidity-wise, the CMU All Share Index includes all stocks with a recent six-month average daily turnover reaching at least EUR 1 000. All other indices (main CMU indices) except convergence ones include stocks with six-month average daily liquidity of EUR 50 000 or more. Convergence indices, however, comprise stocks with average daily liquidity of at least EUR 1 000, but not exceeding EUR 50 000.

[31] This is open to discussion. S&P US indices, for example, define the »domicile« of a company in terms of the majority of assets or revenues attributable to US origin.

One reason for the selected thresholds is the volatility of daily liquidity. Stocks below EUR 1 000 daily turnover exhibit a high coefficient of variation (COV[32]) of daily liquidity. COV of such stocks is higher than 1, which is considered excessive. In the convergence group (i.e. average daily liquidity of between EUR 1 000 and EUR 50 000), stocks typically exhibit COV of between 0.5 and 1.0. In the main CMU indices group (i.e. average daily liquidity above EUR 50 000) COV can be as low as 0.2. The lower threshold of EUR 1 000 is also supported by the argument of the inability to build any reasonable economic exposure. Data shows many stocks with limited trading activity have typical liquidity even below EUR 500 per day. There are not many stocks traded with average daily liquidity of between EUR 500 and EUR 1 000. The 'liquidity group' between EUR 1 000 and EUR 5 000, by contrast, consists of roughly 500 listed companies throughout the EU markets. With this defined liquidity filter, one can observe a welcome feature of the suggested index design. Namely, in the convergence CMU index families, stocks from all EU capital markets are quite evenly represented, regardless of the mainstream classification of developed, emerging or frontier nature.

5.2 Weighting and balancing

In principle, indices are free-float adjusted and market capitalisation-weighted. Given the nature and the purpose of an index, capping of the market capitalisation weights are typically applied as well. It may well be that a particular issuer is so large that its market capitalisation-based weight creates an unreasonable concentration. There are two different capping methods: constituent (company) capping, and constituent capping together with concentration limit capping. The latter is expressed as X/Y/Z capping - X being a capping of the weight of a single constituent (of X%), and Y and Z being maximum cap of Z% of a group of companies that exceed individual weights of Y%. This is prescribed, for example, to UCITS funds as the 10/5/40 rule - 10% maximum constituent weight with 40% cap on cumulative weight of all constituents with more than 5% weight. UCITS regulation still allows for exceptions to this rule, with individual caps of up to 25% or more.

Given a particular aim of a specific CMU Index Family member, various alternative weighting schemes can be used, although investors are not particularly fond of such alternatives. The most often used alternative would be an equally weighted index, followed by assigning minimum/maximum weights of exposures to particular sub-sets of constituents. For example, an index covering a particular set of SMEs could be stratified in terms of weights placed upon a particular market and further minimum/maximum weight for an issuer.

5.3 Index calculation

In terms of the frequency of calculation, the indices should be provided in real time (intra-day), with the standard set of open, close, low, and high data at end-of-day (EOD). There are two basic approaches for calculation: price based and total return based. The difference between the two is that the total return approach takes into account dividend payments as well as potential tax adjustments (withholding tax) to dividend payments, for the purpose of reinvesting dividends. Based on the interviews with various index users and investors, we observe that most of them prefer total return indices, while there is also some, albeit limited, interest in price-based indices. Indices are typically calculated by applying adjustment for free float[33] and capping of weights (as already explained). In addition, some other constituent attributes (corporate actions, domestic/foreign ownership

[32] COV is defined as a ratio between the standard deviation and the mean. In this particular case it relates to the standard deviation of daily liquidity and the average daily liquidity.

[33] Free float refers to the outstanding shares adjusted for block ownership so as to reflect tradable/investible parts of listed equity. Frequency of observing the free float and determining the adjustment can vary.

factors, etc) may be applied to further adjust the constituent weights, the so-called effective adjustment factor.

5.4 Revision process and criteria

Rebalancing (or reviews) of constituent lists are either calendar scheduled (announced) or triggered by a particular corporate event (unannounced). Calendar-based reviews typically take into consideration changes in free float, liquidity, and size; in short, all the factors that affect index composition (in principle twice a year) and calculation (in principle every quarter). More challenging for an index provider are unexpected (unannounced) revisions due to corporate events. Many interviewed investors emphasised the trusted systematic approach and information advantage of independent index providers. Most of the index providers specify in detail various corporate events and the treatment of those events in their methodologies (rights issues, M&As, state-owned enterprises, employee stock ownership plans, convertible bonds, stock splits and reverse splits, special dividends, spin-offs, share repurchases, delistings, suspensions, financial distress, and name changes, etc.).

5.5 Other methodological issues

Index methodology needs to address another set of issues. For any type of index, data policy has to be established, whereby sources of data (financial data) used in index methodology are identified and specified. In addition, when it comes to various thematic indices, clear theme identification rules need to be specified. This is particularly the case, for example, for ESG (as well as green and any sustainability-based themes), where ESG score composites are not uniquely accepted (specified).

6 Governance of CMU Index Family

The goals of the CMU Index Family are central when it comes to its governance structure. The first goal is to foster promotion and visibility of the CMU. The second is to provide companies, in particular SMEs, with enhanced access to capital markets' financing, by channelling the fragmented liquidity and savings into productive use through further integration and interconnectivity of capital markets across the EU. To propose the governance structure best suited for fulfilling these goals, one needs to understand the effectiveness and the shortcomings of the existing index provision models.

The existing index provision models and the market are reviewed from various pieces of information: index provision market concentration, constituent market overview, interviews and surveys of index issuers and investors, and earlier related studies.

Several potential governance approaches for the creation of the CMU Index Family are presented. These are based on the overview of the existing market and models for index provision services, and range from fully market based (private) to one based on government intervention. This chapter discusses various options and the preferred strategy for the governance of the CMU Index Family.

6.1 Existing index provision models

Most of the finance literature addresses the index provisioning services from the perspective of its impact on inclusion and exclusion of companies (as discussed in section 3.1). The literature on the role of index providers when it comes to their overall impact on financial markets is far more scarce, in particular from the perspective of their roles as information providers, standard setters, implicit authorities, and in investor access.

Here, as already pointed out in this study (see section 3.3 and Chapter 4), one has to differentiate between index provision of stock exchanges and that of independent index providers, because this has important implications regarding the pricing and the use of indices. The few academic papers that address this particular issue consider only independent index providers, owing to their worldwide impact and high market concentration. This distinction and differential behaviour of stock exchanges as index providers versus independent index providers, as well as their relevant market shares, pricing and investor impact will further on in this report be considered as an important factor when it comes to the governance of the CMU Index Family (see section 6.2). Hereafter the focus will be on the previous findings and discussions that relate only to independent index providers.

Petry, Fichtner and Heemskerk (2019) discuss how, with a rise of passive asset management and a massive shift of funds from actively managed investments (funds) towards passively managed funds (predominantly ETFs), index provisioning has essentially changed in its nature; it has moved from simply providing information regarding the overall market performance towards "becoming actors that exercise growing private authority as they steer investments through indices they create and maintain" (Petry et al., 2019, p1).[34] With this critical shift in their importance, it is essential to understand the main features of the indexing industry and index providers' behaviour. Petry et al. (2019), for example, report that the revenue of the three big index providers (MSCI, FTSE and S&P DJI) has tripled since 2010 (and almost doubled between 2006 and 2010), with a combined market share of almost 80% (Jahnke, 2019), and very high operating margins (over 60% in the case of MSCI). They argue that this suggests "that index providers operate in an

[34] This actually fits within a broader issue of the political economy related to various types of benchmarking exercises, such as competitiveness, schooling systems, poverty, etc., (see, for example, Broom and Quirk, 2015a and 2015b and Fletcher, 2017). We aim to steer away from these debates as much as possible and focus on the practical implications related to the governance of index provisioning.

oligopolistic industry, which has high barriers to competition" (entry). At the same time, the passive investment industry in the US seems to be dominated by the 'big three': BlackRock, Vanguard, and State Street (Fichter, Heemskerk and Garcia-Bernardo, 2017). Together they constitute the largest shareholder in 88% of the S&P 500 firms, for example, where they hold more long-term investment positions compared to active asset management investors.

Moreover, the big three also represent the most important clients for the three big index providers (Jahnke, 2019). This implies that the incentives of the largest independent index providers seem very closely aligned with the preferences of the largest passive investors. This has also been corroborated by several findings in the initial interviews and later on in the broader survey. Namely, independent index providers mostly refer to investor interest when asked about index constitutions, while large western institutional investors show little to no interest in small and medium-sized issuers and/or smaller markets.

This relates to the important question of why small and medium-sized issuers, as well as smaller markets, are poorly represented in indices. The common answer provided by index providers (and many investors as well) is liquidity constraints. However, the liquidity of a particular financial asset is very much determined by the demand for such an asset. One could argue that in the age of the rise in passive investing, inclusion in the index significantly drives up the demand by passive investors, who track a particular index, and hence, the liquidity of the included asset, thus generating the positive effect on returns. The converse holds for index exclusions (see section 3.1). However, the index inclusion rules almost exclusively require sufficient prior liquidity.

Nevertheless, it would be wrong to assume that the full causality goes from inclusion towards liquidity. As interviews and surveys of investors that are interested in small and medium-sized firms, as well as smaller markets, show, they do look for (and are in need of) ease of trading of assets (liquidity). The equity market overview of CMU countries has also shown that there are many stocks of SMEs with very poor liquidity (many non-trading days and small free float) and mostly listed on smaller national markets. Hence, the explanation regarding the liquidity of such issuers (markets) lies somewhere between the internal (endogenous) factors (size, ownership structure, free float, and trading costs) and external (exogenous) factors (visibility, geographic proximity to financial centres, and index inclusion).

Similar findings, for example, have been found in the case of the visibility and geographical location of firms in the US. Loughran and Schultz (2005) compare urban and rural US firms and find that investors hold and trade securities that capture their attention, as well as prefer to hold and trade shares of firms located nearby. Rural stocks capture the attention of fewer people, are followed by fewer analysts, and thus have less information available to investors. The market for urban stocks is much more liquid, while rural stocks exhibit lower turnover, lower liquidity, and higher trading costs. One could draw a parallel between these findings and the CMU stocks. The only difference would be the fragmented CMU national markets, compared to the more integrated US equity market. However, as the case of Euronext shows (Nielsson, 2009), a merger of stock exchanges in Amsterdam, Brussels, Lisbon, and Paris was not associated with liquidity gains for SMEs and domestic companies, with large firms and firms with foreign sales benefiting the most. Hence, the segmentation of the CMU national markets does not seem to be a determining factor when it comes to liquidity.

Finally, while in some constituencies such as the EU, regulators have inaugurated benchmark regulations in the post-global financial crisis era; in global terms such regulation is non-existent or very weak (McCarthy, 2018). Any governance form of the CMU Index Family, albeit already bounded by the EU regulation, should aim towards satisfying a more stringent set of rules and preventing index abuse, in particular those of

transparency of an index methodology and limitations to arbitrary decisions of the index committee (Robertson, 2018).

These issues are crucial in order to determine the best governance model for the CMU Index Family.

6.2 Party responsible for calculation and management

The three options regarding the responsible party for calculation and management of the CMU Index Family are ranging, in the increasing degree of intervention, from a purely market-driven solution to government-provided service.

From the perspective of the most able to fulfil the objectives of the CMU Index Family, a public-private partnership (PPP) would be the most appropriate. The European Commission would promote the CMU, as well as many important related initiatives, through the creation and support of the CMU Index Family.

6.2.1 Market-based approach

A purely market-based approach is likely to fail. If it were a viable option, it would have been operational by now. Moreover, given that most of the independent (and the largest) index providers stated that they follow investors' demand, they would have done so if sufficient demand from their largest clients (the largest asset management companies based in the US and western Europe) existed. Given that the commonality between the proposed CMU Index Family and the existing indices lies within the largest developed markets and the largest equity issuers, small and medium issuers, and smaller national markets, would remain underserved. Moreover, two additional issues make this option unlikely to be viable.

First, index providers want to claim their independence. Hence, the entire governance of the CMU Index Family would have to be entrusted to an index provider. Given the current state of the index provisioning industry and the related issues that have been briefly discussed, this is unlikely to be the most suitable option to fulfil the objectives of the CMU Index Family.

Second, the cost/benefit ratio of such an undertaking would make such a product relatively expensive and most likely not viable for investors that have the most demand for it - predominantly smaller asset management companies in local (smaller) CMU markets who are not able to afford expensive index products and maintain their cost competitiveness.

6.2.2 Public-private partnership

A PPP entails a partnership where the European Commission would provide the main framework for such an index family (methodology, governance, and pricing) and would partner with one of the existing providers to launch and maintain the index family. The provider would be selected through a tender procedure.

Although it is assumed that a broad CMU Index Family framework would be set by the European Commission, the detailed methodology of index construction, rebalancing, and maintenance of indices would still be a domain of the contracted index provider. Existing index providers have market reputation, while their developed methodology has become the market standard, familiar to investors. Compared to the first option, this has the potential to address the two aforementioned issues.

First, the broad methodology and governance would be proposed by the European Commission, thus effectively retaining the top-level control over the objectives of the CMU Index Family.

Second, without any prejudice to identifying the public body in the partnership,[35] a public involvement would foster a framework that would enable the introduction of the CMU Index Family, withstanding, of course, all the economic and legal foundations for such an action.

In practice, the European Commission could call for the creation of a task force on the implementation of the CMU Index Family, with interested or relevant public stakeholders exploring the most viable options of the public engagement in the PPP, as well as being responsible for the operational launch of the CMU Index Family.

In terms of financial support (at least in the inception phase), the CMU Index Family could be supported within the framework of support to Member States for capital markets development. The existing Structural Reform Support Programme (SRSP)[36] of the European Commission, which offers support in implementing growth-enhancing reforms, has among its objectives the improvement of financing opportunities under the CMU initiative. While the activation of the support, which typically involves provision of expertise, has to be triggered by a formal request by a national government, several Member States, especially from CEE countries where equity markets are less developed, in cooperation with local market institutions, could activate the programme and play an important role to boost the CMU Index Family and local equity markets.

This option is best able to fulfil the objectives of the CMU Index Family.

6.2.3 European Commission-governed index

The CMU Index Family could also be **provided entirely by the European Commission.** This option is not viable, however, since there are major obstacles that hinder such an implementation.

First, the European Commission is not technically equipped to provide such a service. It is not a question of implementing a particular mechanism for calculating an index, but rather maintaining the index, predominantly tracking and taking into account all the corporate actions that affect index constituents (eligibility, adjustments, etc.).

Second, there is an issue of the supranational (public) institution directly undertaking a market-based service.

6.3 Costs and revenues for providing indexes

Given the specific nature of the CMU Index Family creation and its mission of facilitating better market access and liquidity of SMEs and smaller markets in particular, market participants should not (at least in the initial phase) be expected to pay to utilise the CMU Index Family. Moreover, this is best way to make use of such a service because the most market potential for such an index family has been expressed by smaller asset management companies. These mostly operate in national markets and are not able (or willing) to take upon themselves a major (fixed) cost of the use of such a service. The European Commission should explore all the options to offer the infrastructure needed to motivate as many market participants as possible to use the CMU Index Family.

[35] There are various options for the engagement of public entities, ranging from national Member States, consortium of Member States, supranational financial institutions, EU regulatory agencies, DG REFORM, DG FISMA, etc.

[36] https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/overview-funding-programmes/structural-reform-support-programme-srsp_en

6.4 Other considerations

One could argue that the impact of optimal index provision on the effective investability of SMEs and smaller markets is limited. In other words, it is a necessary but insufficient condition. Without actual significant investors' interest (investment flow) in such investments, such assets and/or markets may most likely still end up being underserved. Hence, based on all these findings, supranational institutions (EBRD, EIB and EIF), as well as national promotional/development banks and pillar II pension funds, could explore options allowing them some level of engagement in supporting investment activities.

Furthermore, while the discussion regarding the use of indices has focused on institutional investors, the retail market should not be completely neglected. For example, the Pan-European Personal Pension Product (PEPP) initiative seeks to address the ageing of the population, the need for retirement savings and the lack thereof in many EU Member States.[37] Creation of the CMU Index Family on the suggested governance basis would allow better promotion of the CMU, SMEs, and smaller markets, as well as facilitate more competition among pension product providers and potential larger investment flows, as the use of index could be relatively inexpensive (if not free of charge).

It must be emphasised that the promotion and support of the CMU Index Family should not be considered as investment advice. While indices do represent the foundation for many investment products, they are in themselves simply an information metric of the market performance.

[37] Apparently, only 27% of Europeans between the ages of 25 and 59 are enrolled in a pension product (https://ec.europa.eu/commission/presscorner/detail/en/MEMO_19_1993).

7 CMU Index Family market potential and impact

This chapter is based on a survey of investors and assesses the extent to which European and global institutional investors are effectively interested in and expected to use the CMU Index Family. It also assesses the composition, performance and liquidity of the index, based on a simulation of the index over the five years between April 2015 and March 2020.

An assessment across the CMU Index Family indices is given below (the information for the individual indices is provided in Annex 2).

7.1 Index composition

The number of companies included in the CMU All Share Index is 3 570 or about half the total companies listed on the EU-27, UK regulated markets and SME Growth Markets (see Table 7.1). There are four reasons for this:

- The CMU Index Family only covers companies listed in the EU-27; UK-listed companies are excluded.
- The CMU Index Family only covers EU-domiciled companies, which means that all those companies listed in the EU-27 with their headquarters outside the EU are excluded.
- The CMU Index Family only covers actively traded companies, which means that the companies where trading was suspended at the time of the index calculation were also excluded.
- The CMU Index Family only covers companies with a minimum liquidity; companies with a daily trading value of less than EUR 1 000 per day in the six months preceding the calibration have been excluded.

The CMU All Share Index has about twice as many companies than any of the sub-indices. It covers both the 1 613 companies with lower daily trading values included in the convergence indices (i.e. between EUR 1 000 and EUR 50 000 daily trading value) and the 1 957 companies with higher trading values included in the main indices (i.e. more than EUR 50 000 daily trading value).

The CMU ESG indices comprise all companies included in the main indices and the convergence indices, with the exception of those companies meeting the baseline or activity-based exclusion criteria.

The other size and sectoral indices all include a sub-set of the companies meeting the requirements for inclusion in the main and convergence indices. In most cases, the main indices include slightly more companies than the convergence indices, with a clear exception for size-based indices. Most micro caps, companies listed at SME Growth Markets and small and mid-sized national capital markets are included in the convergence indices. Most notable is the CMU Small National Capital Markets Convergence Index, which covers about ten times as many companies as the CMU Small National Capital Markets Index.

Looking at the companies across sectoral indices. Most of the companies are in the CMU Manufacturing indices, which cover about a third of all companies in the CMU All Share Index. Moreover, the CMU ICT and CMU Banks and Financial Services (excl. insurance) each cover more than a tenth of the companies. The other eight sectors cover the remaining quarter of the companies.

Table 7.1 Number of companies

Index	Number of companies	
	Main index	Convergence index
Main indices		
CMU All Share	3 570	1 613
Thematic indices		
CMU ESG	1 863	1 579
Size indices		
CMU Micro Cap	349	1 279
CMU Small Cap	795	282
CMU SME Growth Markets	236	510
CMU Small National Capital Markets	13	126
CMU Mid National Capital Markets	110	195
Sectoral indices		
CMU Manufacturing	690	546
CMU Energy	96	66
CMU Utility	28	21
CMU Construction	69	43
CMU Trade	41	51
CMU Logistics	24	34
CMU ICT	270	245
CMU Banks & Financial Services (excl. insurance)	252	209
CMU Insurance	34	6
CMU Real Estate	92	107
CMU Health and Social Services	143	85
CMU Services	216	196

Source: CEPS (2020)

Apart from CMU ESG, the CMU indices are based on the free-float adjusted market capitalisation. This means that in principle larger companies have a relatively larger weight in the index than smaller companies, with their size measured by the market capitalisation unadjusted for free float (see Table 7.2).

About three-quarters of the companies included in the CMU All Share Index are micro caps (up to EUR 100 million market capitalisation) or small caps (between EUR 100 million and EUR 1 billion), yet they are responsible for only 4% of the index weight. In turn, the remaining quarter of companies, consisting of mid caps (between EUR 1 billion and EUR 5 billion) and large caps (more than EUR 5 billion) account for 11% and 85% of the index respectively. This means that with 800 mid and large caps, 96% of the index can be tracked.

The main thematic and sectoral indices show a fairly similar distribution as the CMU All Share Index, with large companies representing the largest share of the index weight. In the sectoral indices, large companies represent between 70% and 90% of the index, with the exception of the CMU Real Estate Index. In the CMU Real Estate Index, small and mid-sized companies have a large share in the index, with 11% and 40% respectively. Interestingly, the smaller companies have a relatively larger weight in the CMU ESG indices than in the CMU All Share indices, which suggests that the companies in the low emission sectors are in general smaller than the companies in the high emission and excluded sectors.

Generally, the convergence indices include very few mid and large caps, and this is reflected in larger index weights for the micro and small caps. For example, the CMU Convergence consists of about 3% of mid and large caps, which represent about 37% of the index weight. Indeed, the inclusion of micro and small caps in the convergence indices is based on the trading values, which are in general lower for smaller companies than for larger companies. The larger companies with low trading values often have a limited free float.

The size indices are skewed to particular size categories by design. The CMU Micro Cap Index and the CMU Small Cap indices include only micro and small caps respectively. The SME Growth Markets are targeting companies with a market cap of up to EUR 200 million, a factor which is also reflected in the composition. Micro caps represent two-thirds of the companies and 22% of the index weight. Small caps represent about 32% of the companies and about 70% of the index weight. The three included mid caps represent 1% of the companies and 8% of the index weight. There are no large caps in the SME Growth Markets Index. Even the CMU Growth Markets Convergence Index consists exclusively of micro and small caps.

The smaller capital markets also have fewer large companies. In fact, the CMU Small National Capital Markets Index consists exclusively of micro, small and mid caps. The CMU Small National Capital Markets Convergence Index consists only of micro and small caps. The CMU Mid National Capital Markets Index includes some large caps, which represent about 10% of the companies included and about half of the index weight. The convergence index consists almost exclusively of micro, small and mid caps.

Table 7.2 Companies by size (% of index weight)

Index	Main					Convergence				
	Micro	Small	Mid	Large	Total	Micro	Small	Mid	Large	Total
Main indices										
CMU All Share	0.5	3.5	11.0	85.0	100	29.2	34.0	28.4	8.4	100
Thematic indices										
CMU ESG	0.2	3.6	12.2	84.0	100	34.3	39.7	22.5	3.5	100
Size indices										
CMU Micro Cap	100.0	0.0	0.0	0.0	100	100.0	0.0	0.0	0.0	100
CMU Small Cap	0.0	100.0	0.0	0.0	100	0.0	100.0	0.0	0.0	100
CMU SME Growth Markets	22.2	69.9	7.9	0.0	100	79.3	20.7	0.0	0.0	100
CMU Small National Capital Markets	2.3	80.9	16.8	0.0	100	30.5	69.5	0.0	0.0	100
CMU Mid National Capital Markets	0.8	10.2	36.1	52.9	100	22.4	43.7	33.7	0.2	100
Sectoral indices										
CMU Manufacturing	0.1	3.0	10.0	86.9	100	26.1	28.9	31.4	13.6	100
CMU Energy	0.2	2.1	7.5	90.2	100	44.5	51.0	0.6	3.9	100
CMU Utility	0.5	4.3	17.8	77.4	100	39.0	35.4	17.8	7.8	100
CMU Construction	0.3	5.2	24.7	69.8	100	71.9	28.1	0.0	0.0	100
CMU Trade	0.3	7.5	22.7	69.5	100	63.4	27.3	0.0	9.3	100
CMU Logistics	0.0	9.6	18.2	72.2	100	31.6	57.4	8.9	2.1	100
CMU ICT	0.3	3.8	11.8	84.1	100	66.1	29.3	0.0	4.6	100
CMU Banks & Financial Services (excl. insurance)	0.2	3.1	14.5	82.2	100	23.8	46.6	29.4	0.2	100
CMU Insurance	0.1	0.5	12.9	86.5	100	50.0	50.0	0.0	0.0	100
CMU Real Estate	0.3	11.3	39.6	48.8	100	32.2	58.9	8.9	0.0	100
CMU Health and Social Services	0.7	6.1	13.8	79.4	100	68.6	26.0	5.4	0.0	100
CMU Services	0.4	8.0	16.6	75.0	100	45.7	42.7	11.6	0.0	100

Source: CEPS (2020)

The concentration of companies in the indices depends largely on the share of large companies in the index (see Table 7.3). In general, the more large companies are included in the index, the higher the share of the companies with the largest index weights. This effect, however, is somewhat reduced by the maximum index weights applied. The maximum weight of the largest companies in the index is capped at 10% for an individual company and 40% for the largest five companies. This limits the concentration in the indices in the CMU Index Family. If there are 12 or fewer companies in the index, all of the companies have an equal weight in the index. This is the case for the CMU Insurance Convergence Index, which is reflected in an equal distribution across companies.

In the CMU All Share Index, the top 5% of the companies represents about 74% of the index. Another 20% of large companies are responsible for another 23% of the index. The next 25% of companies contribute only about 2.5% of the index. The remaining 50% of the companies account for only 0.4% of the index. The index can thus be tracked for 99.6% by investing in 1 785 of the total 3 570 companies included in the CMU All Share Index.

The ESG is also very concentrated, but less so than the CMU All Share Index. This is because the excluded convergence companies generally have a very small index weight, and those smaller companies included in the index have higher weights.

The included companies are more homogeneous in the size category, which is reflected in less concentrated indices. In the CMU Micro and Small Cap indices the top 25% companies account for about 50% of the companies, which is almost half the share of the top 50% of companies in the CMU All Share Index. The CMU SME Growth Markets and CMU Mid National Capital Markets with more heterogeneous composition in size also have relatively higher concentration ratios, but still significantly less than the CMU All Share Index with 73% and 83% of the index for the top 25% companies respectively.

The sectoral indices are fairly concentrated, with the exception of the CMU Logistics Index. In general, the indices with more companies included, such as CMU Manufacturing Index, CMU ICT, CMU Banks & Financial Services (excl. insurance) and CMU Services are more concentrated. The CMU Logistics and CMU Utility indices are relatively more homogenous with predominantly large companies.

The convergence indices are significantly less concentrated than the main indices. With very few or no large caps, the indices become more homogeneous in terms of size. Nevertheless, the top 50% of the companies still account for 78% of the index weights in all convergence indices, except for the equally weighted CMU Insurance Convergence Index.

Table 7.3 Index weight of largest companies

Index	Main				Convergence			
	Top 1%	Top 5%	Top 25%	Top 50%	Top 1%	Top 5%	Top 25%	Top 50%
Main indices								
CMU All Share	38.6	73.8	97.1	99.6	33.6	53.4	81.8	94.0
Thematic indices								
CMU ESG	31.3	64.8	93.7	98.7	25.5	51.6	84.6	95.3
Size indices								
CMU Micro Cap	3.9	15.5	53.8	80.5	6.7	23.8	65.1	87.4
CMU Small Cap	4.1	16.6	54.8	80.0	7.7	24.1	62.4	84.3
CMU SME Growth Markets	11.9	34.2	73.0	90.6	13.0	31.1	71.0	90.2
CMU Small National Capital Markets	9.0	9.0	35.2	59.8	11.8	29.9	68.3	88.5
CMU Mid National Capital Markets	20.0	41.2	83.1	95.8	18.6	48.2	81.4	93.8
Sectoral indices								
CMU Manufacturing	28.5	66.4	93.4	98.6	34.4	58.2	82.9	93.9
CMU Energy	8.9	40.0	89.1	98.3	10.0	34.6	69.9	88.5

Index	Main				Convergence			
	Top 1%	Top 5%	Top 25%	Top 50%	Top 1%	Top 5%	Top 25%	Top 50%
CMU Utility	9.7	17.5	54.7	90.6	8.4	16.4	47.8	78.9
CMU Construction	8.6	32.2	86.1	96.7	10.0	28.1	59.0	84.3
CMU Trade	9.3	24.9	76.9	94.6	9.3	26.2	68.7	89.8
CMU Logistics	9.0	17.0	47.7	82.1	8.9	17.8	61.6	84.8
CMU ICT	24.3	63.6	94.3	98.7	11.1	28.6	70.9	91.2
CMU Banks & Financial Services (excl. insurance)	19.8	49.0	86.5	96.5	20.1	40.0	76.8	93.0
CMU Insurance	8.0	16.0	66.9	91.5	16.7	16.7	33.3	50.0
CMU Real Estate	10.0	38.0	78.5	93.7	13.5	33.7	73.3	92.1
CMU Health and Social Services	20.0	53.8	92.7	98.3	6.8	31.2	70.8	89.6
CMU Services	21.9	51.1	91.0	97.7	13.9	36.9	76.0	91.7

Source: CEPS (2020)

The geographical distribution follows the distribution of EU-27-listed companies across countries (see Table 7.4 and Table 7.5). The CMU All Share Index consists primarily of companies from countries with larger equity markets. Companies in Germany (28%) and France (21%) together represent nearly half of the index weight of the CMU All Share Index. The remainder of the index is primarily formed by companies from Italy (9%), the Netherlands (8%), Spain (8%) and Sweden (10%). The companies from the remaining 21 EU countries represent 17% of the index.

In turn, the CMU Convergence Index is more equally spread across countries. Companies from Germany (23%) and Sweden (10%) represent about one-third of the index. Finland (5%), France (9%), Italy (7%), the Netherlands (7%) and Poland (6%) represent about another third. The remaining 20 EU countries represent the final third in the CMU Convergence Index.

The size indices show a relatively larger share for some of the smaller equity markets. In the CMU Micro and Small Cap indices, companies from Italy and Sweden have a relatively larger weight, while the companies from Germany and the Netherlands account for a smaller share than in the CMU All Share Index. The CMU SME Growth Markets, CMU Small and Mid National Capital Markets indices are by design more concentrated in selected markets. The CMU SME Growth Markets are restricted to the markets registered as such. Companies in France, Italy and Sweden form the lion's share of these indices. In the CMU Small Capital Markets Index companies from Estonia (24%) and Slovenia (51%) have the highest weight, while in the CMU Small Capital Markets Convergence Index the companies from Bulgaria (24%) and Malta (29%) have more than half of the index weight. The CMU Mid National Capital Markets Index are concentrated in Greece (27%), Hungary (19%) and Portugal (33%), while the CMU Mid National Capital Markets Convergence Index is concentrated in Croatia (33%), Greece (16%) and Luxembourg (29%).

Overall, the sectoral indices have the same distribution as the CMU All Share Index. However, listed German companies contribute the most to the various indices: CMU Manufacturing (36%), CMU Trade (43%), CMU Logistics (43%), CMU ICT (33%), CMU Insurance (26%), CMU Real Estate (25%), and CMU Health and Social Services (44%). French companies contributed most to the CMU Energy (24%) and CMU Services (41%) indices, while Italian companies (CMU Utility, 47%), Spanish (CMU Construction, 36%) and Swedish (CMU Banks & Financial Services [excl. insurance], 23%) have the largest weight in a single index.

Table 7.4 Companies included in main indices by countries (% of index weight)

Index	% of index weight																											
	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	Total
Main index																												
CMU All Share	1.2	3.4	0.0	0.0	0.2	27.8	3.9	0.0	0.4	8.2	4.0	20.9	0.1	0.3	1.6	8.8	0.0	0.0	0.0	0.0	7.7	1.1	0.5	0.2	9.6	0.1	0.0	100
Thematic index																												
CMU ESG	1.2	3.3	0.0	0.0	0.2	27.6	4.7	0.0	0.5	9.3	3.5	19.4	0.1	0.4	1.0	7.9	0.0	0.0	0.0	0.0	7.7	1.3	0.2	0.2	11.4	0.0	0.0	100
Size indices																												
CMU Micro Cap	0.4	1.8	0.0	0.0	0.0	5.6	1.1	0.0	3.2	3.6	8.0	13.8	0.3	1.8	0.3	20.0	0.1	0.0	0.0	0.0	1.8	3.8	0.7	0.8	32.8	0.0	0.0	100
CMU Small Cap	2.3	4.8	0.0	0.3	0.1	13.5	3.5	0.3	2.2	5.0	8.0	10.2	0.3	0.2	3.4	10.5	0.1	0.0	0.0	0.0	4.8	4.4	0.3	1.8	23.3	0.6	0.0	100
CMU SME Growth Markets	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	5.9	14.9	0.0	0.0	11.8	13.1	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	53.7	0.0	0.0	100
CMU Small National Capital Markets	0.0	0.0	0.0	8.8	0.0	0.0	0.0	24.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4	0.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0	50.6	0.0	100
CMU Mid National Capital Markets	0.0	0.0	0.0	0.0	10.3	0.0	0.0	0.0	26.5	0.0	0.0	0.0	1.8	19.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.8	9.4	0.0	0.0	0.0	100
Sectoral indices																												
CMU Manufacturing	0.6	4.1	0.0	0.0	0.0	36.2	2.8	0.0	0.1	2.6	5.0	19.2	0.0	0.1	1.3	7.1	0.0	0.0	0.0	0.0	9.1	0.4	0.1	0.0	11.3	0.1	0.0	100
CMU Energy	3.9	0.9	0.0	0.0	1.1	0.8	6.2	0.0	1.0	27.3	6.0	23.8	0.0	1.3	0.0	10.2	0.0	0.0	0.0	0.0	3.4	4.6	6.2	0.9	2.3	0.2	0.0	100
CMU Utility	4.8	0.0	0.0	0.0	0.0	30.8	7.8	0.0	2.3	0.0	7.3	0.0	0.0	0.0	0.0	46.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	100
CMU Construction	1.1	0.9	0.0	0.0	0.0	11.3	0.0	0.0	1.1	35.7	0.0	28.8	0.0	0.0	14.6	0.0	0.0	0.0	0.0	0.0	6.1	0.4	0.1	0.0	0.0	0.0	0.0	100
CMU Trade	0.0	8.5	0.0	0.0	0.0	43.2	0.0	0.2	0.9	0.0	0.0	19.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	18.1	0.3	9.0	0.0	0.0	0.0	0.0	100
CMU Logistics	4.4	12.2	0.0	0.0	0.0	43.4	0.0	0.7	0.9	0.0	0.0	23.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8	0.5	1.5	1.5	0.0	0.0	0.0	100
CMU ICT	0.5	1.0	0.0	0.0	0.1	33.3	1.2	0.0	0.6	13.5	4.6	21.2	0.1	0.1	0.0	3.1	0.0	0.0	0.0	0.0	10.2	1.8	0.2	0.1	8.2	0.0	0.0	100
CMU Banks & Financial Services (excl. insurance)	2.9	5.2	0.0	0.1	0.6	12.1	2.7	0.0	1.1	17.7	1.8	6.7	0.0	1.4	1.1	14.4	0.0	0.0	0.0	0.0	6.8	2.2	0.2	0.3	22.6	0.0	0.0	100
CMU Insurance	1.7	7.2	0.0	0.0	0.0	26.1	6.2	0.0	0.1	2.9	8.0	17.2	0.0	0.0	0.2	11.7	0.0	0.0	0.0	0.0	14.4	4.1	0.0	0.0	0.0	0.2	0.0	100
CMU Real Estate	6.5	16.6	0.0	0.0	0.0	24.5	0.0	0.0	0.6	13.1	0.0	18.1	0.0	0.1	1.3	0.4	0.0	0.0	0.0	0.0	12.6	0.7	0.0	1.4	4.2	0.0	0.0	100
CMU Health and Social Services	0.1	0.0	0.0	0.0	0.0	43.5	36.5	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0	0.0	100
CMU Services	0.0	5.5	0.0	0.0	0.0	0.0	0.3	0.1	0.9	10.6	3.3	40.6	0.3	0.0	6.7	7.6	0.0	0.0	0.0	0.0	12.5	0.4	0.0	0.2	10.9	0.0	0.0	100

Source: CEPS (2020)

Table 7.5 Companies included in convergence indices by countries (% of index weight)

Index	% of index weight																										
	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	Total
Main index																												
CMU Convergence	3.6	1.5	2.5	1.3	0.5	23.1	3.4	1.1	1.7	2.4	5.1	8.8	3.8	0.5	0.5	6.8	0.8	3.2	0.1	3.1	6.7	5.9	0.5	1.0	10.4	1.4	0.1	100
Thematic index																												
CMU ESG	2.9	1.0	3.4	1.4	0.3	12.4	5.4	1.2	1.2	2.2	6.2	8.7	4.4	0.3	0.3	6.3	0.5	6.0	0.2	4.4	8.9	5.9	0.7	0.9	12.7	2.1	0.2	100
Size indices																												
CMU Micro Cap	0.5	2.1	3.9	2.8	0.2	9.1	7.6	1.4	2.8	0.4	6.4	12.5	2.0	1.0	0.2	9.9	1.0	0.0	0.1	1.0	1.5	10.7	0.7	1.9	19.6	0.8	0.0	100
CMU Small Cap	3.4	2.6	4.1	1.3	1.4	13.1	3.5	1.9	2.5	6.5	9.1	11.2	4.5	0.7	1.3	3.7	1.6	3.3	0.3	8.2	0.1	5.9	0.9	1.3	3.6	3.6	0.4	100
CMU SME Growth Markets	0.0	1.2	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	5.3	23.8	0.0	0.0	2.5	18.6	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	42.4	0.0	0.0	100
CMU Small National Capital Markets	0.0	0.0	24.2	12.1	0.0	0.0	0.0	10.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	0.0	1.1	29.4	0.0	0.0	0.0	0.0	0.0	13.8	1.2	100
CMU Mid National Capital Markets	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	15.3	0.0	0.0	0.0	33.3	4.5	0.0	0.0	0.0	28.5	0.0	0.0	0.0	0.0	4.6	9.0	0.0	0.0	0.0	100
Sectoral indices																												
CMU Manufacturing	7.9	2.3	1.8	0.4	1.4	19.1	1.6	0.5	2.3	2.6	6.7	9.1	3.3	0.5	0.1	12.5	1.1	0.0	0.0	0.4	5.4	6.7	0.2	1.4	12.4	0.2	0.0	100
CMU Energy	0.0	1.5	6.0	0.0	0.5	22.1	2.6	0.0	7.0	0.5	0.2	15.6	0.0	3.3	12.3	3.3	4.7	0.0	0.0	0.0	0.0	13.6	3.4	0.5	2.8	0.0	0.0	100
CMU Utility	0.0	0.0	5.0	0.0	0.0	25.6	5.7	8.4	7.9	0.0	0.0	0.0	0.0	0.0	0.0	23.3	10.9	0.0	2.7	0.0	0.0	3.6	0.0	0.0	7.0	0.0	0.0	100
CMU Construction	0.0	4.9	2.4	13.4	0.0	2.0	0.0	11.7	1.5	0.0	0.0	26.5	2.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.3	2.5	4.7	0.0	0.0	0.0	100
CMU Trade	0.0	0.0	3.2	7.8	0.0	23.7	0.0	0.0	6.7	0.0	0.0	18.1	13.9	0.0	0.0	0.0	2.4	0.0	0.0	0.0	3.0	8.6	0.0	0.1	6.8	5.8	0.0	100
CMU Logistics	0.0	0.0	7.7	0.0	0.0	12.2	0.0	0.0	2.9	0.0	0.0	23.4	15.5	1.9	0.0	0.0	0.0	0.0	0.0	10.6	0.0	7.8	0.0	8.2	0.0	9.8	0.0	100
CMU ICT	0.0	0.6	0.7	1.0	0.0	17.5	0.6	0.1	1.1	0.0	8.6	16.5	0.0	0.1	0.0	3.4	2.4	0.0	0.1	7.0	1.6	12.2	3.8	0.0	22.3	0.3	0.0	100
CMU Banks & Financial Services (excl. insurance)	4.3	0.7	5.4	1.6	0.3	5.1	11.2	2.5	0.1	2.1	5.8	3.8	2.4	0.2	0.0	5.2	0.2	15.4	0.0	6.1	10.3	3.8	0.0	0.7	10.1	2.5	0.2	100
CMU Insurance	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	33.3	0.0	0.0	0.0	16.7	0.0	100
CMU Real Estate	0.0	6.7	5.0	0.0	0.0	25.0	1.9	2.1	3.7	11.6	0.0	19.0	0.0	2.4	2.2	0.7	0.3	0.0	0.0	5.2	0.1	6.1	0.0	0.0	8.0	0.0	0.0	100
CMU Health and Social Services	0.0	0.0	0.0	0.0	0.0	16.8	0.6	0.0	2.8	0.0	14.3	0.0	0.0	0.0	0.0	4.5	0.0	0.0	2.7	1.4	0.0	2.9	0.0	6.2	47.6	0.0	0.0	100
CMU Services	0.0	0.6	1.3	3.0	0.1	0.0	3.8	0.0	2.3	4.9	8.6	19.5	19.9	0.8	1.0	12.2	0.0	0.0	0.0	1.4	2.1	8.7	1.3	0.0	6.7	0.3	1.3	100

Source: CEPS (2020)

The sectoral distribution follows the sectoral distribution of EU-27-listed companies (see Table 7.6 and Table 7.7). The CMU All Share Index consists primarily of manufacturing companies, which account for 39% of the index weight. The companies also conducting financial and insurance (19%) and ICT (12%) activities account for a large share of the index. These three largest sectors combined account for about 69% of the index. In comparison with the CMU All Share Index, a larger share of the companies in the CMU Convergence Index is active in the energy and financial and insurance service sectors and relatively few in manufacturing and ICT.

The CMU ESG Index is skewed towards low carbon emission sectors by design. This means that the manufacturing companies (16%) still have a substantial share in the index, but much less than in the CMU All Share Index. The index weight of energy (0.4%) and mining companies (0.0%) is marginal, as many companies in these sectors are excluded from the index. In turn, the more service-oriented sectors, such as financial and insurance services (37%), ICT (23%), and healthcare (8%), have a significantly higher weight in the index. The same CMU ESG Convergence Index has a similar sectoral distribution.

The distribution across sectors is broadly the same for the size indices as for the CMU All Share Index. The main difference is that financial and insurance services companies have a relatively smaller share in the CMU Micro, Small and SME Growth Markets indices and healthcare and other services have a relatively larger share. The CMU Small and Mid-National Markets indices have a relatively larger share of financial and insurance services companies and a smaller share of manufacturing companies.

The sectoral indices only cover the companies active in the sectors covered by the index. For most indices, this means that all the companies included in the index are active in the same sector (CMU Construction, CMU Trade, CMU Logistics, CMU ICT, CMU Banks & Financial Services (excl. insurance), CMU Insurance, CMU Real Estate, CMU Health and Social Services). However, there are a few sectoral indices that cover more than one sector. The CMU Manufacturing indices also include, besides manufacturing companies, a very small share of defence companies. The CMU Energy indices cover both part of the companies active in the energy sector as well as all companies in the mining sector. The CMU Utility indices cover some of the companies in the energy sector as well as all companies in the water sector. The latter account for only a small share in the CMU Utility indices. Finally, the CMU Service indices cover all companies active in a range of sectors, including the accommodation and food sector, professional, scientific and technical activities sector, arts, entertainment and recreation, and other services activities.

Table 7.6 Companies included in main indices by sectors (% of index weight)

Index	% of index weight																			
	Agriculture, Forestry and Fishing	Mining and Quarrying	Manufacture	Electricity, Gas, Steam and Air Conditioning	Water Supply; Sewerage; Waste	Construction	Wholesale and Retail Trade	Transporting and Storage	Accommodation and Food	Information and Communication	Financial and Insurance Activities	Real Estate	Professional, Scientific and Technical Activities	Administrative and Support Service	Public Administration and Defence; Social	Education	Human Health and Social Work Activities	Arts, Entertainment and Recreation	Other Services Activities	Total
Main index																				
CMU All Share	0.0	6.7	38.7	4.6	0.0	3.1	2.2	1.3	0.0	11.7	18.8	2.0	2.6	1.2	1.0	0.0	3.8	0.8	1.5	100
Thematic index																				
CMU ESG	0.0	0.2	15.7	0.4	0.0	1.2	0.9	0.5	0.0	22.8	36.5	1.7	4.7	2.3	1.6	0.0	7.5	0.9	3.1	100
Size indices																				
CMU Micro Cap	1.0	4.6	30.9	1.9	0.3	2.8	1.6	0.0	0.0	16.8	11.9	2.9	4.1	0.0	0.1	0.0	15.0	0.4	5.7	100
CMU Small Cap	0.0	2.3	36.9	2.5	0.0	3.1	2.1	1.4	0.2	12.3	13.2	6.7	3.4	0.6	0.1	0.0	7.1	1.6	6.5	100
CMU SME Growth Markets	0.0	4.4	39.9	0.1	0.0	0.2	2.4	0.0	0.0	12.6	10.2	5.3	4.8	0.6	0.1	0.0	10.1	0.8	8.5	100
CMU Small National Capital Markets	0.0	9.0	16.2	0.0	0.0	0.0	8.0	7.9	0.0	8.6	33.7	0.0	0.0	0.0	0.0	0.0	6.1	10.5	0.0	100
CMU Mid National Capital Markets	0.1	16.9	8.1	21.0	0.0	1.5	5.8	1.2	0.4	8.8	29.8	2.5	0.9	0.0	0.0	0.0	0.0	3.0	0.0	100
Sectoral indices																				
CMU Manufacturing	0.0	0.0	97.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	100
CMU Energy	0.0	77.8	0.0	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Utility	0.0	0.0	0.0	99.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Construction	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Trade	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Logistics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU ICT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Banks & Financial Services (excl. insurance)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Insurance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Real Estate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Health and Social Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100
CMU Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	26.1	23.8	0.0	0.0	0.0	16.9	32.8	100

Source: CEPS (2020)

Table 7.7 Companies included in convergence indices by sectors (% of index weight)

Index	% of index weight																			
	Agriculture, Forestry and Fishing	Mining and Quarrying	Manufacture	Electricity, Gas, Steam and Air Conditioning	Water Supply; Sewerage; Waste	Construction	Wholesale and Retail Trade	Transporting and Storage	Accommodation and Food	Information and Communication	Financial and Insurance Activities	Real Estate	Professional, Scientific and Technical Activities	Administrative and Support Service	Public Administration and Defence; Social	Education	Human Health and Social Work Activities	Arts, Entertainment and Recreation	Other Services Activities	Total
Main index																				
CMU Convergence	0.1	1.9	34.2	10.4	0.1	1.2	3.5	2.1	0.9	7.1	24.1	5.8	2.0	0.7	0.0	0.0	2.7	0.6	2.6	100
Thematic index																				
CMU ESG	0.0	0.8	14.7	0.4	0.0	0.5	1.5	1.1	1.6	13.1	44.7	5.4	3.7	1.3	0.1	0.0	5.1	1.2	4.8	100
Size indices																				
CMU Micro Cap	0.2	1.5	30.6	2.4	0.2	2.4	4.4	1.7	0.4	16.0	17.2	6.5	2.9	1.2	0.1	0.0	6.4	0.9	5.0	100
CMU Small Cap	0.0	4.4	29.1	1.7	0.0	1.4	1.7	4.0	1.9	6.1	31.0	10.2	0.9	1.0	0.0	0.0	2.1	1.0	3.5	100
CMU SME Growth Markets	0.0	1.4	27.7	3.8	0.1	0.7	2.6	0.6	0.0	15.8	16.4	4.2	5.5	0.9	0.3	0.0	11.9	0.7	7.4	100
CMU Small National Capital Markets	0.0	0.9	14.3	3.5	0.4	4.6	3.8	7.9	0.7	7.8	44.0	7.1	0.3	0.8	0.0	0.0	1.1	1.9	0.9	100
CMU Mid National Capital Markets	0.0	1.5	27.4	1.6	0.0	1.1	3.7	4.3	5.2	3.2	35.7	3.2	8.1	0.1	0.0	0.0	2.2	2.2	0.5	100
Sectoral indices																				
CMU Manufacturing	0.0	0.0	99.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	100
CMU Energy	0.0	61.6	0.0	38.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Utility	0.0	0.0	0.0	91.4	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Construction	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Trade	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Logistics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU ICT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Banks & Financial Services (excl. insurance)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Insurance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Real Estate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
CMU Health and Social Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100
CMU Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1	0.0	0.0	0.0	27.1	10.3	0.0	0.0	0.0	9.5	40.0	100

Source: CEPS (2020)

7.2 Performance

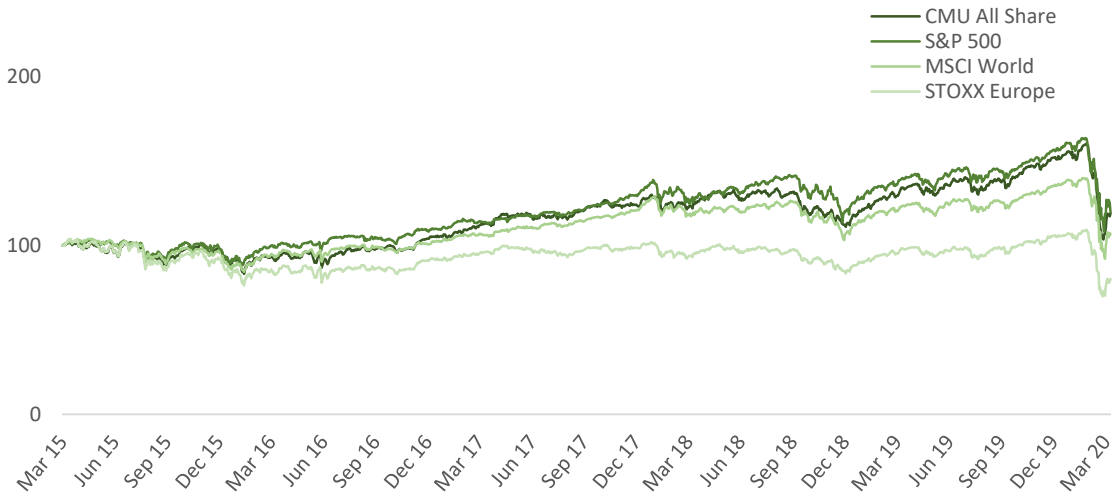
This section assesses the performance of the CMU Index Family, first comparing the historic performance of the CMU All Share Index with other broad indices, and then assessing the performance of the sub-indices.

7.2.1 CMU All Share Index

In the past five years, the CMU All Share Index (Price) would have had a return of about 19.4%. The CMU All Share Index increased from the outset in value from 100.0 on 1 April 2015 to 160.6 on 19 February 2020. It then declined rapidly to 103.7 on 19 March 2020 with the outbreak of Covid-19 and the related lockdown measures that brought the global economy to a standstill. The CMU All Share Index did recover some of its losses to finish on 31 March 2020 at 119.4. This would imply an annualised return of 3.6% per year excluding costs and dividends.

The dividends form an important part of the returns. In fact the CMU All Share Index (gross return) increased from 100.0 on 1 April 2015 to 134.5 on 31 March 2020. Indeed, at 34.5%, the gross return index is about 78% higher than the price index, partly because of the large drop of the price index in March 2020. This CMU All Share Index (Gross Return) would imply an annualised return of 6.1% per year excluding costs and dividends tax. If the dividends were to be corrected for dividend tax, as the CMU All Share Index (Net Return) does, the return would be 29.8%, which means an annualised return of 5.4% per year excluding costs.

Figure 7.1 CMU All Share Index performance compared to main multinational indices



Source: CEPS, S&P, MSCI and STOXX (2020)

In comparison to the internationally-renowned multinational broad indices, the CMU All Share Index seems to follow the movements of indices such as the S&P 500, MSCI World and STOXX Europe. Like the CMU All Share Index (Price), the multinational indices grew in value over the past five years, until the spread of Covid-19 across the globe (see Figure 7.1). Based on the simulation, the return of the CMU All Share Index was in the past five years virtually the same as the S&P 500 (+19.5%), which is the main large cap benchmark for the US stock markets. Moreover, it would have outperformed MSCI World (+6.6%) and STOXX Europe (-19.8%) indices.

There are large differences in the composition of these indices (see Table 7.8), which explains some of the variation in returns. The CMU All Share Index includes at least twice as many companies compared to the other indices. These companies are listed at markets that are classified as developed, emerging or frontier by the large index providers, whereas the other indices only cover developed markets, with the exception of STOXX Europe, which

covers both developed and emerging markets. Moreover, the CMU All Share Index also covers micro and small caps, whereas the other indices except for STOXX Europe only cover mid and/or large caps.

Table 7.8 CMU All Share Index composition compared to main multinational indices

Index	Number of companies	Geographical coverage	Type of markets	Company size
CMU All Share	3 570	EU-27	Developed, emerging and frontier	Micro, Small, Mid and Large
S&P 500	505	US	Developed	Large
MSCI World	1 637	EU-12, AU, CA, CH, HK, IL, JP, NO, NZ, SG, UK and US	Developed	Mid and Large
STOXX Europe	600	EU-14, CH, NO and UK	Developed and emerging	Small, Mid and Large

Source: CEPS (2020)

However, to get a fair view on the relative performance, the returns should be considered in relation to the risk of the indices. The Sharpe ratio forms a simple measure for the risk-adjusted return (see Table 7.9). The CMU All Share index exhibits the highest risk-adjusted return during the last year and second highest over the course of the past five years among the main multinational indices. Only S&P 500 had a higher risk-adjusted return, which means that the S&P 500 was less volatile during this period.

Table 7.9 CMU All Share Index Sharpe ratio compared to main multinational indices[38]

Index	1 Year	5 Years
CMU All Share	1.0	1.0
S&P 500	0.6	1.3
MSCI World	0.2	0.8
STOXX Europe	-0.8	-1.2

Source: CEPS (2020)[39]

Moreover, the index returns might also be somewhat affected by the simplification of the index calculation for the simulation of the returns. Indeed, the index returns were calculated for the entire five years, based on their composition at the end of 2019. This means that the stocks that have gained most in value over the past five years are likely to have a slightly higher weight, and those that have failed in the past five years are excluded. In turn, the stocks that were listed in the past five years contribute a zero-return prior to their listing.

Finally, the return of the index can deviate from the returns of the investment products based on the index, because of the tracking error, replication costs, borrowing arrangements, dividends, taxes, and so on. (see Box 4).

7.2.2 CMU Index Family sub-indices

The CMU Convergence Index had a higher return than the CMU All Share Index (see Table 7.10). The return of the price index was +25.4% from April 2015 to March 2020, about 30% more than the CMU All Share Index. The gross return and net return were higher than those of the CMU All Share Index, but relatively less than the price index.

The CMU ESG indices would have performed better than both the CMU All Share Index and CMU Convergence Index. The return of the CMU ESG indices would have been between 0.5% and 2.3% higher than the CMU All Share Index.

The size indices show a large range of positive returns. The CMU Micro Cap Index and CMU Mid National Capital Markets had lower returns than the CMU All Share Index, while the CMU Small Cap, CMU SME Growth Markets, CMU Mid National Capital Markets and size-

[38] Sharpe ratio is defined as the annualised excess return divided by the annualised standard deviation of the daily returns.
[39] Based on annualised price return data and overnight LIBOR rates

related convergence indices had higher returns. Most interesting are the CMU Small Cap indices and CMU Small National Markets, which had a much higher return than the CMU All Share and CMU Convergence Index.

The sectoral indices also show a large range of returns. The CMU Construction, CMU Logistics, CMU Banks & Financial Services (excl. insurance), CMU Insurance main indices and CMU Energy, CMU Construction and CMU Insurance convergence indices all had a negative return for at least their price indices between April 2015 and March 2020. All the other sectoral indices had a positive return. Among these, the CMU Trade, CMU ICT, CMU Health and Social Services are the only sectoral indices of which both the main and the convergence index outperformed the CMU All Share and CMU Convergence Index respectively.

Table 7.10 Performance in the past five years by type of index

Index	Main			Convergence		
	Price	Gross Return	Net Return	Price	Gross Return	Net Return
Main index						
CMU All Share	+19.4%	+34.5%	+29.8%	+25.4%	+36.1%	+33.1%
Thematic index						
CMU ESG	+21.3%	+35.2%	+31.0%	+27.7%	+36.6%	+34.0%
Size indices						
CMU Micro Cap	+5.5%	+17.7%	+15.4%	+21.3%	+34.3%	+30.1%
CMU Small Cap	+50.1%	+62.8%	+59.0%	+32.5%	+44.8%	+41.9%
CMU SME Growth Markets	+294.3%	+298.0%	+296.7%	+44.0%	+51.0%	+48.7%
CMU Small National Capital Markets	+5.6%	+21.4%	+19.1%	+63.2%	+77.4%	+75.0%
CMU Mid National Capital Markets	+23.3%	+48.9%	+43.8%	+23.2%	+37.9%	+35.4%
Sectoral indices						
CMU Manufacturing	+19.3%	+30.5%	+27.1%	+3.1%	+11.0%	+9.0%
CMU Energy	+10.3%	+42.6%	+32.4%	-11.5%	+10.0%	+4.9%
CMU Utility	+44.8%	+69.3%	+62.1%	+19.6%	+36.8%	+32.3%
CMU Construction	-3.3%	+8.9%	+4.9%	-13.0%	+5.8%	+2.3%
CMU Trade	+38.6%	+48.2%	+45.2%	+29.4%	+42.5%	+38.8%
CMU Logistics	-13.8%	-1.0%	-4.6%	+3.8%	+16.5%	+14.1%
CMU ICT	+33.5%	+46.8%	+42.9%	+41.3%	+52.7%	+49.5%
CMU Banks & Financial Services (excl. insurance)	-20.1%	-7.8%	-11.4%	+32.3%	+40.5%	+37.9%
CMU Insurance	-17.2%	+5.0%	-1.8%	-15.9%	-5.2%	-7.5%
CMU Real Estate	+5.0%	+37.0%	+25.7%	+91.5%	+128.1%	+116.7%
CMU Health and Social Services	+109.1%	+119.2%	+116.2%	+35%	+39.6%	+38.6%
CMU Services	+75.8%	+89.4%	+85.0%	+6.6%	+12.5%	+10.9%

Source: CEPS (2020)

The risk-adjusted returns slightly change this picture. In general, the gross and net return indices had higher risk-adjusted returns than the price indices (see Table 7.11), as they have a similar volatility as the price index and a higher return. Moreover, the returns of the convergence indices were less volatile than the main indices, which is reflected in relatively higher risk-adjusted returns. For example, although the returns of the CMU Convergence Index are only slightly higher than CMU All Share returns, the risk-adjusted return expressed in the Sharpe ratio is about one and a half times higher.

All the size indices have relatively high risk-adjusted returns. Interestingly, the CMU SME Growth Markets Convergence Index has the highest return among the size indices, even though the returns are almost six times lower than CMU SME Growth Market Index. The convergence indices cover fewer liquid companies; the Sharpe ratios suggest that this does not necessarily entail more volatile returns than more liquid companies.

Among the sectoral indices, CMU Health and Social Services, Trade, ICT and Services have the highest risk-adjusted returns. For example, absolute returns of the CMU Services Index are almost twice as high as those of the CMU Trade Index, but the risk-adjusted return is

nearly the same for both indices. This means that the returns of the CMU Services Index are about twice as volatile as the CMU Trade Index. Among convergence sectoral indices CMU ICT Convergence, Trade Convergence and Services Convergence indices offered the highest risk-adjusted returns.

Table 7.11 Sharpe ratio in the past five years by type of index

Index	Main			Convergence		
	Price	Gross Return	Net Return	Price	Gross Return	Net Return
Main indices						
CMU All Share	1.04	1.27	1.21	1.97	2.01	2.01
Thematic indices						
CMU ESG	1.06	1.27	1.22	1.85	1.88	1.87
Size indices						
CMU Micro Cap	1.25	1.51	1.47	1.77	1.91	1.88
CMU Small Cap	1.93	1.92	1.93	1.84	1.82	1.82
CMU SME Growth Markets	1.19	1.20	1.20	2.46	2.41	2.43
CMU Small National Capital Markets	1.00	1.36	1.34	1.32	1.37	1.36
CMU Mid National Capital Markets	1.55	1.69	1.67	1.49	1.52	1.53
Sectoral indices						
CMU Manufacturing	1.05	1.23	1.19	1.18	1.47	1.40
CMU Energy	0.83	1.29	1.21	0.13	0.98	0.86
CMU Utility	0.95	1.09	1.06	0.42	0.72	0.69
CMU Construction	0.98	1.40	1.28	0.57	1.19	1.09
CMU Trade	1.40	1.46	1.45	1.82	1.97	1.94
CMU Logistics	0.00	0.51	0.39	1.29	1.54	1.49
CMU ICT	1.34	1.47	1.44	2.02	2.09	2.07
CMU Banks & Financial Services (excl. insurance)	-0.55	0.16	-0.02	1.24	1.34	1.31
CMU Insurance	-0.30	0.64	0.43	0.47	0.89	0.80
CMU Real Estate	1.02	1.46	1.41	1.31	1.39	1.34
CMU Health and Social Services	1.68	1.67	1.67	1.19	1.22	1.21
CMU Services	1.42	1.44	1.44	1.43	1.73	1.66

Source: CEPS (2020)

Box 4. Costs of index-linked investment products

The returns of index-linked investment products deviate from the returns of the underlying indices. The costs of the investment product (management, legal, trading and auditor fees as well as other operational expenses) and the tracking error are the main factors causing the deviation. This box assesses the costs and tracking errors from a sample of ETFs following indices similar to those included in the CMU Index Family.

Based on the comparison of costs charged by three large ETF providers within the same product range, the cumulative costs reflected in the Total Expense Ratio (TER) range between 0.18% and 0.55%, depending on the underlying index and on the provider (see Table 7.12). In general, ETFs tracking indices with more stocks, more specific (sectoral/sizes) and covering smaller/fewer liquid stocks are more expensive. However, this is not necessarily the case for all ETFs, as the pricing also related to other factors, such as the size of the fund and competition from other providers.

Similarly, the tracking error of the indices with more and less liquid companies included are in general higher.

Table 7.12 TERs and tracking errors across ETFs similar to the CMU Index Family

Index	Benchmark(s)	Provider 1		Provider 2		Provider 3	
		TER	Tracking error	TER	Tracking error	TER	Tracking error
Main indices							
CMU All Share	World Index	0.50%	0.39%	0.38%	0.10%	0.30%	0.01%
Size indices							
CMU Small Cap	World Small Cap Index	0.35%	0.30%	N.A.	N.A.	N.A.	N.A.
CMU Mid National Capital Markets	Emerging Markets Index	0.18%	0.55%	0.20%	0.02%	0.55%	0.05%
Thematic indices							
CMU ESG	World ESG Screened, World ESG Leaders Index	0.20%	0.08%	0.18%	N.A.	N.A.	0.12%
Sectoral indices							
CMU Manufacturing	World Consumer Discretionary, World Consumer Staples, World Materials Index	0.25%	N.A.	N.A.	N.A.	0.30%	0.03%
CMU Energy	World Energy Index	0.25%	N.A.	0.35%	0.13%	0.30%	0.06%
CMU Utility	World Utilities Index	N.A.	N.A.	N.A.	N.A.	0.30%	0.03%
CMU Construction	World Industrials Index	N.A.	N.A.	N.A.	N.A.	0.30%	0.03%
CMU ICT	World Information Technology Index, World Communication Services Index	0.25%	N.A.	N.A.	N.A.	0.30%	0.03%
CMU Banks & Financial Services (excl. insurance)	World Financials Index	N.A.	N.A.	0.35%	0.01%	0.30%	0.01%
CMU Insurance	World Financials Index	N.A.	N.A.	0.35%	0.01%	0.30%	0.01%
CMU Health and Social Services	World Health Care Index	0.25%	N.A.	N.A.	N.A.	0.30%	0.04%

Notes: The ETFs of each of the providers are included in the same product category and use indices from the same provider for comparability. The specific index for each of the categories can vary across providers.
Source: CEPS (2020)

7.3 Liquidity

The companies covered in the CMU Index Family all have an average minimum daily trading value of EUR 1 000 or more. Moreover, the convergence indices all have a daily trading value between EUR 1 000 and EUR 50 000. All main indices, except the CMU All Share Index, have a daily trading value of more than EUR 50 000.

Despite the minimum average daily trading value there are numerous companies with non-trading days. About 51% of the companies included in the CMU All Share Index had at least one day in the six months preceding the calculation of the indices on which the shares of the company were not traded (see Table 7.13). Twenty-five per cent of the companies had five or more non-trading days and about 20% had 10 or more non-trading days.

The non-trading days are substantially less present among the main indices. The CMU ESG Index only includes companies with a trading value of more than EUR 50 000. About 30% of the companies in the index had about one or more non-trading days, while only a small minority of the companies (3.5%) had five or more non-trading days.

The non-trading days are mostly linked to companies with a limited free-float adjusted market capitalisation. In general, the size indices cover more smaller companies. In the CMU Micro Cap Index there are more companies with non-trading days than the CMU Small Cap Index. The CMU Growth Markets and the CMU Small National Markets indices with a mix of micro and small caps have even more non-trading days. In turn, the larger CMU Mid National Capital Markets with more larger companies have far fewer non-trading days.

The sectoral indices show various levels of non-trading days. The companies with at least one non-trading day range between 12% for CMU Health and Social Services and 49% for CMU Services indices. However, the shares of companies with five or more non-trading days is significantly less, with up to 9%.

The convergence indices include more companies and have by design a lower trading value. Also, a larger share of these companies had days without trading in their shares. Most of the convergence indices have between 72% and 87% companies with one or more non-trading days. A large share of these companies had even ten or more non-trading days during a six-month period. The majority of the convergence indices had between 37% and 52% of companies with 10 or more non-trading days.

Table 7.13 Non-trading days in six months by number of days (% of companies)

Index	Main			Convergence		
	≥1 Days	≥5 Days	≥10 Days	≥1 Days	≥5 Days	≥10 Days
Main index						
CMU All Share	50.9	24.6	19.8	77.5	50.4	41.0
Thematic index						
CMU ESG	29.4	3.5	2.4	77.3	50.2	40.7
Size indices						
CMU Micro Cap	34.4	8.6	5.4	75.8	47.8	38.9
CMU Small Cap	28.7	3.3	2.1	84.8	58.5	47.2
CMU SME Growth Markets	39.8	10.6	8.5	74.9	42.7	32.7
CMU Small National Capital Markets	46.2	7.7	0.0	96.8	87.3	81.7
CMU Mid National Capital Markets	10.0	0.9	0.9	86.7	65.1	56.4
Sectoral indices						
CMU Manufacturing	27.2	2.9	2.3	75.6	46.0	36.8
CMU Energy	30.2	1.0	1.0	84.8	50.0	45.5
CMU Utility	14.3	3.6	0.0	66.7	57.1	42.9
CMU Construction	27.5	5.8	2.9	72.1	46.5	25.6
CMU Trade	36.6	2.4	0.0	86.3	56.9	45.1
CMU Logistics	29.2	0.0	0.0	91.2	73.5	61.8
CMU ICT	35.2	3.7	1.9	75.9	46.9	37.6
CMU Banks & Financial Services (excl. insurance)	17.9	2.4	2.0	85.2	63.2	51.7
CMU Insurance	44.1	8.8	5.9	83.3	66.7	50.0

Index	Main			Convergence		
	≥1 Days	≥5 Days	≥10 Days	≥1 Days	≥5 Days	≥10 Days
CMU Real Estate	31.5	5.4	5.4	83.2	59.8	52.3
CMU Health and Social Services	11.9	3.5	2.1	50.6	32.9	24.7
CMU Services	48.6	5.1	2.8	80.1	50.0	43.9

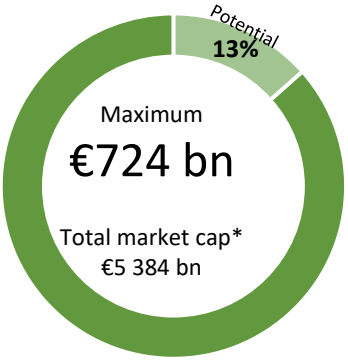
Source: CEPS (2020)

7.4 Market potential

A survey of institutional investors determined the market potential. The expressed interest in the completed survey responses, as well as declines of the survey invitation with an indication about their interest, have been extrapolated using the information about the EU fund investments to obtain the maximum interest.[40]

The results indicate a moderate interest in the CMU Index Family (see Figure 7.2). Based on the extrapolation, the CMU Index Family could attract a maximum of EUR 724 billion in institutional investments (both benchmarking and tracking). This is equivalent to about 13% of the total free-float adjusted market capitalisation of the CMU All Share Index. The indicated interest considers the cumulative interests in the CMU All Share Index as well as sub-indices.

Figure 7.2 Indicated investor interest in CMU Index Family



*Notes: *The total market capitalisation is free-float adjusted.*
Source: CEPS (2020)

The CMU All Share Index might primarily have a benchmark function and could attract EUR 143 billion or 3% of the total free-float adjusted market capitalisation. This would be equivalent to about 60% of the investments received by the most-used index within the category of similar indices (see Table 7.14).

The CMU ESG Index could attract the most investments with nearly EUR 204 billion or 4% of market capitalisation. This is significantly more than any of the existing ESG indices with EU companies. The relatively large interest reflects the expected surge in ESG investments in the upcoming years.

According to the investors, in the optimal scenario the five size indices combined could attract about EUR 230 billion, or 80% of the cumulative market capitalisation. Currently, there are only a few EU indices that cover micro and small cap indices and no known indices that just cover SME Growth Markets.

[40] For the estimations, the potential investments (higher value in the indicated range) as indicated by investors in the survey as well as the investors that have indicated not to be interested in using the CMU Index Family have been aggregated. The share of these investors in the EU investments (see section 3.4) has been used to estimate the total potential investments. If there was no indications for the sub-index available from the index (specific CMU Convergence indices, specific CMU Sectoral indices and CMU Small and Mid-National Capital Markets), the current share in investments was considered. The potential for each of the sub-indices has been capped at the maximum free-float adjusted market capitalisation.

The twelve sectoral indices could attract as much as EUR 143 billion or 3% of the cumulative market capitalisation. This is about the amount invested in EU ETFs and mutual funds with similar indices.

All the 19 CMU Convergence indices could attract about EUR 129 billion or almost 65% of the market capitalisation of the convergence companies. For these indices there are no equivalent indices available.

Table 7.14 Estimated potential CMU Index Family (tracking and benchmarking) in comparison with current EU investment

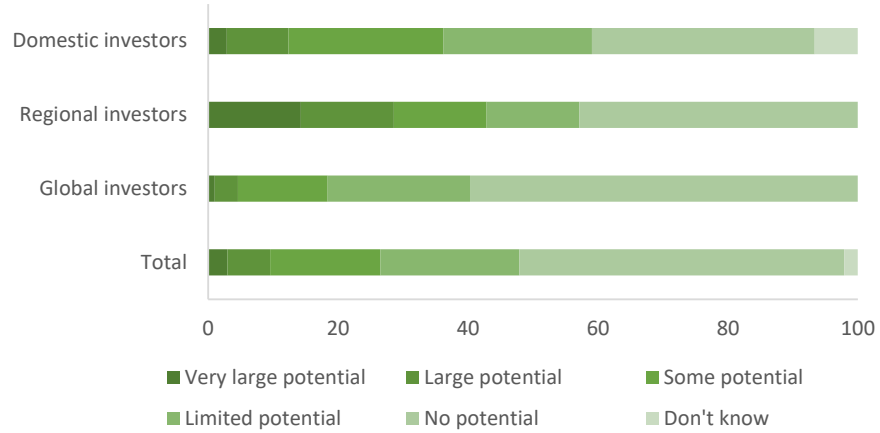
Index	CMU Index Family (estimated maximum)	Most used index in category*	Category*
	EUR bn	EUR bn	EUR bn
Main indices			
CMU All Share Index	143.5	239.5	311.9
Thematic indices			
CMU ESG Index	203.4	4.2	39.4
Size indices			
CMU Micro Cap Index	9.7	1.6	1.7
CMU Small Cap Index	56.9	15.2	67.2
CMU SME Growth Markets Index	17.5	N.A.	N.A.
CMU Small National Capital Markets Index	4.0	0.1	0.2
CMU Mid National Capital Markets Index	28.4	225.4	266.9
Sectoral indices			
CMU Manufacturing Index	29.5	2.2	11.2
CMU Banks & Financial Services (excl. insurance) Index	5.5	3.5	11.0
CMU Insurance Index	2.2	N.A.	N.A.
CMU ICT Index	16.2	13.9	36.7
CMU Energy Index	12.4	9.1	17.9
CMU Services Index	8.6	0.2	0.4
CMU Health and Social Services Index	7.8	23.0	26.7
CMU Construction Index	19.8	0.1	0.1
CMU Utility Index	10.9	3.5	7.4
CMU Trade Index	7.8	0.0	0.0
CMU Real Estate Index	12.8	14.2	34.0
CMU Logistics Index	4.6	2.1	3.3
Other indices			
CMU Convergence indices	122.4	N.A.	N.A.
Total	**724.1**	**557.7**	**836.1**

*Notes: *The index-related investments cover investments tracked by ETFs and mutual funds benchmarking partial and full EU indices (see section 3.4 for a detailed presentation).*
Source: CEPS (2020)

The investments could be channelled to the underlying CMU All Share Index companies when the CMU Index Family is used for index-linked products, benchmarking and, to a lesser extent, derivatives.

The CMU All Share Index seems to have the largest potential for benchmarking, primarily because of the large number of constituents. The CMU Small Cap index appears to be the most attractive to the investors in terms of tracking, while, compared to others, the CMU Micro Cap Index has the largest likelihood of being used for derivatives. This is primarily because it is relatively more difficult to replicate the CMU Micro Cap Index than other indices.

Figure 7.3 Investors' interest by type of investor



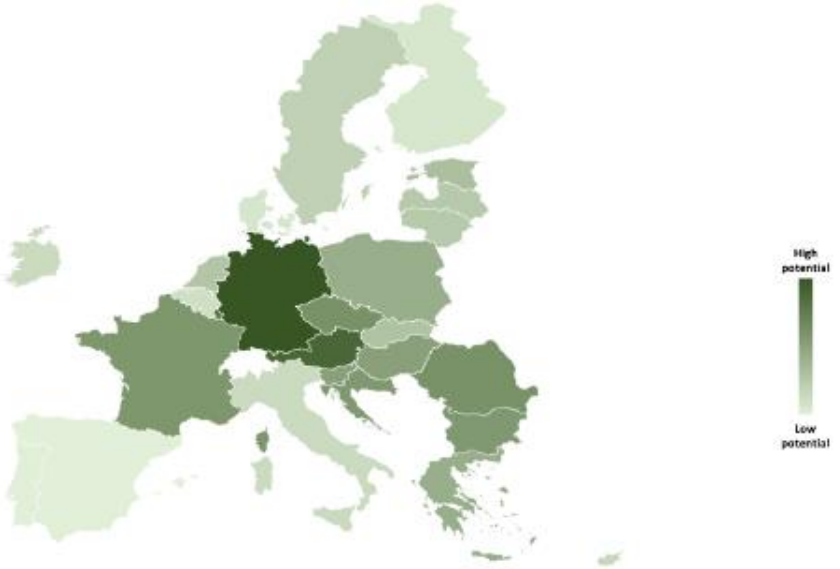
Source: CEPS (2020)

Among the institutional investors, the domestic and regional investors appear to be most interested in the CMU Index Family. Nearly a quarter of all surveyed regional investors have said that the CMU Index Family has large or very large potential (see Figure 7.3), while two-thirds of the global investors indicate that the CMU Index Family has no potential.

Most of the likely-to-invest asset managers are based in the EU-27. Institutional investors indicate that within the EU most investment could come from Germany, France and Austria (see Figure 7.4). CEE investors exhibit considerable interest, whereas western European investors (apart from Austria, France and Germany) appear not to be interested. Outside the EU-27, most investments could come from other European countries (UK, Norway and Switzerland), neighbouring countries and North America (see Figure 7.5).

Whether the potential will actually be realised depends on many different factors and circumstances which can be only partially controlled (investability, replicability, pricing, performance, competition, and so on).

Figure 7.4 Investor interest across the EU-27



Source: CEPS (2020)

Figure 7.5 Investor interest across the globe

Source: CEPS (2020)

The inclusion in the CMU All Share Index or any of the sub-indices is likely to have a positive impact on the individual stocks as well as the market. The inclusion of the companies in the index can attract additional direct investments in the index and included companies as discussed above, but also indirectly through more information about the companies in the index, increase the awareness among investors and also signal the quality of the company based on the selection criteria.

Especially the smaller companies and markets that currently are not included in an index could benefit from the inclusion in the CMU All Share Index and especially the sub-indices. Indeed, the smaller companies and markets are likely to benefit from the inclusion in the sub-indices, as they might fall in the tracking-error of the CMU All Share Index.

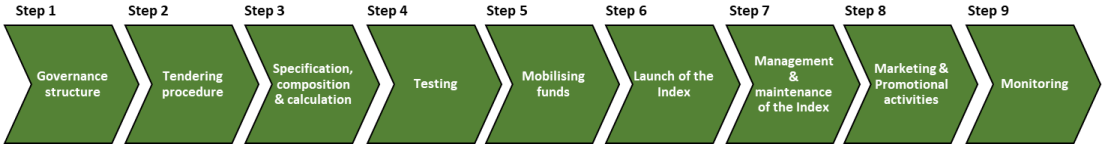
8 CMU Index Family implementation roadmap

This chapter shows the sequence of concrete actions needed to successfully implement the CMU Index Family.

In addition to the technical implementation steps of any equity index, the roadmap (see Figure 8.1) includes the definition of the governance, following the arguments presented in Chapter 6. Action to mobilise large public investors and marketing activities to disseminate the existence of the CMU Index Family among investors, including smaller and individual investors, is also included. These actions go beyond what a typical market-driven process would entail and are justified by the potential existence of a market failure, which results in the non–provision of indices similar to those included in the CMU Index Family. However, for the long-term success of the CMU Index Family a strong involvement of market parties, including index providers and institutional investors, is required.

The sequencing illustrated below is indicative; in practice some of the steps are tightly linked and entail actions that have to run in parallel or during the entire process.

Figure 8.1 Steps of the CMU Index Family implementation Roadmap –



Source: CEPS (2020)

This becomes evident in the timeline providing the sequence of actions and the specific objective.

8.1 Governance structure

There are three potential governance models assessed for the creation of the CMU Index Family (see discussion in Chapter 6). The choice will depend on the existence of a market failure.

The interviews with issuers and investors reveal that domestic and regional investors, and especially those from the CEE region, see significant potential for a CMU Index Family, whereas global investors do not see any or only limited potential. The lack of demand among global investors, which in practice drives the creation of indices by the main independent index providers, seems to be the main reason why the CMU Index Family does not yet exist.

Following this line of reasoning, and based on the assessment of the three governance models, a PPP appears to be the most reasonable option to unlock the creation of a CMU Index Family.

A task force on the implementation of the CMU Index Family could offer an appropriate setting to identify the parties of the PPP. For instance, one or more national governments or an EU body, as public party, which would concretely support an independent index provider, a stock exchange or a consortium to launch the CMU Index Family. The European Commission and EBRD could offer logistical and secretariat assistance to such a task force.

In order to formally test the appetite of issuers for such an index and model, the task force should conduct an open public consultation process.

In a positive outcome, the task force would provide guidance on the shape of the PPP model.

The public party could focus on three actions for a CMU Index Family:

- Preparing a public procurement for its creation
- Providing financial support to kick-start the process
- Supporting the communication to increase awareness of it.

In any event, the public party should not interfere with the functioning of the index. For the purpose of market credibility and the ultimate objective of mobilising private funds, a capable index provider, or consortium, should manage the index in a technical manner.

In practice, the PPP structure will raise the question of the 'ownership' and 'labelling' of the index. On the one hand, a clear EU label on the index may be a source of attractiveness for investors, especially for smaller savers and possibly of importance if an EU body is involved. On the other hand, from the point of view of a provider, the ownership of the intellectual property of the index is the main source of future revenues, so is likely to be considered as a key condition for the provision of the index. The potential tension between the public support required to set up the index and the level of freedom in the exploitation has to be resolved *ex ante*, so in the end the EU labelling and ownership may have to be disconnected.

The market adoption could be enhanced by promoting a coalition with public investors (EBRD, EIF, national promotional banks, etc.). Their involvement in the early stages could have a signal effect to boost credibility as well as liquidity in local equity markets. While the PPP structure could facilitate public investors' interest, by all means it should be ensured that no conflict of interest exists for the public parties involved in the PPP. A situation whereby a government, public agency and EU body is seen as an investor actively involved in creating, managing and governing the index could prevent market agents from actively participating in the initiative, thus determining the fate of the CMU Index Family.

8.2 Tendering procedure

To trigger the creation of the CMU Index Family, the task force could suggest that the public party of the PPP launches a public procurement to financially support at least part of the cost related to the creation of the index. The open public consultation may be the tool to know in advance whether the interest comes mostly from smaller providers and those with interest in smaller markets, or if there is broader interest. The public procurement approach could also stimulate competition for larger providers.

The selection of the index provider (or a consortium of providers) is one important element for receiving the trust from investors in the CMU Index Family. Moreover, only those index providers that have the technical capacity to calculate the indices in real time at a high frequency should qualify for offering the index.

In practice, the index provider can be selected by a competitive tender procedure for issuing the CMU Index Family, to which interested issuers can submit a bid. Price, duration, scope of the CMU Index Family and sequencing of the launch of sub-indices should be specified in the call for tender.

A realistic budget for the tender is difficult to identify *ex ante*, and, crucially, it would depend on the scope and duration of the contract. If the CMU Index Family is to be free of charge for users, it would require up to EUR 400 000 per year to create and maintain it in its entirety, according to an estimate of a large index provider. The main costs for the creation of the CMU Index Family are related to obtaining the required data, for which a subscription to a commercial data provider or exchanges is required.

It would not make much difference to the scope of the tender if the entire CMU Index Family is covered, or just the CMU All Share Index. The only exception is the ESG Index, which requires additional information about the listed companies. From a marketing perspective, the sequencing of the launch of the sub-indices is sensible:

- First, the CMU All Share Index;
- Second, the CMU Convergence and sub-indices; and,

- Third, the CMU ESG indices.

This bidder should demonstrate that it is able to offer the indices in line with the strategy and methodology outlined in Chapters 4 and 5.

In addition, a clear division of roles and responsibilities between the parties of the PPP should be defined *ex ante*. Last but not least, interactions between any potential coalition of public investors and the index provider should be excluded. This is of crucial importance as it can reduce the interest among private investors.

8.3 Specification, composition and calculation

The process of constructing a CMU Index Family consists of: i) the index specifications, ii) the composition of the various sub-indices, and iii) the actual calculation.

This study provides a concrete ground for several of these steps. An established index provider could use such information as a base and apply its own know-how and access to data to prepare the index.

The first phase consists of identifying the stocks/companies that meet the criteria, and ensuring that the required information is available and can be used for the purpose of calibrating the index. This includes identifying:

- Name and ISIN
- Location of the headquarters
- Market value
- Free float
- Activities
- High-frequency data on the share price and volume
- Dividend pay-outs
- Special events/corporate actions (stock-splits, M&A, suspension, etc.)

It is at this stage that the ownership of the CMU Index Family has to be defined.

The second phase consists of the composition of the CMU All Share Index and its sub-indices. The initial composition of each index is determined according to the methodology, which also foresees the periodic adjustments to the composition.

The third and final phase consists of the calculation of the sub-indices, according to the identified specifications of this study. This means that for each of the sub-indices, a main and a convergence index are calculated. Moreover, the indices are calculated as price, gross return and net return indices.

8.4 Testing

In the context of the launch of the CMU Index Family, testing has a dual purpose. It should be noted that part of the testing is run in parallel, and strictly linked to calculation of the indices, as described in the previous section (see chapter 4 and 5).

The first purpose of the testing is typical of each index. Once the securities for an individual country are identified, a liquidity test is performed on each security. The purpose of this test is to make sure that the necessary liquidity is present for any security.

The second purpose of the testing relates to the volatility and the performance of the different sub-indices based on historical data. In practice this would consist of a simulation exercise similar to the one conducted in Chapter 7.

8.5 Mobilising public funds

The commitment of a coalition of public investors could be critical to ensure the feasibility of a CMU Index Family and contribute to local capital markets development by kick-starting a virtuous cycle. This will happen mostly by contributing to the liquidity of the secondary market, which would help additional companies to get a valuation.

From the viewpoint of the public investors, which usually intervene by financing (bankable) projects with a public interest where markets are less developed, the CMU Index Family offers continued opportunities to do so by using a different form of funding than lending.

For the success of the CMU Family Index, the involvement of public investors would be most important at the initial phase, so as to unlock the commitments from the private institutional investors. The public party of the PPP could play an important role in raising awareness and communicating the future launch of the CMU Index Family at the very early stage of the implementation process, so that potential funds are ready at its launch.

8.6 Index launch

Once the CMU Index Family is fully identified and tested, indices can be launched by the provider in the same way it is done for other indices.

In this context a tiered approach may be appropriate. One can envisage starting with the launch of the CMU All Share Index, followed by the CMU Convergence Index, the size and sectoral indices and finally the CMU ESG indices.

This study shows that investability would not be the main feature of the CMU All Share Index, which would work more as a reference index with an EU label, even if only implicitly. In practice, the calculation of such an index would require collecting complete information and data for the EU-27 countries, and therefore enough to build any other sub-index (excluding CMU ESG indices). This implies that other sub-indices could be quickly launched with little extra cost.

Starting with the CMU All Share Index would also allow potential involvement of promotional banks and other large public investors to be explored, which could substantially affect liquidity and potentially boost the attractiveness of the sub-indices.

8.7 Management and maintenance

Once the CMU Index Family has been launched, the index provider will manage and maintain the indices.

Indices are typically maintained on a daily basis by a dedicated support team, which is in direct collaboration with teams in charge of the data operations. The latter are responsible for identifying all corporate actions that affect the capital structure of a constituent in the index. These events also include stock splits and delistings and are dealt with following an internal predefined methodology. The purpose is to ensure that these changes are implemented in the applicable index and the appropriate measures are in place to ensure the accuracy of the index values.

The indices are usually rebalanced twice a year. This exercise will be the main source of additions and deletions to the CMU All Share Index and its sub-indices. The rebalancing process starts with all eligible stocks and the relative data. Based on the set of predefined rules those stocks that meet the conditions are identified and included in the index. This leads to changes in the weights and stocks included in the index.

8.8 Marketing and promotional activities

The task force should also indicate whether the public party of the PPP should support the promotion of the index among EU savers and family investors. This would be consistent

with the double objective of the CMU promoting integration of EU equity markets and unleashing the potential of a very large number of smaller savers. In such a case, the promotion of the CMU Index Family has to be done in a balanced and prudent way. In an environment of very low interest rates on debt securities, stocks which still form a small part of families' financial portfolios can contribute to increasing returns. Marketing and promotional campaigns of diversified portfolios of stocks could help develop an 'equity culture' in the EU, and also improve financial literacy.

Given the governance structure described above and the operationalisation of the index, which remains market driven, it should be clear that the bodies involved in the PPP cannot offer any guarantee on the returns to investors. Nevertheless, as public bodies, they should be aware of the 'legitimate expectation' trap and how it is used in the communication. Therefore, effort should focus on large-scale dissemination about the existence of the CMU Index Family, which gives the opportunity to finance EU-based companies, rather than on the potential returns for investors. Such promotional campaigns are likely to be seen by retail investors as expanding their trade opportunities which, in turn, could also raise commercial interest among larger investors.

8.9 Monitoring

Most existing indices are monitored by an index committee, which reviews the family and (sub-)indices and implements rebalances. The committee is typically composed of several of the index provider managers, including the index manager and head of data operations. Its main activity is to ensure that the attributes the index claims to possess are indeed present. This includes, for instance, the liquidity, capitalisation and potentially other specific features (meeting ESG criteria, part of SME Growth Market, etc.).

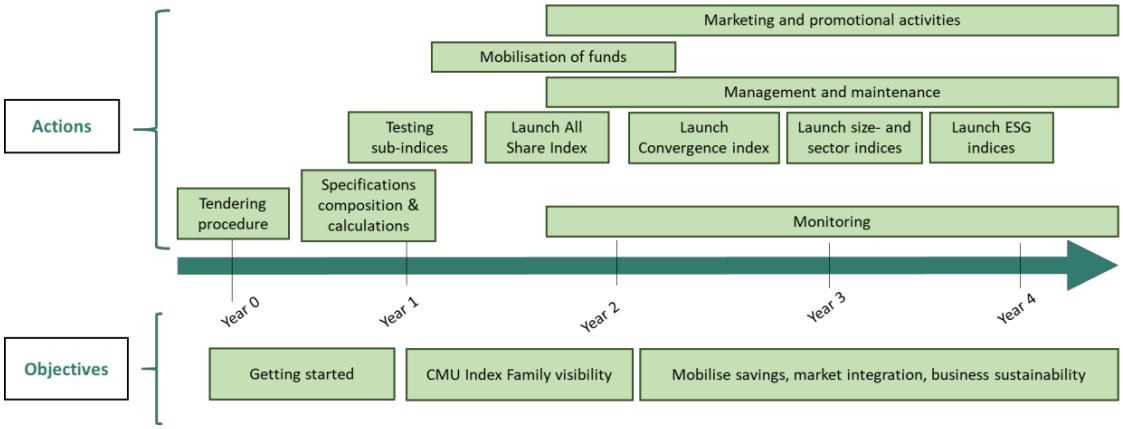
The committee also deals with unusual corporate actions such as mergers and delistings and takes decisions about whether an index should be discontinued or resurrected. This may be needed as each index needs a minimum number of constituents for its price to be computed.

The public party of PPP should be systematically informed by the index committee about any development. In the initial phase, particularly after the launch of the CMU All Share Index, frequent meetings should assess the performance (e.g. indices, realising its potential and market impact), as to what extent the latter is market driven and what the role of public funds constitutes.

8.10 Timeline

When setting up the CMU Index Family it is important to specify objectives to be achieved over time and the sequence of actions for the purpose (see Figure 8.2).

Figure 8.2 Indicative timeline



Source: CEPS (2020)

It is reasonable to assume from Figure 8.2 that after the decision to initiate a CMU Index Family following a PPP approach, it would take about nine months to complete the tendering procedure, select the contracting issuer and set up the partnership. Given the inputs provided in this study in terms of specification, composition and calculation of the CMU Index Family and the experience and availability of data expected for the selected reputed issuer, the CMU All Share Index should be ready by the end of the first year.

Once the CMU All Share Index is launched, actions in the following year should aim for the right visibility among the community of investors, and in particular large public investors, which could trigger a positive spin about the index. The end of the second year should be the time for an assessment of the performance of the index and its overall success and/or failures. Such evaluation should guide the launch of the other sub-indices, which should be completed in about two years. The objective is to increasingly mobilise private funds to boost liquidity and access in less-developed markets and ultimately foster equity market integration across the whole EU. Given the key role played by market forces in this process, such objectives must go hand in hand with the business sustainability of the CMU Index Family.

9 Conclusions

This study has developed an index set-up for a CMU Index Family. The index family considers about 3 600 stocks of EU-listed companies on EU-27 regulated markets and SME Growth Markets that are actively traded and have an average daily liquidity of more than EUR 1 000.

The proposed CMU Index Family consists of 38 indices, including the all share, ESG, SME Growth Market, company size (micro and small cap), market size (small and mid) and indices based on sectors (manufacturing, bank & financial services, insurance, ICT, energy, services, health and social services, construction, utility, trade, real estate, and logistics). These are calculated for both the most liquid stocks and the less liquid stocks to promote convergence.

In covering nearly all the stocks, and especially the smaller equity markets and companies with a low market value, the CMU Index Family contributes to market development and integration. Indeed, it addresses the relative over-representation of the larger markets and companies with a high market value in existing popular indices. This dynamic is driven by the independent index providers that primarily create indices based on the demand among large institutional investors. The passive investments follow these large investors, allocating a relatively larger share of their investments to large cap and developed market-dominated indices.

Feedback from stakeholders showed that there is limited to no potential for the CMU All Share Index to attract investments. This is especially due to difficulties connected to the replication of the index, which involves relatively high costs and requires a large scale. Nevertheless, some investors might want to use it as a more comprehensive benchmark to inform their investment performance. There is some demand for the sub-indices from national and regional institutional investors. However, the willingness of these investors to pay for the use of the index is often limited. Additionally, there is a potential for direct demand from retail investors.

There is potential for the CMU Index Family, but it largely depends on the conditions. This includes the governance and quality of the index provider selected to set up the index, but also the pricing and communication/sales strategy. Public parties can play an important role in creating the circumstances for a successful launch of a CMU Index Family (e.g. selection of index provider, sponsoring, and communication).

The creation of a task force on the implementation of the CMU Index Family is recommended to explore the most viable alliance of public and private partners for its launch.

The overall impact of the CMU Index Family on the development and integration of the EU equity markets is likely to be limited. But as most of the smaller EU markets are relatively small in size, diverting a limited amount of equity investments from large to smaller markets might already make a big difference for these markets. Moreover, the launch of the CMU Index Family could also contribute to the enhancement of the equity investment culture among households in the EU.

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List of abbreviations

Abbreviation	Full form
AEX	Euronext Amsterdam
AIM	Alternative Investment Market
ATHEX	Athens Exchange Group
AUM	Assets Under Management
BCPB	Bratislava Stock Exchange
BEL	Euronext Brussels
BET	Budapest Stock Exchange
BI	Milan Stock Exchange
BICS	Bloomberg Industry Classification System
BME	Madrid Stock Exchange
BR	Brazil
BSO	Bulgarian Stock Exchange
BVB	Bucharest Stock Exchange
CAC	Euronext Paris
CA	Canada
CEE	Central and Eastern Europe
CESEE	Central, Eastern and Southeastern Europe
CH	Switzerland
CMU	Capital Markets Union
CN	People's Republic of China
CO2	Carbon Dioxide
COV	Coefficient of Variation
COVID-19	Coronavirus Disease
CSD	Central Securities Depository
CSE	Cyprus Stock Exchange
CTB	Climate Transition Benchmark
DBG	Deutsche Börse
DG FISMA	Directorate-General for Financial Stability and Capital Markets
DJI	Dow Jones Index
DNSH	Do No Significant Harm
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
EIF	European Investment Fund
EMU	European Monetary Union
ENX	Euronext
EOD	End-of-Day
ESG	Environmental, Social and Corporate Governance
ETF	Exchange-Traded Fund
EU	European Union
FTSE	Financial Times Stock Exchange Group
GHG	Greenhouse Gas
GICS	Global Industry Classification Industry
GPW	Warsaw Stock Exchange
ICB	Industry Classification Benchmark
ICT	Information and Communications Technology
IFI	Independent Fiscal Institutions
IN	India
IPCC	Intergovernmental Panel on Climate Change
IPO	Initial Public Offering
ISEQ	Euronext Dublin
ISIN	International Securities Identification Number
KR	South Korea
KWH	Kilowatt-Hour
LJSE	Ljubljana Stock Exchange

Abbreviation	Full form
LSE	London Stock Exchange
LSEG	London Stock Exchange Group
LuxSE	Luxembourg Stock Exchange
M&A	Merger & Acquisition
MK	Macedonia
MSCI	Morgan Stanley Capital International
MSE	Malta Stock Exchange
MTF	Multilateral Trading Facility
NACE	Statistical Classification of Economic Activities in the European Community
NATO	North Atlantic Treaty Organization
NDAQ	Nasdaq Nordic
NO	Norway
OECD	Organisation for Economic Co-operation and Development
OMXBB	Nasdaq Baltic
OMXC	Nasdaq Copenhagen
OMXH	Nasdaq Helsinki
OMXR	Nasdaq Riga
OMXS	Nasdaq Stockholm
OMXT	Nasdaq Tallinn
OMXV	Nasdaq Vilnius
PAB	Paris-aligned Benchmark
PE	Private Equity Funds
PEPP	Pan-European Pension Product
PPP	Public-to-Private Partnership
PSE	Prague Stock Exchange
PSI	Euronext Lisbon
RU	Russian Federation
SB	Serbia
S&P	Standard & Poor's
SME	Small and Medium-sized Enterprises
TR	Turkey
TRBC	Thomson Reuters Business Classification System
TW	Taiwan
UCITS	Undertakings for the Collective Investment in Transferable Securities
UK	United Kingdom
US	United States of America
WBAG	Vienna Stock Exchange Group
ZSE	Zagreb Stock Exchange

Annex 1. CMU ESG Index methodology

Introduction

Corporates are exposed to environmental, social and governance (ESG) risks to different degrees, depending on industry and company-specific factors. At company level, ESG data has already improved substantially in the past few years, yet multiple challenges remain in terms of quality, granularity, timeliness, reliability, and comparability, and the lack of consistency across different providers given the variety of methodologies. Many investors are advocating for more standardisation in ESG ratings/scores and mandatory reporting by corporates. This could also contribute to the creation, acceptance and adoption of ESG-based indices by the market.

Market practices

In the past 10 years, benchmark administrators have designed hundreds of ESG and 'low-carbon' indices. The ESG indices broadly follow three different methodologies:

- The **rank-and-select methodology** follows an exclusionary approach that removes certain companies from the underlying benchmark universe. The best-rated companies are selected according to their ranking (ESG Leaders, ESG Average, ESG Laggards and avoiding regional and sector biases), for example, 50% or 25% of top companies in terms of free-float market cap.
- The **weight-tilt methodology** is to adjust the weights (using a factor from 0.5 to 2.0) of the benchmark's components toward better-rated companies and rating upgrades, i.e. companies with higher and improving ESG quality.
- The **optimisation techniques** in index construction are used to minimise the trade-off between ESG factors and index diversification and tracking error and/or potential industry/country/style-factors.

EU taxonomy

The methodology for the CMU ESG Index is informed by the EU ESG policies to reach, among other things, the climate change targets included in the Paris Agreement. In November 2019, regulation laying down minimum requirements for EU Climate Transition Benchmarks and EU Paris-aligned Benchmarks at Union level were adopted (see Table 0.1 for key elements).[41] The regulation delegates the responsibility for the specific minimum requirements for the benchmarks to the European Commission and the companies only need to disclose their performance on the targets by the end of 2022.

As the Commission still needs to issue the delegated acts, the draft CMU ESG Index follows the EU 'Taxonomy for Sustainable Activities',[42] which is likely to form the basis for the requirements. The EU 'Taxonomy for Sustainable Activities' is a list of economic activities with performance criteria for their contribution to six environmental objectives. To be included in the proposed EU Taxonomy, an economic activity must contribute substantially to at least one environmental objective and do no significant harm to the other five, as well as meet minimum social safeguards. Technical screening criteria set requirements for determining Substantial Contribution and Doing No Significant Harm (DNSH).

[41] https://eur-lex.europa.eu/eli/reg/2019/2089/oj
[42] https://ec.europa.eu/info/publications/sustainable-finance-teg-taxonomy_en

Table A1.1 Key elements of EU CTB and EU PAB

	EU Climate-Transition Benchmark (CTB)	EU Paris-aligned Benchmark (PAB)
Description	A benchmark where the underlying assets are selected, weighted or excluded in such a manner that the resulting benchmark portfolio is on a decarbonisation trajectory and is also constructed in accordance with the minimum standards laid down in the delegated acts	A benchmark that is labelled as an EU Paris-aligned benchmark where the underlying assets are selected in such a manner that the resulting benchmark portfolio's GHG emissions are aligned with the long-term global warming target of the Paris Climate Agreement and is also constructed in accordance with the minimum standards laid down in the delegated acts
RISK-ORIENTED MINIMUM STANDARDS		
Minimum Scope 1+2(+3) carbon intensity reduction compared to investible universe	30%	50%
Scope 3 phase-in	Up to 4 years	Up to 4 years
Baseline Exclusions	Yes Controversial Weapons Societal norms violators	Yes Controversial Weapons Societal norms violators
Activity Exclusions	No	Coal (1%+ revenues) Oil (10%+ revenues) Natural Gas (50%+ revenues) Electricity producers with carbon intensity of lifecycle GHG emissions higher than 100gCO2e/kWh (50%+ revenues)
OPPORTUNITY-ORIENTED MINIMUM STANDARDS		
Year-on-year self-decarbonisation of the benchmark	At least 7% on average per annum: in line with or beyond the decarbonisation trajectory from the IPCC's 1.5°C scenario (with no or limited overshoot)	
Minimum green share/brown share ratio compared to investible universe (VOLUNTARY)	At least equivalent	Significantly larger (factor 4)
Exposure constraints	Minimum exposure to sectors highly exposed to climate change issues is at least equal to equity market benchmark value	
Corporate Target Setting	Weight increase shall be considered for companies which set evidence-based targets under strict conditions to avoid greenwashing	
Disqualification from label if 2 consecutive years of misalignments with trajectory	Immediate	Immediate
RELEVANCE-ORIENTED MINIMUM STANDARDS		
Review Frequency	Minimum requirements shall be reviewed every three years to recognise market development as well as technological and methodological progress.	
GENERAL STANDARDS		

	EU Climate-Transition Benchmark (CTB)	EU Paris-aligned Benchmark (PAB)
	– Administrators of EU Climate Transition and of EU Paris-aligned benchmarks should ensure the consistency, the comparability and the quality of GHG emissions data (Scope 1+2+3). – The total GHG intensity means the weighted average GHG intensity at index level. There is no minimum standard on the GHG intensity of individual assets constituting the index. – Benchmark administrators can achieve reductions in GHG intensity by reducing the constituent weights of high intensity sectors or companies while simultaneously increasing the constituent weights of low intensity sectors or companies, respectively. – Benchmark administrators can aim to identify firms which are likely to reduce their GHG intensity by at least 7% in the upcoming year. – The Equity Exposure Constraint requires indices to hold a certain percentage of its constituent weights within any of nine NACE section codes (A to L) – Benchmark administrators are strongly recommended to use the NACE codes. For ease of translation to alternative sector classification systems, translations to BICS, GICS, ICB, and TRBC are provided in Appendix B of the Handbook.	

Source: Authors, based on European Commission (2019)

CMU ESG Index methodology

The composition of the CMU ESG Index satisfies the Paris-aligned Benchmark. The CMU ESG Index is based on the CMU All Share Index and follows a combination of rank-and-select and weight-tilt methodology. This is to ensure a broad coverage of EU shares, in line with the objective of the CMU Index Family to contribute to development and integration of the EU equity markets.

STEP 1. CMU All Share Index eligible companies

The CMU All Share Index forms the investible universe of the CMU ESG Index methodology. The CMU All Share Index comprises all E-listed and domiciled companies regardless of level of local capital market development. It has constituent stocks from the regulated markets only.

STEP 2. Excluding baseline and activity exclusion

The companies that meet the criteria for baseline and activity exclusions are excluded from the index. This means that companies involved with controversial weapons and those violating societal norms are excluded. Companies that obtain more than 1% of their revenues from coal, 10% from oil, 50% from natural gas or 50% from electricity production with carbon intensity of lifecycle GHG emissions above 100g CO2 per kWh are also excluded.

STEP 3. Split between low and high carbon intensity

To reduce the emissions of the companies in the portfolio by 50%, the composition of the portfolio needs to be changed. More low carbon-intense companies need to be included. However, only part of the listed companies currently publishes their carbon emissions. Therefore assumptions need to be made about the carbon emissions of the listed companies. In the proposed approach the carbon emissions are considered by sector. More specifically, the sectors are divided between high and low carbon intense (see Table A1.2).

Table A1.2 Distribution of NACE sectors by carbon intensity

High Carbon Intensity	Low Carbon Intensity
A - Agriculture, forestry and fishing B - Mining and quarrying C - Manufacturing D - Electricity, gas, steam and air conditioning supply E - Water supply; sewerage, waste management and remediation activities F - Construction G - Wholesale and retail trade; repair of motor vehicles and motorcycles H - Transportation and storage L - Real estate activities	I - Accommodation and food service activities J - Information and communication K - Financial and insurance activities M - Professional, scientific and technical activities N - Administrative and support service activities O - Public administration and defence; compulsory social security P - Education Q - Human health and social work activities R - Arts, entertainment and recreation S - Other service activities T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use U - Activities of extraterritorial organisations and bodies

STEP 4. Split between low and high carbon intensity

The excluded activities are assumed to have the highest carbon emissions. The carbon intensity of the high carbon-intense sectors is assumed to be four times as carbon intense as the low carbon-intense sectors. In turn, the excluded activities are assumed to be twice as carbon intense as the high carbon-intense sectors, while the baseline exclusions are assumed to have a high carbon intensity.

This gives the following formula for the carbon intensity of the CMU All Share Index, in which W is the weight of the companies across carbon intensity:

Equation CMU All Share Index:

$$(8W_{All\ Activities} + 4W_{All\ Baseline} + 4W_{All\ High} + W_{All\ Low}) * Carbon\ intensity = Carbon\ intensity_{CMU\ All\ Share\ Index}$$

Constraint: $W_{All\ Activities} + W_{All\ Baseline} + W_{All\ High} + W_{All\ Low} = W_{ESG\ High} + W_{ESG\ Low} = 100\%$

Equation CMU ESG Index:

$$(4W_{ESG\ High} + W_{ESG\ Low}) * Carbon\ intensity = Carbon\ intensity_{ESG\ All\ Share\ Index}$$

$$W_{ESG\ High} = W_{All\ Activities} + 0.5W_{All\ Baseline} + 0.5W_{All\ High} + 0.25W_{All\ Low}$$

$$W_{ESG\ Low} = 100\% - W_{ESG\ High}$$

The CMU ESG Index methodology can be updated and refined as soon as the Commission publishes the minimum requirements and listed companies improve their ESG reporting, including carbon intensity and reduction targets.

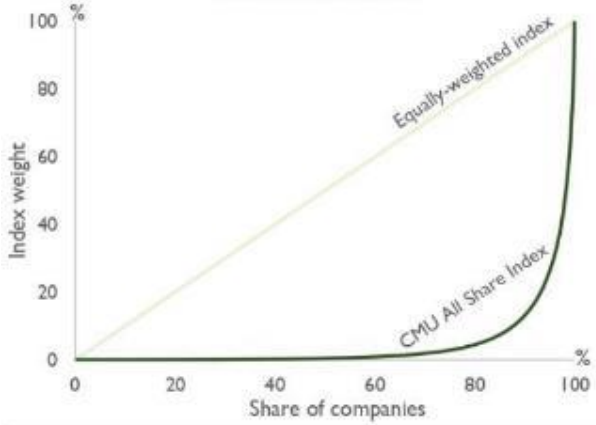
Annex 2. CMU Index Family factsheets

INDEX COMPOSITION

The CMU All Share Index covers all the EU domiciled and listed companies regardless of level of local capital market development. It includes only companies listed at regulated and SME Growth markets. The CMU All Share Index is weighted based on market capitalization adjusted for free-float.

Index name	CMU ALL SHARE INDEX
Number of companies	3 570
Universe	Companies listed on EU regulated and SME Growth markets
Weighting	Market capitalisation adjusted for free-float

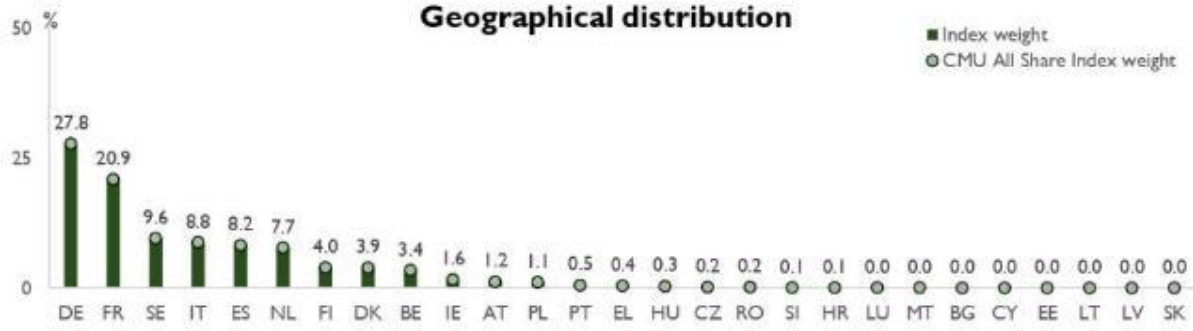
Concentration



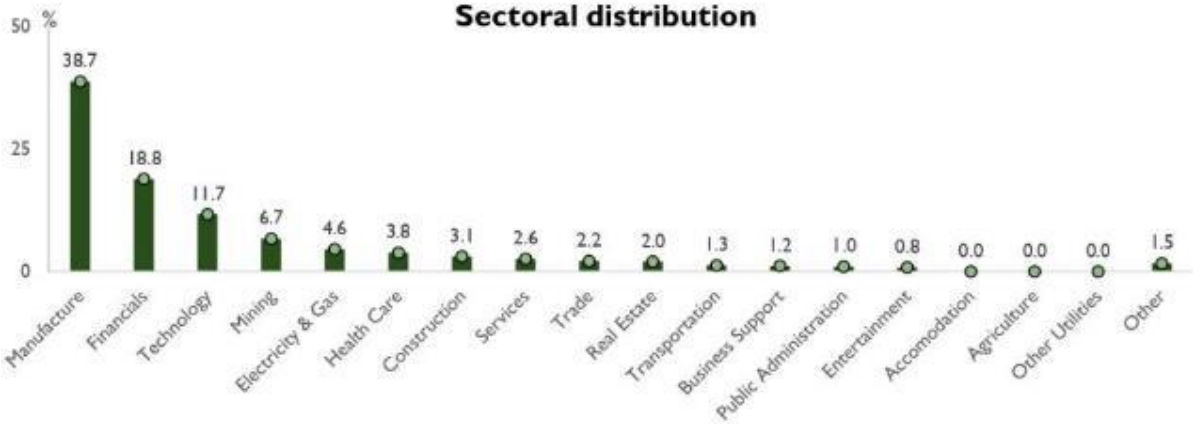
Size distribution

	Companies		Index weight
	NR	%	%
Micro	1 628	45.6	0.5
Small	1 077	30.2	3.5
Mid	468	13.1	11.0
Large	397	11.1	85.0
Total	**3 570**	**100.0**	**100.0**

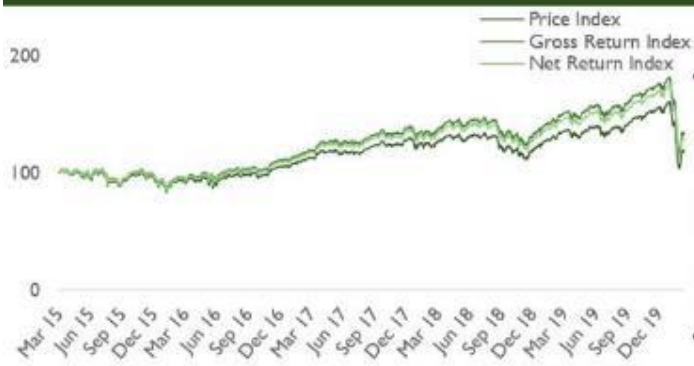
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



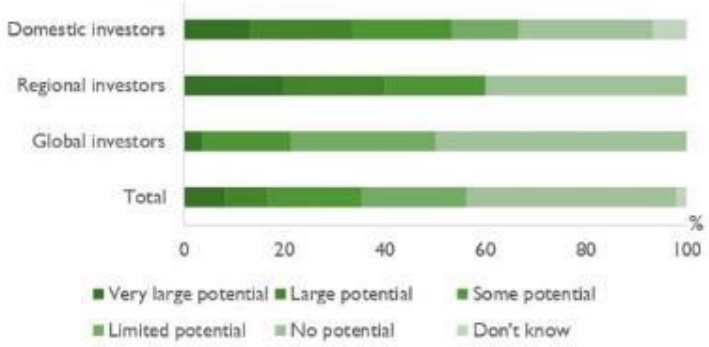
Performance

	Close	Last month	Last year	Last 5 years
Price Index	119.4	-15.9%	-8.6%	+19.4%
Gross Return Index	134.5	-16.2%	-7.2%	+34.5%
Net Return Index	129.8	-16.1%	-7.7%	+29.8%

Liquidity

	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	1 089	59.9	642	73.0	516	73.0	174	87.0	1 419	63.5	35	3.1
Small	467	25.7	191	21.7	150	21.2	23	11.5	716	32.1	338	29.7
Mid	128	7.0	34	3.9	32	4.5	3	1.5	72	3.2	393	34.6
Large	134	7.4	13	1.5	9	1.3	0	0.0	26	1.2	371	32.6
Total	**1 818**	**100.0**	**880**	**100.0**	**707**	**100.0**	**200**	**100.0**	**2 233**	**100.0**	**1 137**	**100.0**

Institutional investor interest



Indicated interest

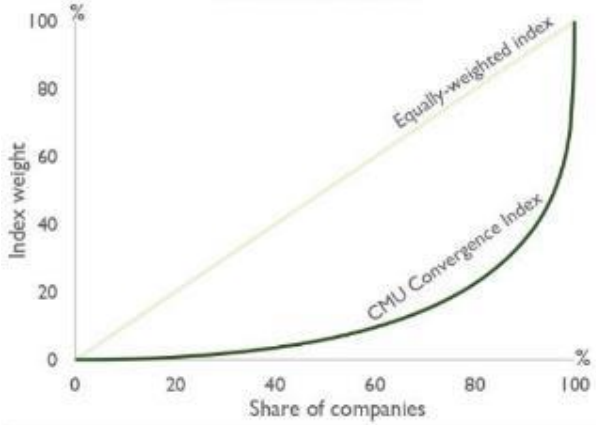
Location investors

INDEX COMPOSITION

The CMU Convergence Index includes only companies with low trading values from the CMU All Share Index universe. The index is fully investable for foreign investors on a stand-alone basis. The CMU Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU CONVERGENCE INDEX
Number of companies	1 613
Universe	Companies with low trading values
Weighting	Market capitalisation adjusted for free-float

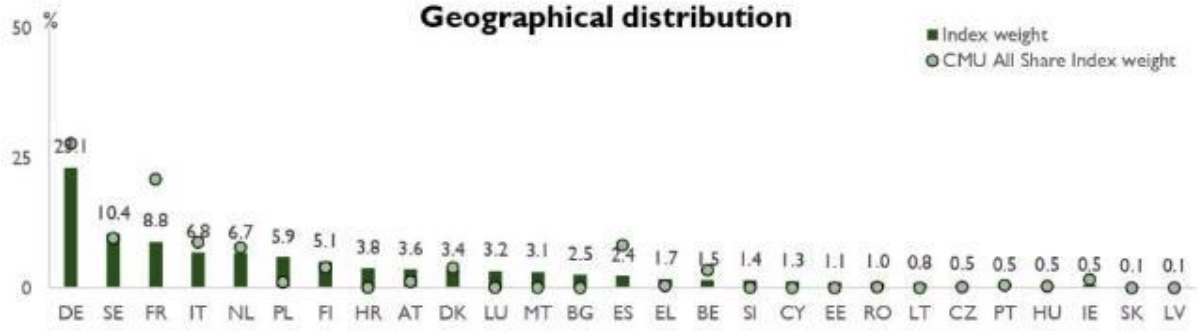
Concentration



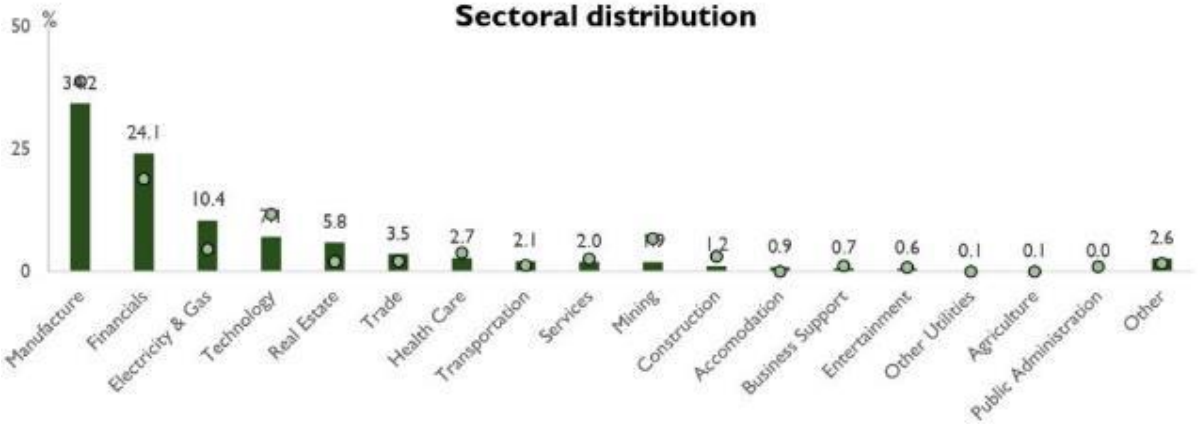
Size distribution

	Companies		Index weight
	NR	%	%
Micro	1 279	79.3	29.2
Small	282	17.5	34.0
Mid	40	2.5	28.4
Large	12	0.7	8.4
Total	**1 613**	**100.0**	**100.0**

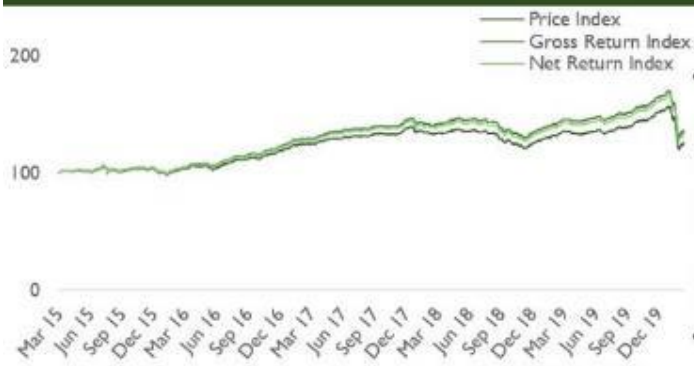
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



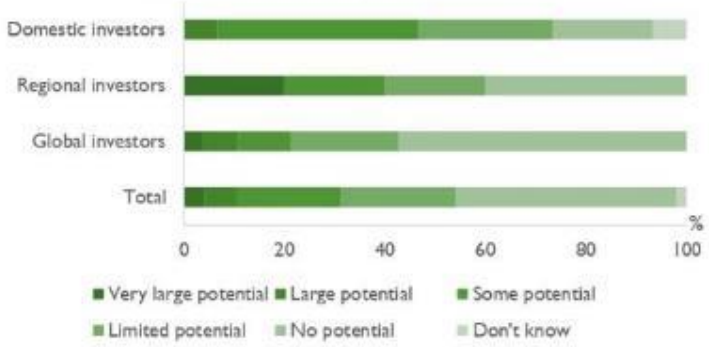
Performance

	Close	Last month	Last year	Last 5 years
Price Index	125.4	-14.1%	-5.2%	+25.4%
Gross Return Index	136.1	-14.0%	-4.1%	+36.1%
Net Return Index	133.1	-14.0%	-4.4%	+33.1%

Liquidity

	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	969	77.5	612	75.3	497	75.1	174	87.0	1 101	78.3	4	66.7
Small	239	19.1	165	20.3	133	20.1	23	11.5	258	18.3	1	16.7
Mid	31	2.5	28	3.4	27	4.1	3	1.5	36	2.6	1	16.7
Large	11	0.9	8	1.0	5	0.8	0	0.0	12	0.9	0	0.0
Total	**1 250**	**100.0**	**813**	**100.0**	**662**	**100.0**	**200**	**100.0**	**1 407**	**100.0**	**6**	**100.0**

Institutional investor interest



Indicated interest

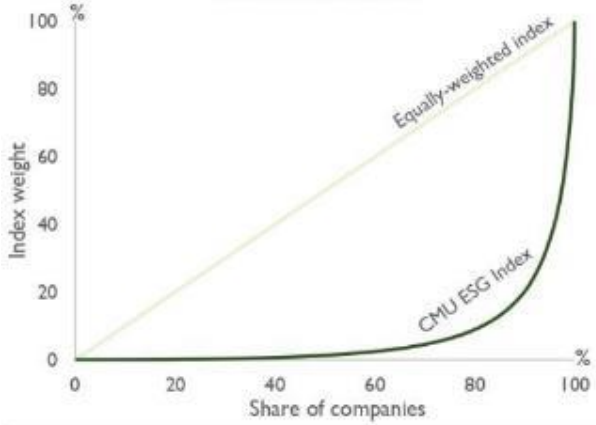
Location investors

INDEX COMPOSITION

The CMU ESG Index excludes controversial, unsustainable, unhuman products, as well as high carbon shares in the EU and those companies with low trading values. It fosters higher information quality and higher transparency in less developed capital markets. The CMU ESG Index is weighted based on market capitalisation adjusted for free-float and ESG factor.

Index name	CMU ESG INDEX
Number of companies	1 863
Universe	ESG-compliant companies
Weighting	Market capitalisation adjusted for free-float and ESG factor

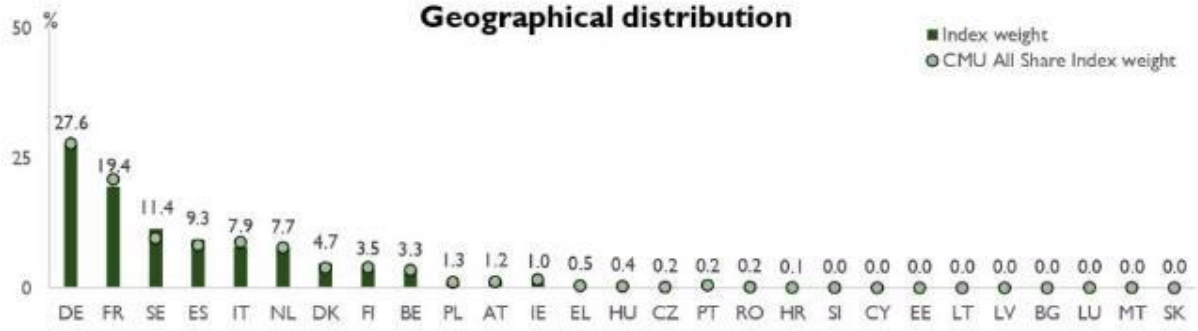
Concentration



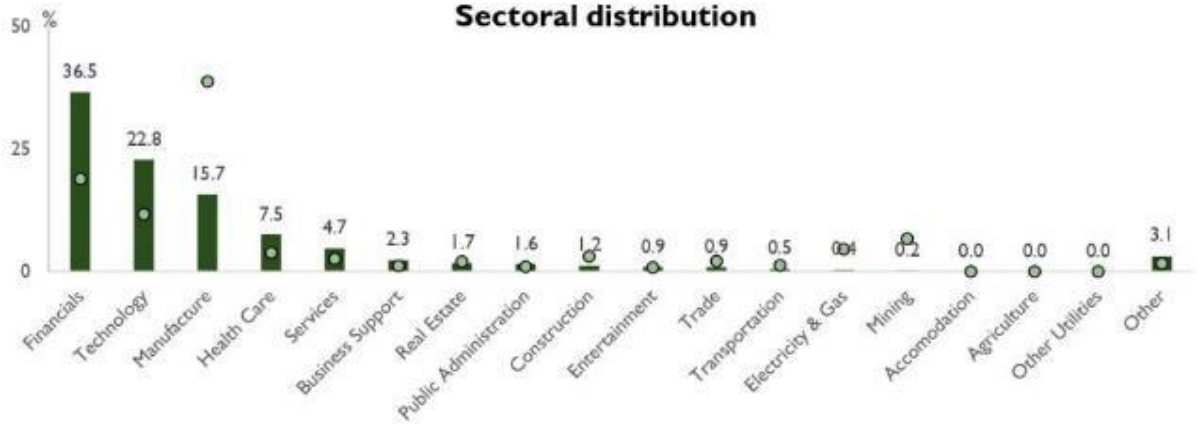
Size distribution

	Companies		Index weight
	NR	%	%
Micro	340	18.3	0.2
Small	765	41.1	3.6
Mid	413	22.2	12.2
Large	345	18.5	84.0
Total	**1 863**	**100.0**	**100.0**

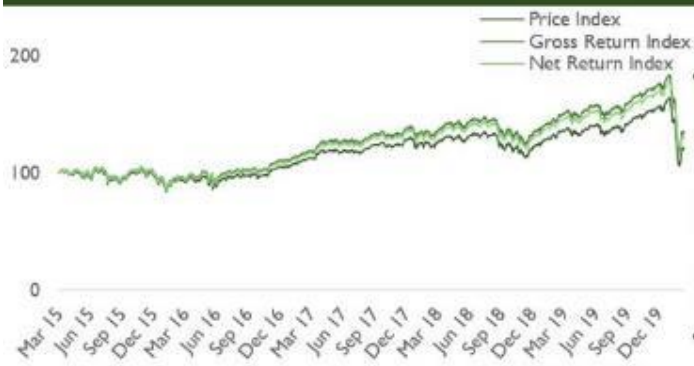
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



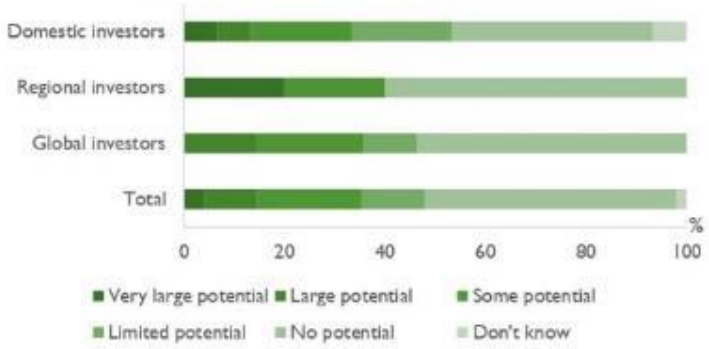
Performance

	Close	Last month	Last year	Last 5 years
Price Index	121.3	-15.9%	-8.0%	+21.3%
Gross Return Index	135.2	-16.3%	-6.9%	+35.2%
Net Return Index	131.0	-16.2%	-7.3%	+31.0%

Liquidity

	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	118	21.6	30	46.2	19	43.2	0	n.a.	311	38.6	29	2.7
Small	222	40.6	25	38.5	17	38.6	0	n.a.	446	55.3	319	30.2
Mid	94	17.2	6	9.2	5	11.4	0	n.a.	36	4.5	377	35.7
Large	113	20.7	4	6.2	3	6.8	0	n.a.	13	1.6	332	31.4
Total	**547**	**100.0**	**65**	**100.0**	**44**	**100.0**	**0**	**n.a.**	**806**	**100.0**	**1 057**	**100.0**

Institutional investor interest



Indicated interest

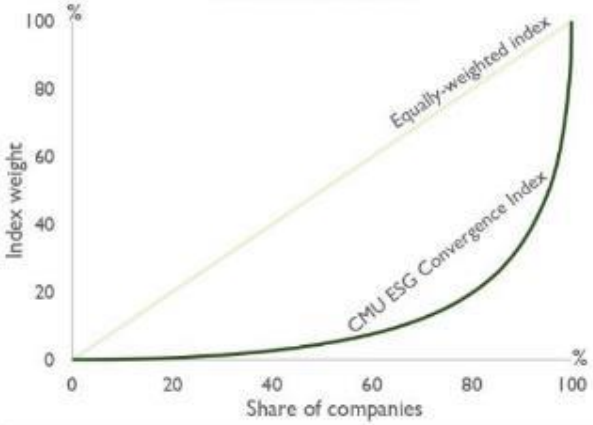
Location investors

INDEX COMPOSITION

The CMU ESG Convergence Index excludes controversial, unsustainable, unhuman products, as well as high carbon shares in the EU. It includes only companies with low trading values. The CMU ESG Convergence Index is weighted based on market capitalisation adjusted for free-float and ESG factor.

Index name	CMU ESG CONVERGENCE INDEX
Number of companies	1 579
Universe	ESG-compliant companies with low trading values
Weighting	Market capitalisation adjusted for free-float and ESG factor

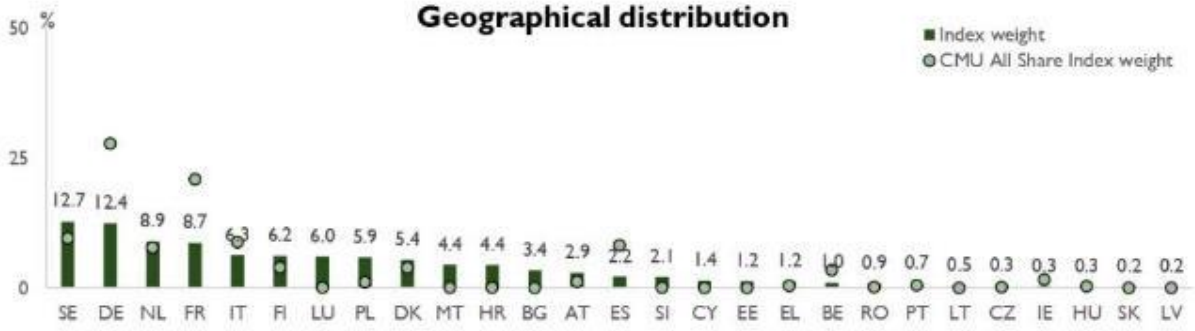
Concentration



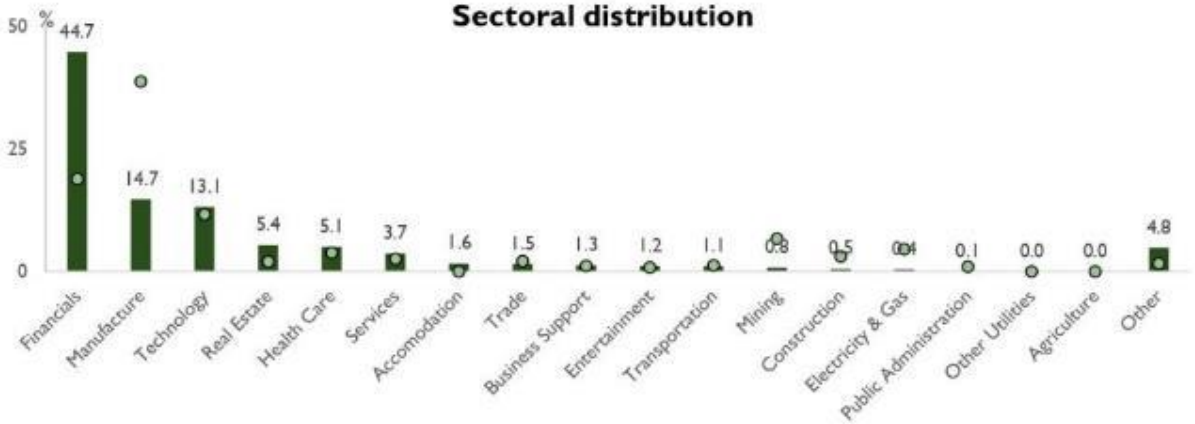
Size distribution

	Companies		Index weight
	NR	%	%
Micro	1 261	79.9	34.3
Small	273	17.3	39.7
Mid	35	2.2	22.5
Large	10	0.6	3.5
Total	**1 579**	**100.0**	**100.0**

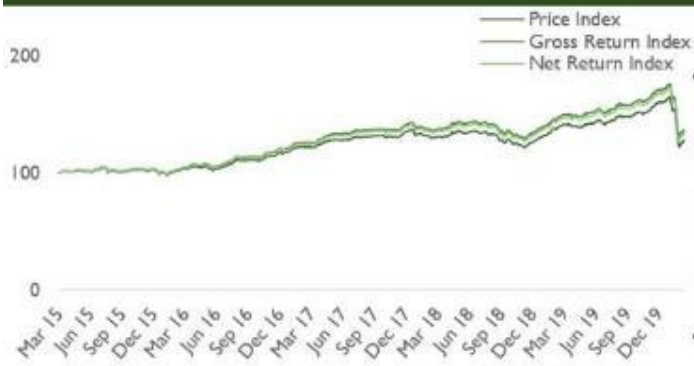
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	127.7	-16.7%	-7.7%	+27.7%
Gross Return Index	136.6	-16.6%	-6.7%	+36.6%
Net Return Index	134.0	-16.6%	-7.0%	+34.0%

Liquidity

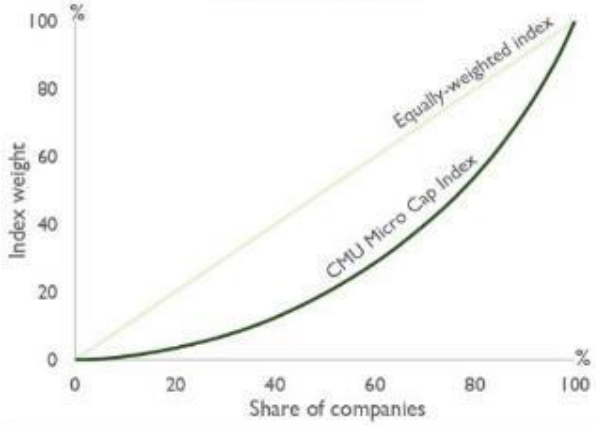
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	954	78.2	601	75.9	487	75.7	171	87.7	1 086	78.8	4	66.7
Small	230	18.9	161	20.3	129	20.1	21	10.8	251	18.2	1	16.7
Mid	27	2.2	24	3.0	23	3.6	3	1.5	31	2.2	1	16.7
Large	9	0.7	6	0.8	4	0.6	0	0.0	10	0.7	0	0.0
Total	**1 220**	**100.0**	**792**	**100.0**	**643**	**100.0**	**195**	**100.0**	**1 378**	**100.0**	**6**	**100.0**

INDEX COMPOSITION

CMU Micro Cap Index includes EU companies with market capitalisations less than EUR 100 million regardless of their domicile market, excluding those with low trading values. The CMU Micro Cap Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU MICRO CAP INDEX
Number of companies	349
Universe	Micro cap companies
Weighting	Market capitalisation adjusted for free-float

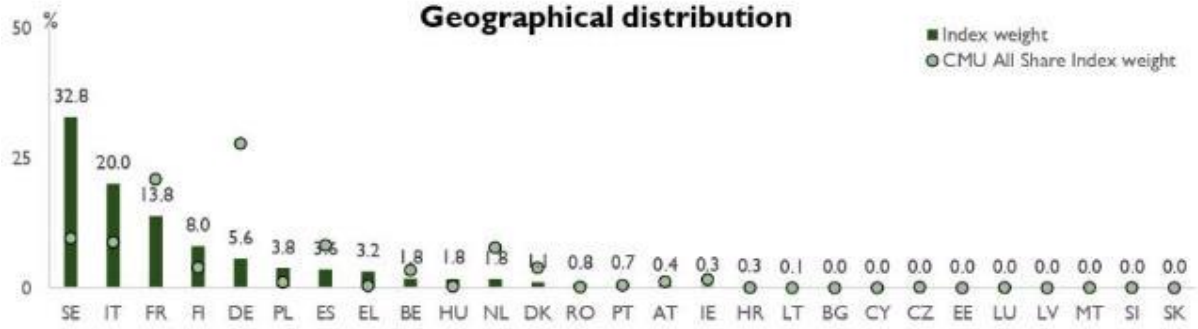
Concentration



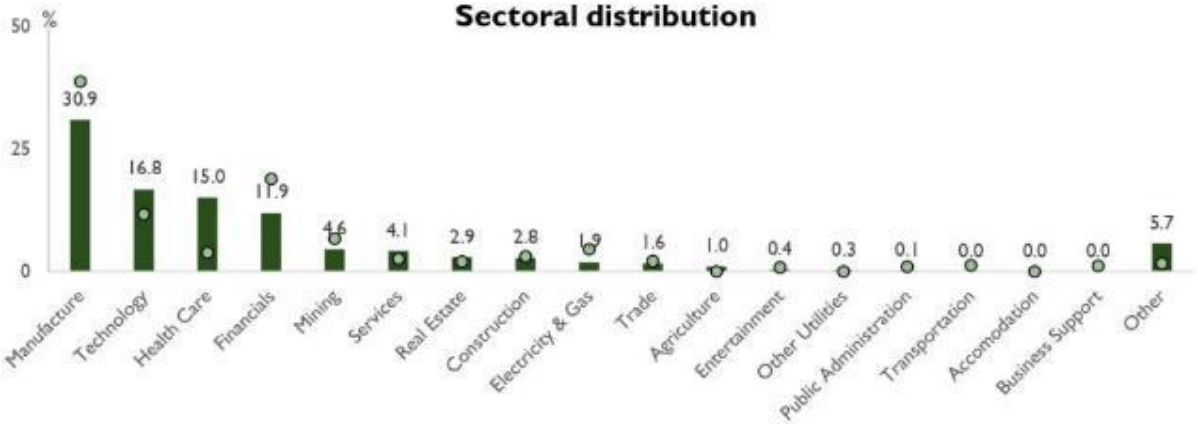
Size distribution

	Companies		Index weight
	NR	%	%
Micro	349	100.0	100.0
Small	0	0.0	0.0
Mid	0	0.0	0.0
Large	0	0.0	0.0
Total	**349**	**100.0**	**100.0**

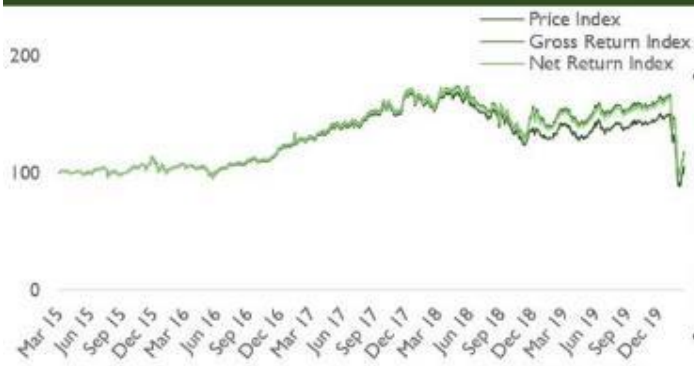
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



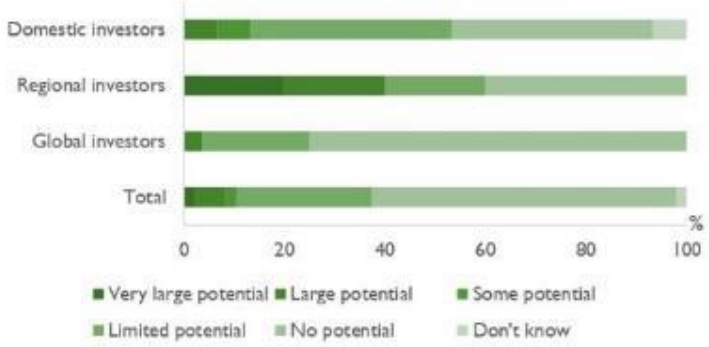
Performance

	Close	Last month	Last year	Last 5 years
Price Index	105.5	-16.5%	-22.0%	+5.5%
Gross Return Index	117.7	-16.4%	-20.7%	+17.7%
Net Return Index	115.4	-16.5%	-21.0%	+15.4%

Liquidity

	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	120	100.0	30	100.0	19	100.0	0	n.a.	318	100.0	31	100.0
Small	0	0.0	0	0.0	0	0.0	0	n.a.	0	0.0	0	0.0
Mid	0	0.0	0	0.0	0	0.0	0	n.a.	0	0.0	0	0.0
Large	0	0.0	0	0.0	0	0.0	0	n.a.	0	0.0	0	0.0
Total	**120**	**100.0**	**30**	**100.0**	**19**	**100.0**	**0**	**n.a.**	**318**	**100.0**	**31**	**100.0**

Institutional investor interest



Indicated interest

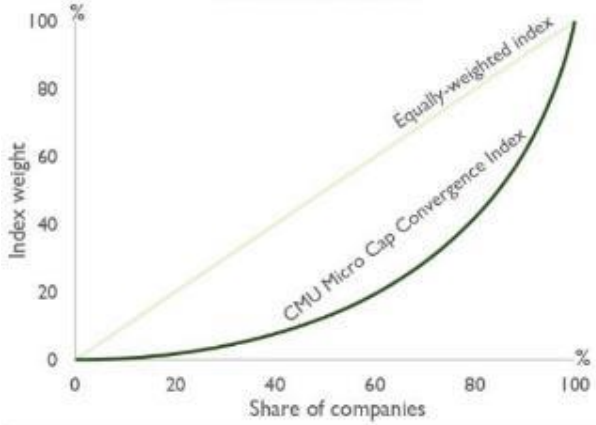
Location investors

INDEX COMPOSITION

The CMU Micro Cap Convergence Index includes EU companies with low trading values with market capitalisations less than EUR 100 million regardless of their domicile market. The CMU Micro Cap Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU MICRO CAP CONVERGENCE INDEX
Number of companies	1 279
Universe	Micro cap companies with low trading values
Weighting	Market capitalisation adjusted for free-float

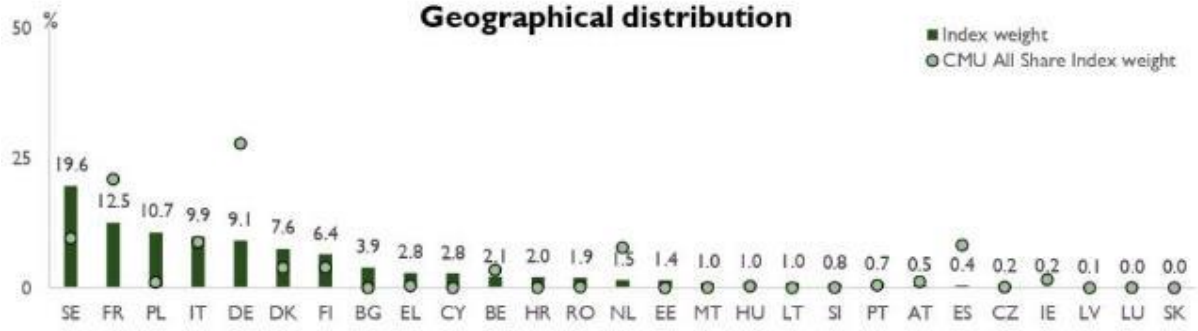
Concentration



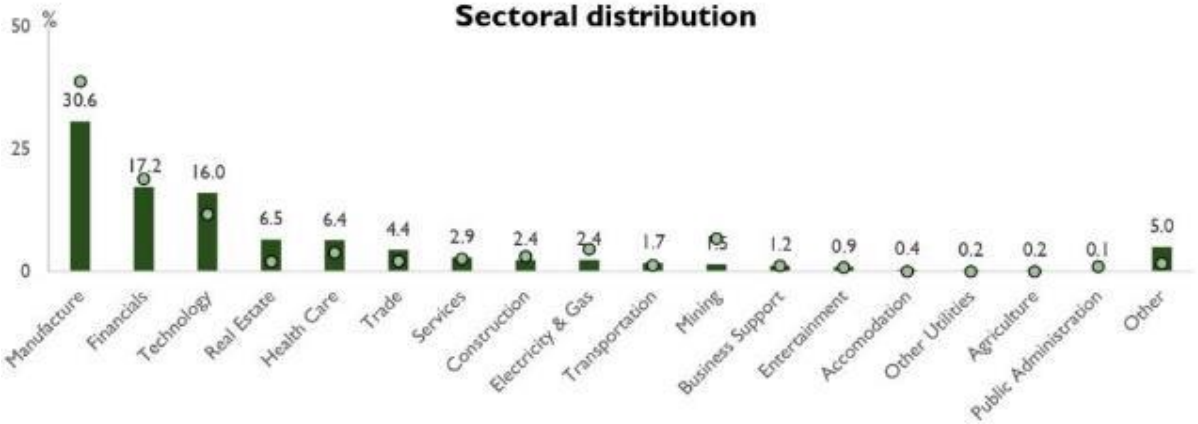
Size distribution

	Companies		Index weight
	NR	%	%
Micro	1 279	100.0	100.0
Small	0	0.0	0.0
Mid	0	0.0	0.0
Large	0	0.0	0.0
Total	**1 279**	**100.0**	**100.0**

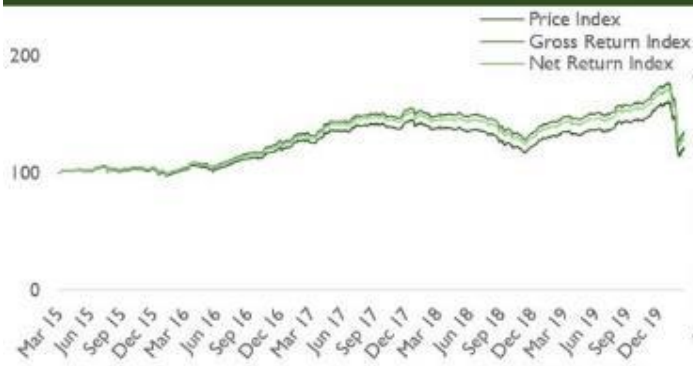
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	121.3	-16.6%	-7.6%	+21.3%
Gross Return Index	134.3	-16.3%	-6.4%	+34.3%
Net Return Index	130.1	-16.4%	-6.7%	+30.1%

Liquidity

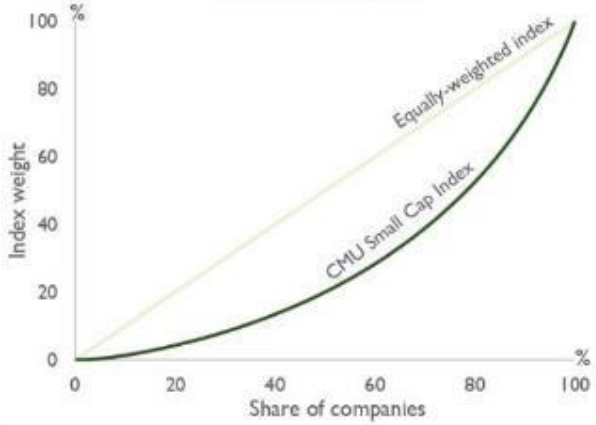
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	969	100.0	612	100.0	497	100.0	174	100.0	1 101	100.0	4	100.0
Small	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mid	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Large	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**969**	**100.0**	**612**	**100.0**	**497**	**100.0**	**174**	**100.0**	**1 101**	**100.0**	**4**	**100.0**

INDEX COMPOSITION

The CMU Small Cap Index includes EU companies with market capitalisations between EUR 100 million and EUR 1000 million regardless of their domicile market, excluding those with low trading values. The CMU Small Cap Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU SMALL CAP INDEX
Number of companies	795
Universe	Small cap companies
Weighting	Market capitalisation adjusted for free-float

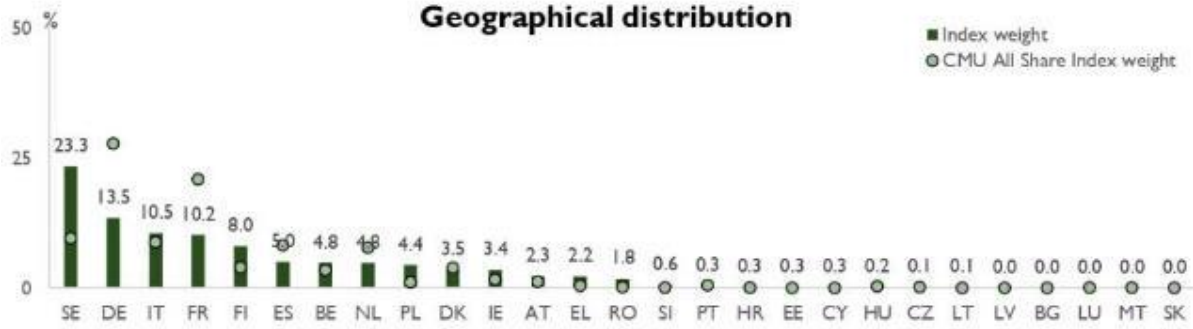
Concentration



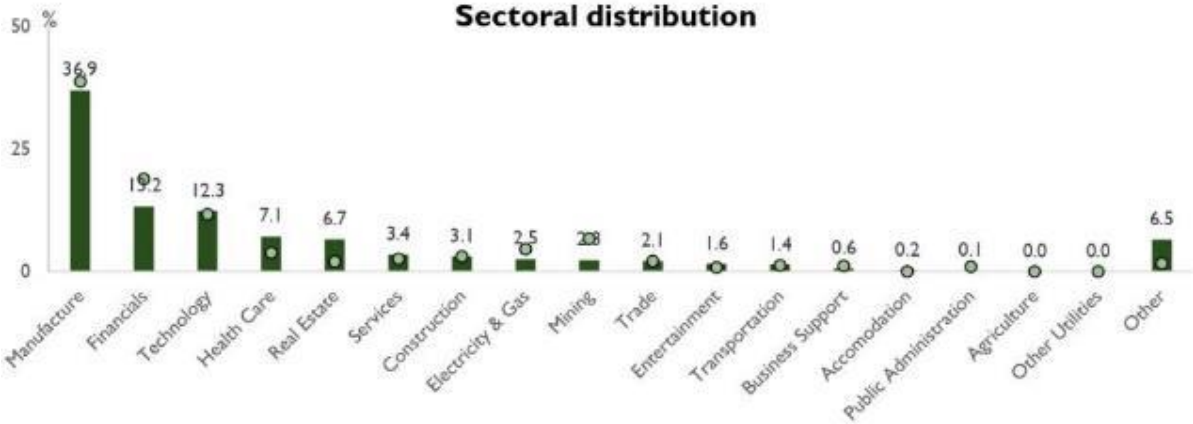
Size distribution

	Companies		Index weight
	NR	%	%
Micro	0	0.0	0.0
Small	795	100.0	100.0
Mid	0	0.0	0.0
Large	0	0.0	0.0
Total	**795**	**100.0**	**100.0**

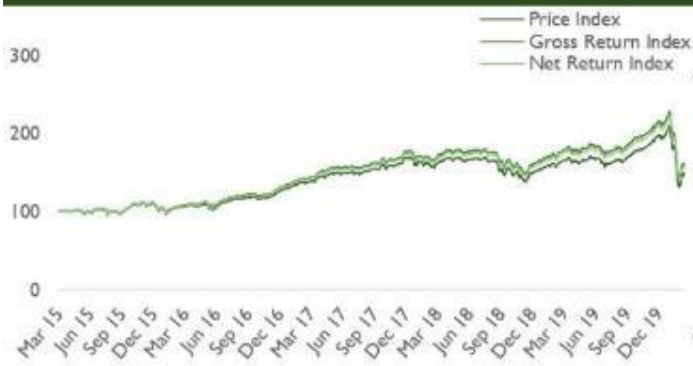
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



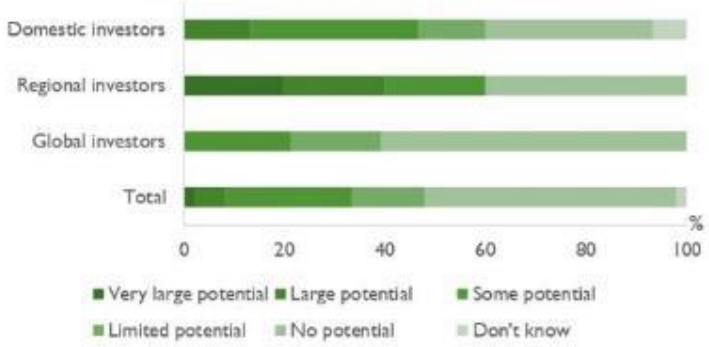
Performance

	Close	Last month	Last year	Last 5 years
Price Index	150.1	-16.4%	-5.8%	+50.1%
Gross Return Index	162.8	-16.7%	-5.4%	+62.8%
Net Return Index	159.0	-16.7%	-5.6%	+59.0%

Liquidity

	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	0	0.0	0	0.0	0	0.0	0	n.a.	0	0.0	0	0.0
Small	228	100.0	26	100.0	17	100.0	0	n.a.	458	100.0	337	100.0
Mid	0	0.0	0	0.0	0	0.0	0	n.a.	0	0.0	0	0.0
Large	0	0.0	0	0.0	0	0.0	0	n.a.	0	0.0	0	0.0
Total	**228**	**100.0**	**26**	**100.0**	**17**	**100.0**	**0**	**n.a.**	**458**	**100.0**	**337**	**100.0**

Institutional investor interest



Indicated interest

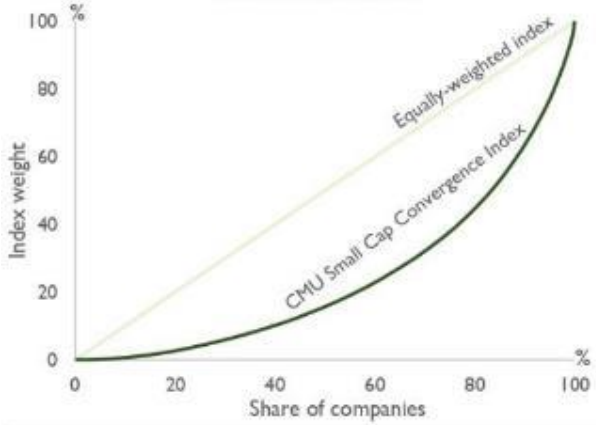
Location investors

INDEX COMPOSITION

The CMU Small Cap Convergence Index includes EU companies with low trading values with market capitalisations between EUR 100 million and EUR 1000 million regardless of their domicile market. The CMU Small Cap Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU SMALL CAP CONVERGENCE INDEX
Number of companies	282
Universe	Small cap companies with low trading values
Weighting	Market capitalisation adjusted for free-float

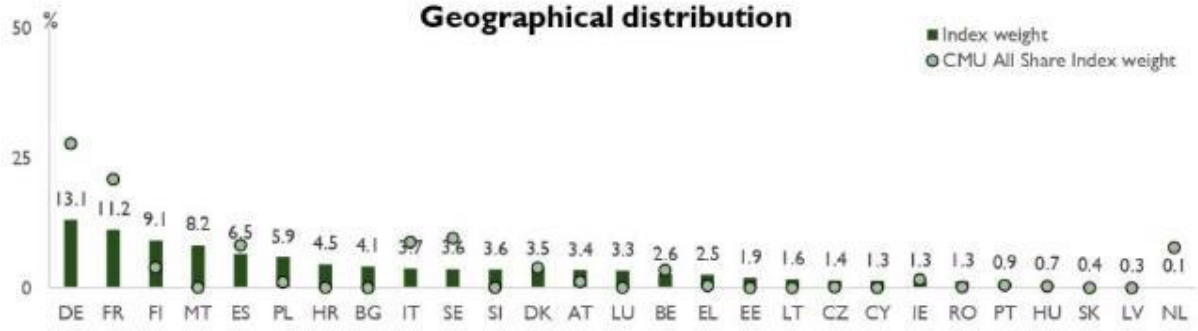
Concentration



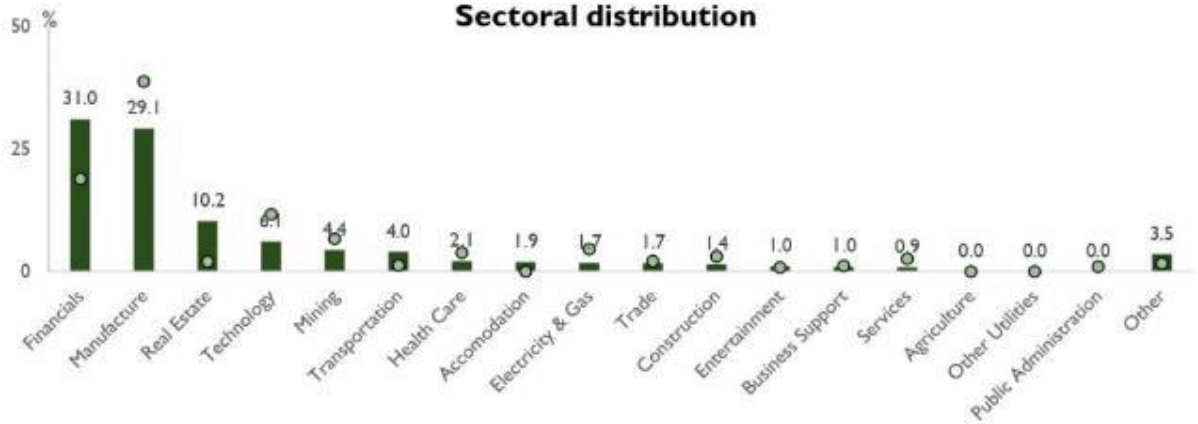
Size distribution

	Companies		Index weight
	NR	%	%
Micro	0	0.0	0.0
Small	282	100.0	100.0
Mid	0	0.0	0.0
Large	0	0.0	0.0
Total	**282**	**100.0**	**100.0**

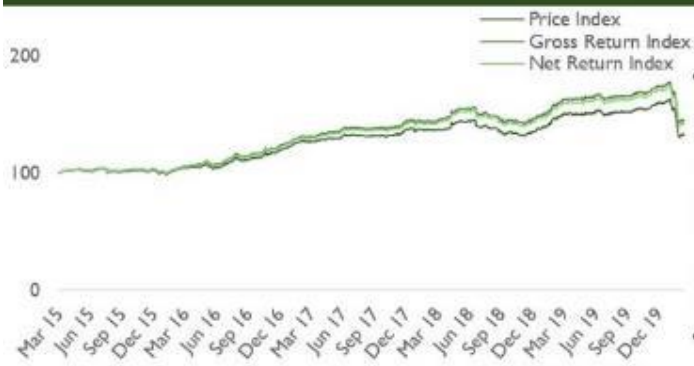
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	132.5	-14.1%	-10.2%	+32.5%
Gross Return Index	144.8	-13.8%	-9.1%	+44.8%
Net Return Index	141.9	-13.8%	-9.4%	+41.9%

Liquidity

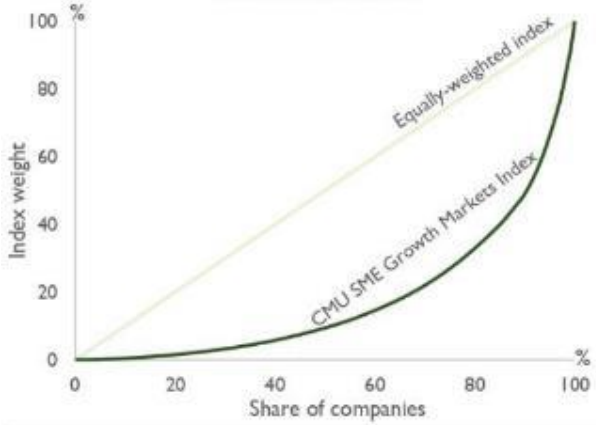
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Small	239	100.0	165	100.0	133	100.0	23	100.0	258	100.0	1	100.0
Mid	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Large	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**239**	**100.0**	**165**	**100.0**	**133**	**100.0**	**23**	**100.0**	**258**	**100.0**	**1**	**100.0**

INDEX COMPOSITION

The CMU SME Growth Markets Index includes EU companies listed on SME Growth markets, excluding those with low trading values. The CMU SME Growth Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU SME GROWTH MARKETS INDEX
Number of companies	236
Universe	Companies listed on SME Growth markets
Weighting	Market capitalisation adjusted for free-float

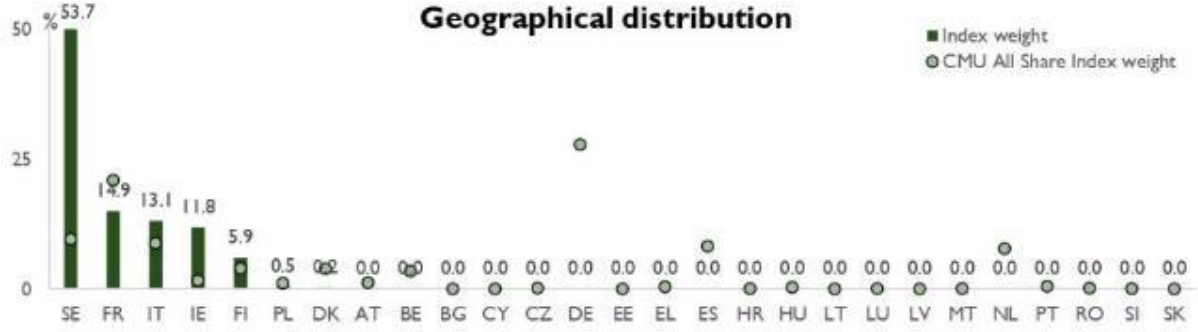
Concentration



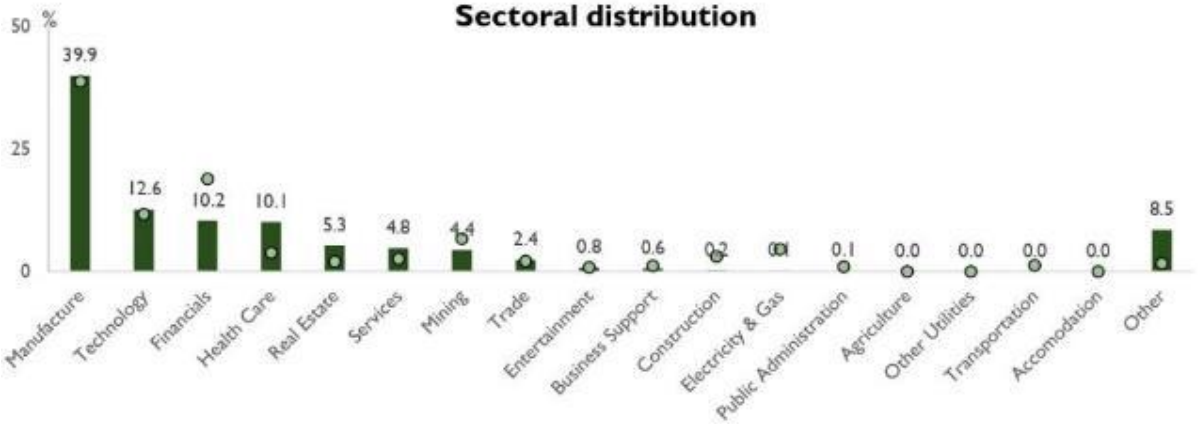
Size distribution

	Companies		Index weight
	NR	%	%
Micro	157	66.5	22.2
Small	76	32.2	69.9
Mid	3	1.3	7.9
Large	0	0.0	0.0
Total	**236**	**100.0**	**100.0**

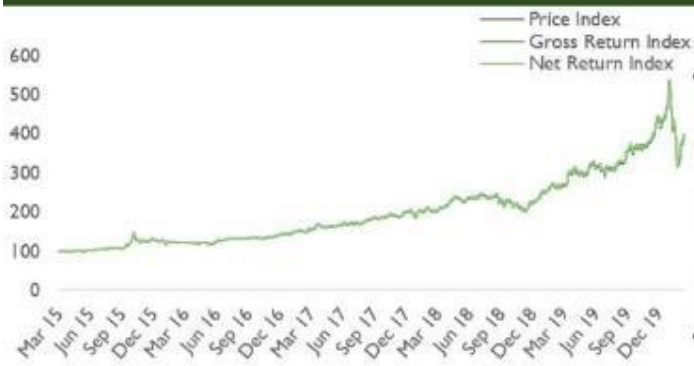
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



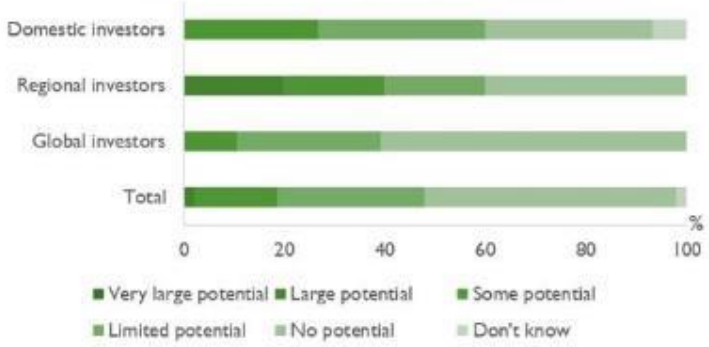
Performance

	Close	Last month	Last year	Last 5 years
Price Index	394.3	-2.9%	+48.8%	+294.3%
Gross Return Index	398.0	-3.0%	+48.6%	+298.0%
Net Return Index	396.7	-2.9%	+48.6%	+296.7%

Liquidity

	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	60	63.8	17	68.0	12	60.0	0	n.a.	146	72.3	11	32.4
Small	33	35.1	8	32.0	8	40.0	0	n.a.	56	27.7	20	58.8
Mid	1	1.1	0	0.0	0	0.0	0	n.a.	0	0.0	3	8.8
Large	0	0.0	0	0.0	0	0.0	0	n.a.	0	0.0	0	0.0
Total	**94**	**100.0**	**25**	**100.0**	**20**	**100.0**	**0**	**n.a.**	**202**	**100.0**	**34**	**100.0**

Institutional investor interest



Indicated interest

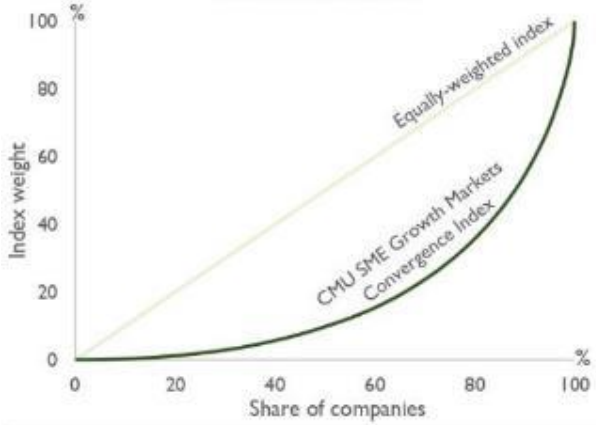
Location investors

INDEX COMPOSITION

The CMU SME Growth Markets Convergence Index includes EU companies with low trading values listed on SME Growth markets. The CMU SME Growth Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU SME GROWTH MARKETS CONVERGENCE INDEX
Number of companies	510
Universe	Companies with low trading values listed on SME Growth markets
Weighting	Market capitalisation adjusted for free-float

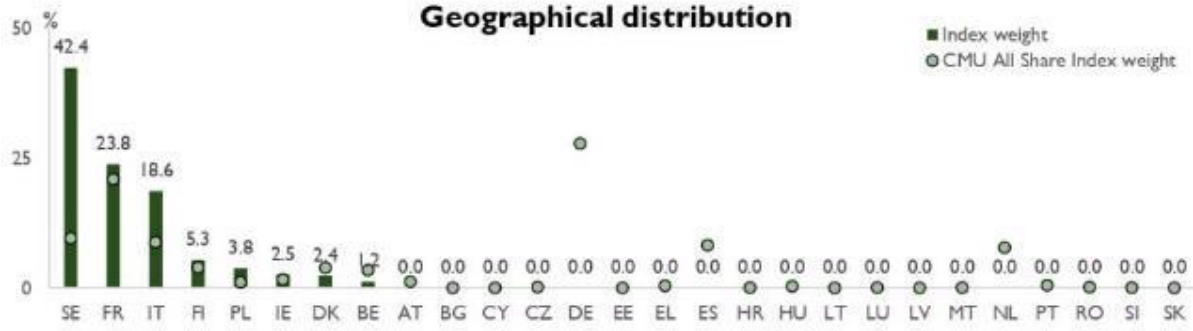
Concentration



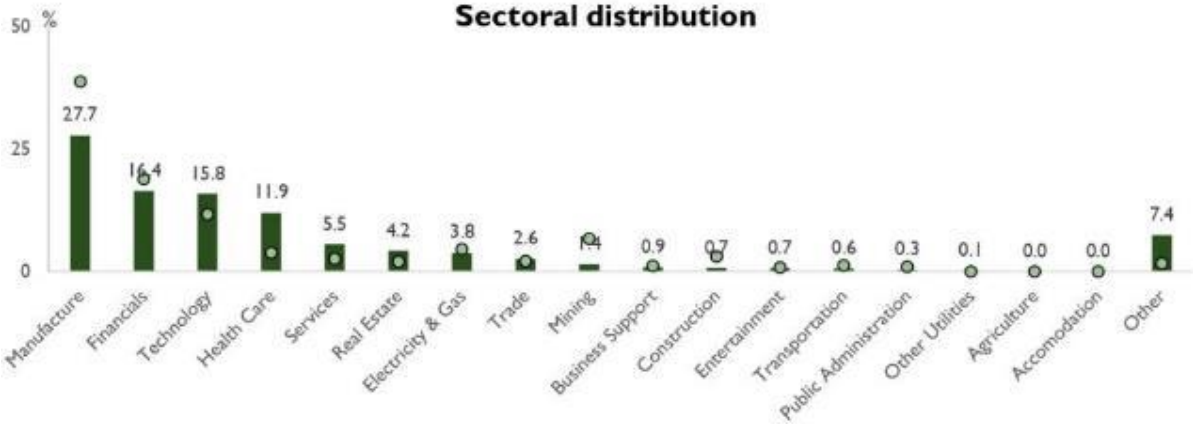
Size distribution

	Companies		Index weight
	NR	%	%
Micro	484	94.9	79.3
Small	26	5.1	20.7
Mid	0	0.0	0.0
Large	0	0.0	0.0
Total	**510**	**100.0**	**100.0**

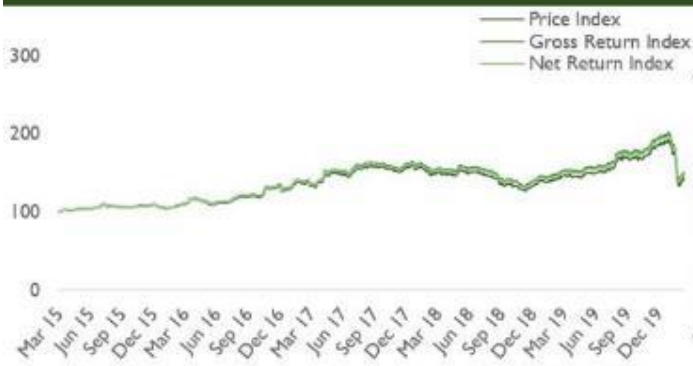
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	144.0	-17.3%	+1.4%	+44.0%
Gross Return Index	151.0	-17.3%	+2.0%	+51.0%
Net Return Index	148.7	-17.3%	+1.8%	+48.7%

Liquidity

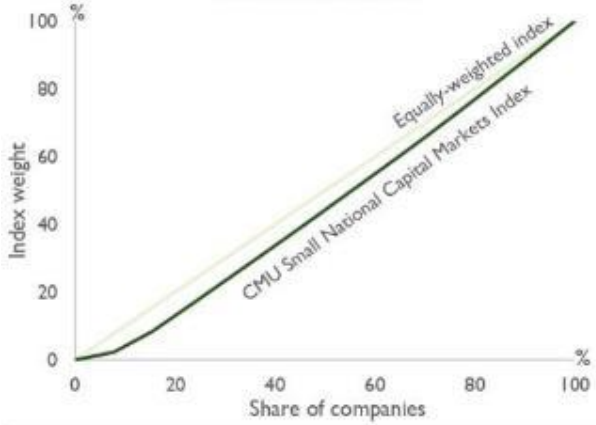
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	358	93.7	202	92.7	157	94.0	41	95.3	441	94.8	2	100.0
Small	24	6.3	16	7.3	10	6.0	2	4.7	24	5.2	0	0.0
Mid	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Large	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**382**	**100.0**	**218**	**100.0**	**167**	**100.0**	**43**	**100.0**	**465**	**100.0**	**2**	**100.0**

INDEX COMPOSITION

The CMU Small National Capital Markets Index includes EU companies listed on small national capital markets, excluding those with low trading values. The CMU Small National Capital Markets Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU SMALL NATIONAL CAPITAL MARKETS INDEX
Number of companies	13
Universe	Companies listed on EU small national markets
Weighting	Market capitalisation adjusted for free-float

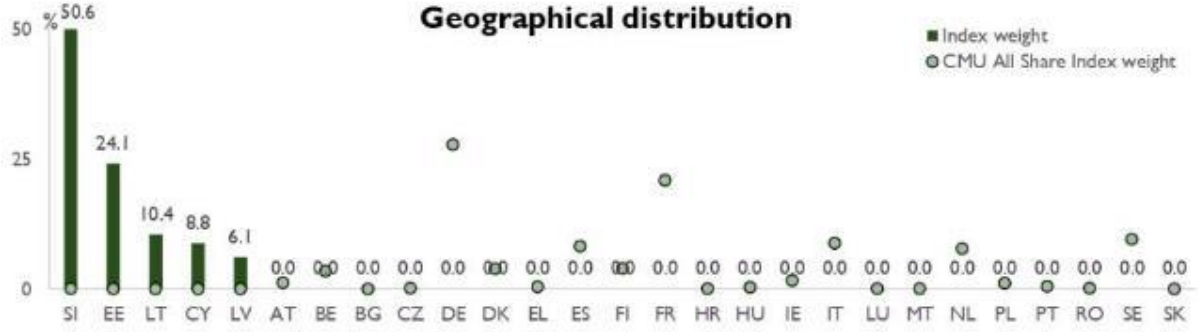
Concentration



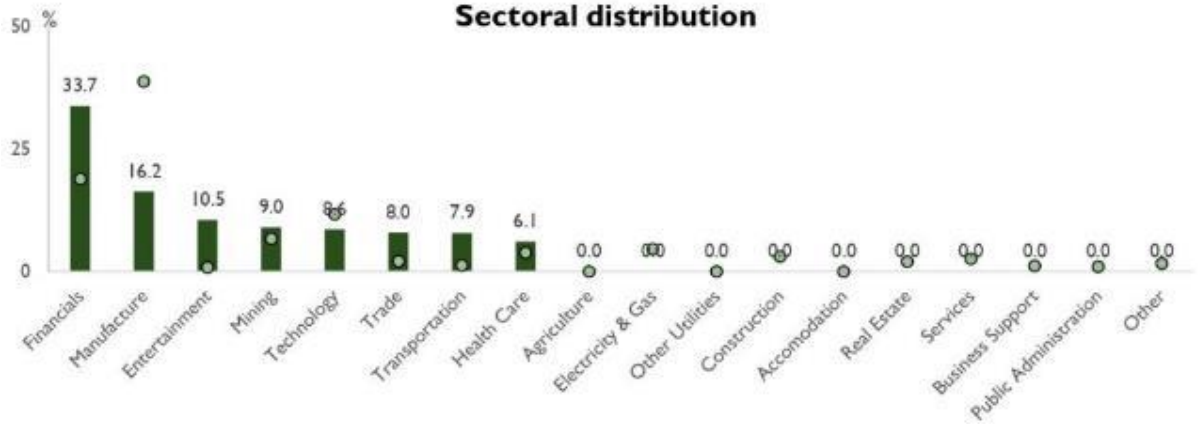
Size distribution

	Companies		Index weight
	NR	%	%
Micro	1	7.7	2.3
Small	10	76.9	80.9
Mid	2	15.4	16.8
Large	0	0.0	0.0
Total	**13**	**100.0**	**100.0**

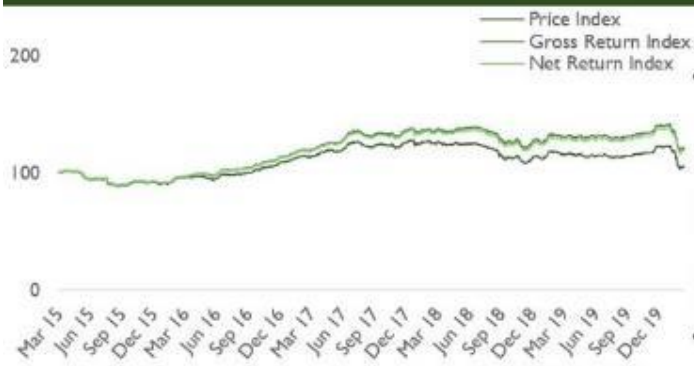
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



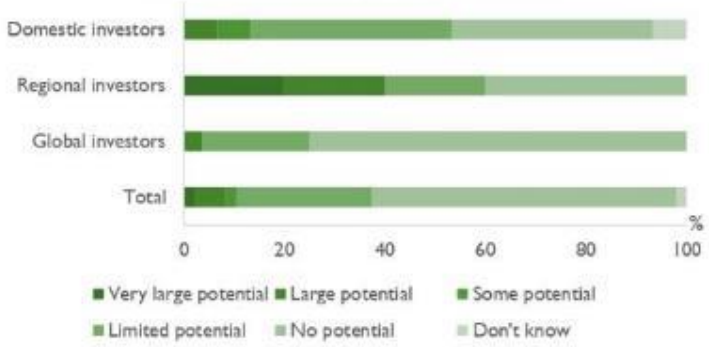
Performance

	Close	Last month	Last year	Last 5 years
Price Index	105.6	-10.8%	-9.6%	+5.6%
Gross Return Index	121.4	-10.6%	-7.5%	+21.4%
Net Return Index	119.1	-10.5%	-7.4%	+19.1%

Liquidity

	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	1	16.7	0	0.0	0	n.a.	0	n.a.	1	8.3	0	0.0
Small	4	66.7	1	100.0	0	n.a.	0	n.a.	10	83.3	0	0.0
Mid	1	16.7	0	0.0	0	n.a.	0	n.a.	1	8.3	1	100.0
Large	0	0.0	0	0.0	0	n.a.	0	n.a.	0	0.0	0	0.0
Total	**6**	**100.0**	**1**	**100.0**	**0**	**n.a.**	**0**	**n.a.**	**12**	**100.0**	**1**	**100.0**

Institutional investor interest



Indicated interest

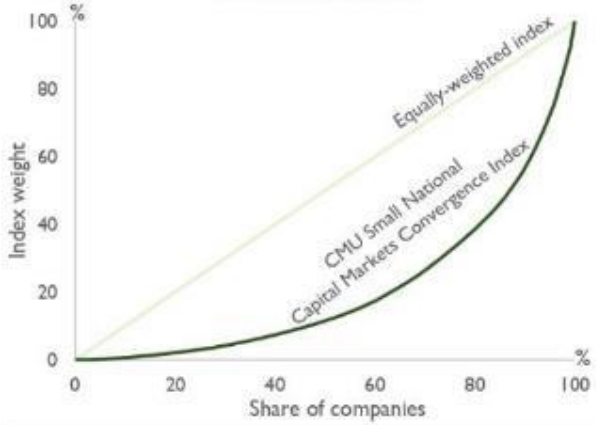
Location investors

INDEX COMPOSITION

The CMU Small National Capital Markets Convergence Index includes EU companies with low trading values listed on small national capital markets. The CMU Small National Capital Markets Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU SMALL NATIONAL CAPITAL MARKETS CONVERGENCE INDEX
Number of companies	126
Universe	Companies with low trading values listed on EU small national markets
Weighting	Market capitalisation adjusted for free-float

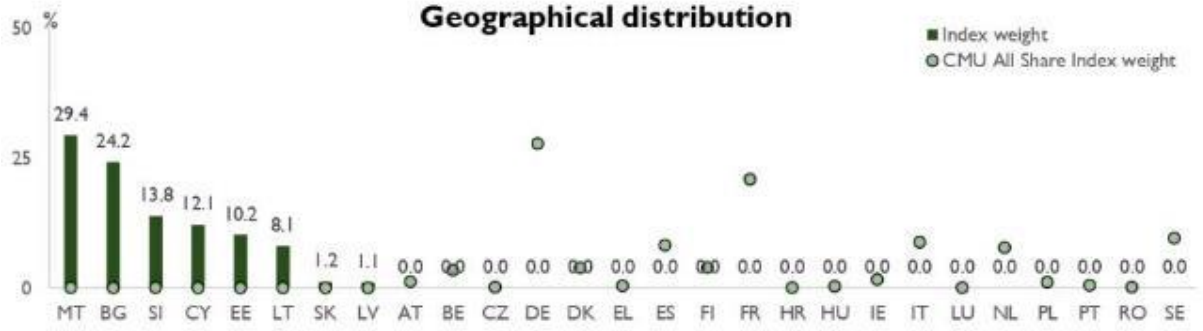
Concentration



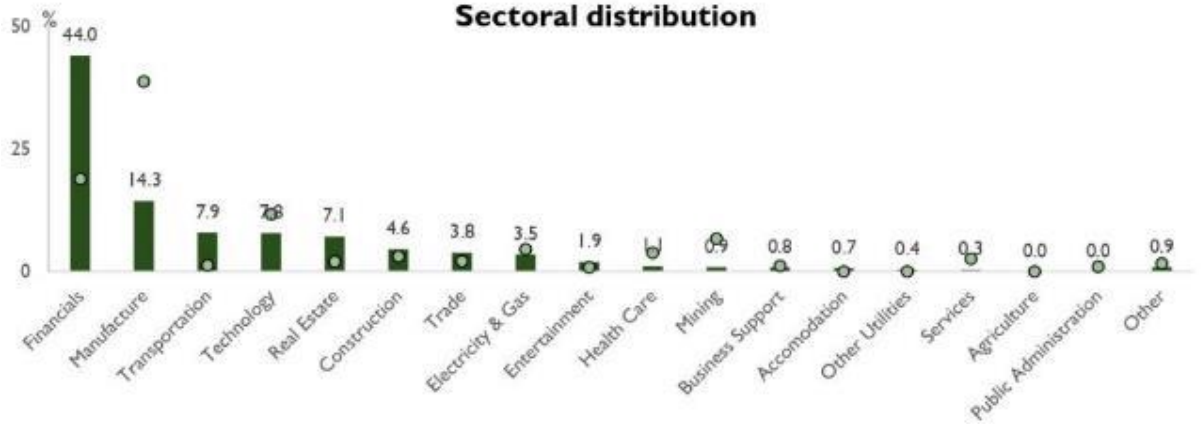
Size distribution

	Companies		Index weight
	NR	%	%
Micro	82	65.1	30.5
Small	44	34.9	69.5
Mid	0	0.0	0.0
Large	0	0.0	0.0
Total	**126**	**100.0**	**100.0**

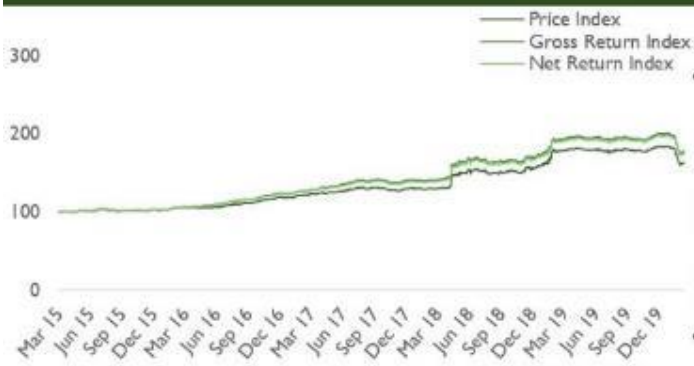
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	163.2	-10.3%	-8.2%	+63.2%
Gross Return Index	177.4	-10.3%	-7.6%	+77.4%
Net Return Index	175.0	-10.3%	-7.6%	+75.0%

Liquidity

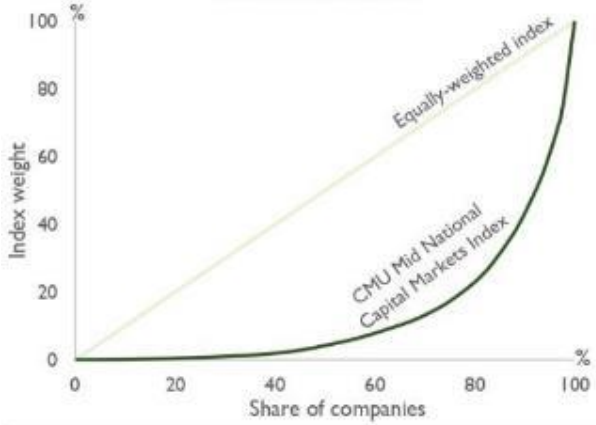
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	82	67.2	75	68.2	73	70.9	29	90.6	53	56.4	0	n.a.
Small	40	32.8	35	31.8	30	29.1	3	9.4	41	43.6	0	n.a.
Mid	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	n.a.
Large	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	n.a.
Total	**122**	**100.0**	**110**	**100.0**	**103**	**100.0**	**32**	**100.0**	**94**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU Mid National Capital Markets Index includes EU companies listed on medium-sized national capital markets, excluding those with low trading values. The CMU Mid National Capital Markets Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU MID NATIONAL CAPITAL MARKETS INDEX
Number of companies	110
Universe	Companies listed on EU mid-sized national markets
Weighting	Market capitalisation adjusted for free-float

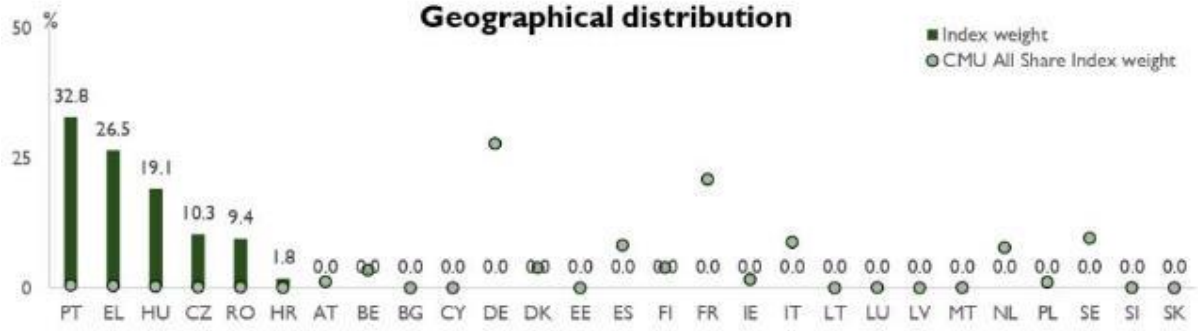
Concentration



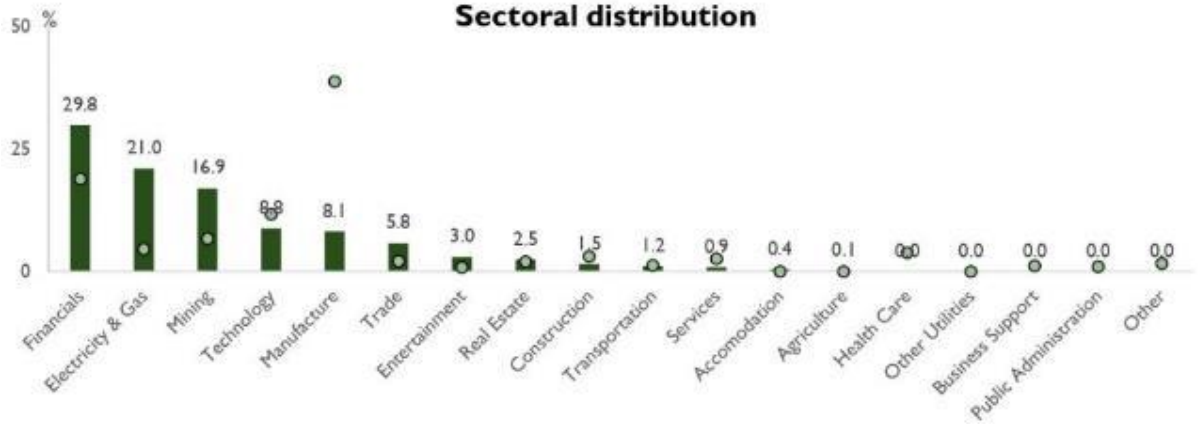
Size distribution

	Companies		Index weight
	NR	%	%
Micro	27	24.5	0.8
Small	44	40.0	10.2
Mid	28	25.5	36.1
Large	11	10.0	52.9
Total	**110**	**100.0**	**100.0**

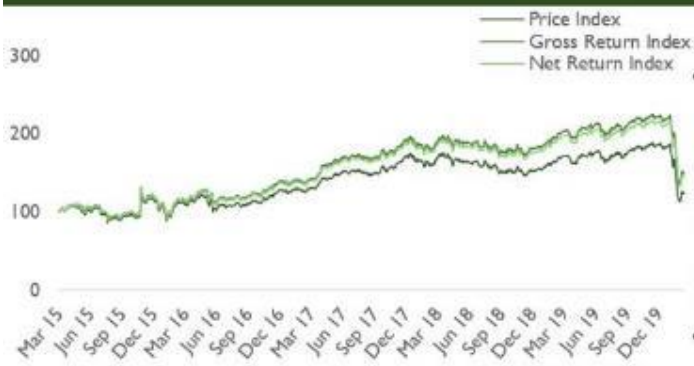
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



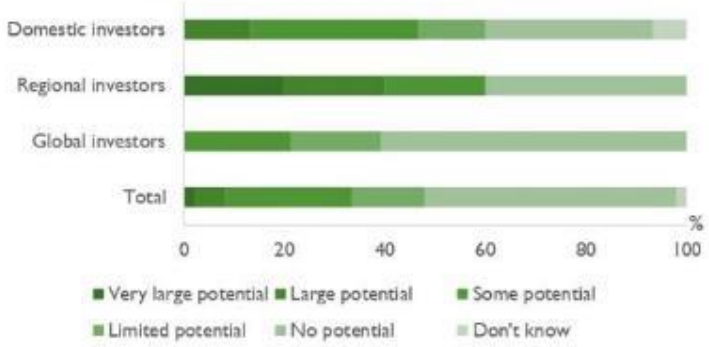
Performance

	Close	Last month	Last year	Last 5 years
Price Index	123.3	-23.5%	-25.8%	+23.3%
Gross Return Index	148.9	-23.4%	-24.5%	+48.9%
Net Return Index	143.8	-23.4%	-24.9%	+43.8%

Liquidity

	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	4	36.4	1	100.0	1	100.0	0	n.a.	25	44.6	2	3.7
Small	6	54.5	0	0.0	0	0.0	0	n.a.	29	51.8	15	27.8
Mid	1	9.1	0	0.0	0	0.0	0	n.a.	2	3.6	26	48.1
Large	0	0.0	0	0.0	0	0.0	0	n.a.	0	0.0	11	20.4
Total	**11**	**100.0**	**1**	**100.0**	**1**	**100.0**	**0**	**n.a.**	**56**	**100.0**	**54**	**100.0**

Institutional investor interest



Indicated interest

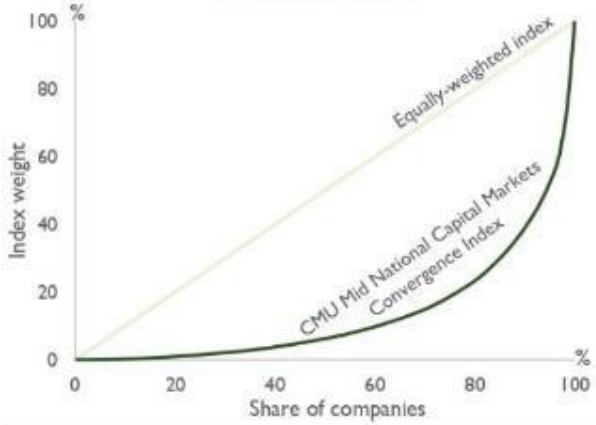
Location investors

INDEX COMPOSITION

The CMU Mid National Capital Markets Convergence Index includes EU companies with low trading values listed on medium-sized national capital markets. The CMU Mid National Capital Markets Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU MID NATIONAL CAPITAL MARKETS CONVERGENCE INDEX
Number of companies	195
Universe	Companies with low trading values listed on EU mid-sized national markets
Weighting	Market capitalisation adjusted for free-float

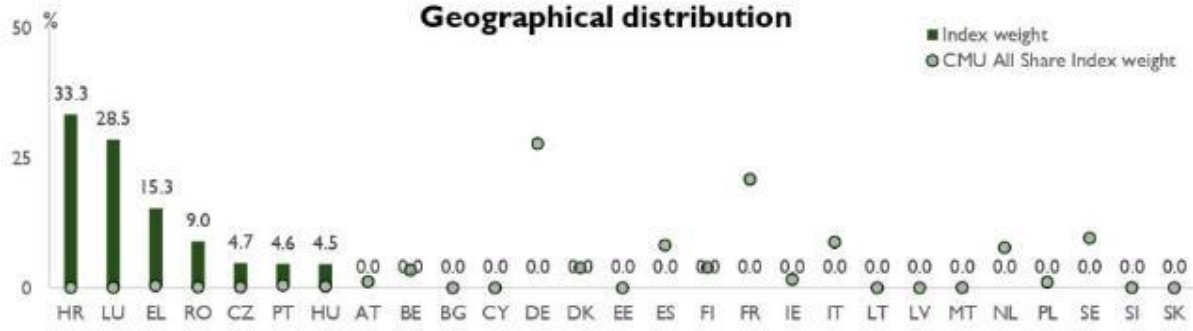
Concentration



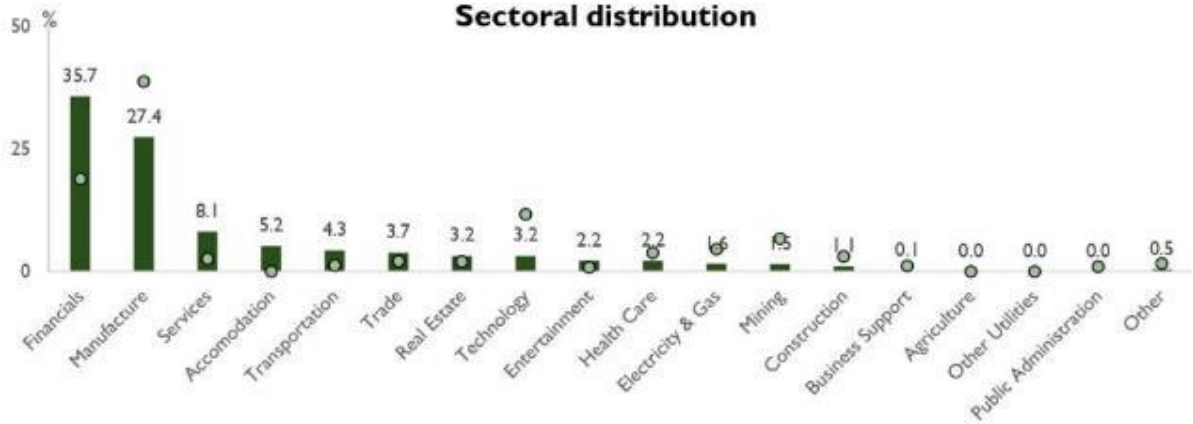
Size distribution

	Companies		Index weight
	NR	%	%
Micro	138	70.8	22.4
Small	49	25.1	43.7
Mid	7	3.6	33.7
Large	1	0.5	0.2
Total	**195**	**100.0**	**100.0**

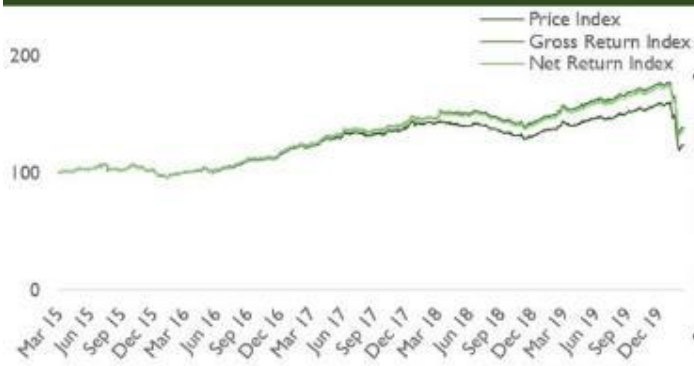
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	123.2	-15.8%	-11.2%	+23.2%
Gross Return Index	137.9	-15.0%	-9.0%	+37.9%
Net Return Index	135.4	-15.1%	-9.3%	+35.4%

Liquidity

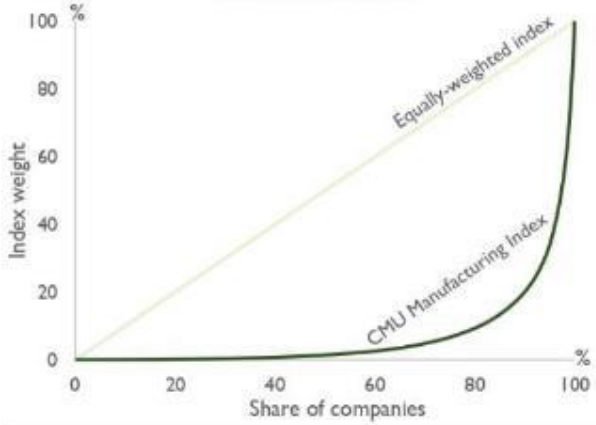
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	117	69.2	86	67.7	73	66.4	41	82.0	97	67.4	0	0.0
Small	45	26.6	35	27.6	31	28.2	7	14.0	41	28.5	1	100.0
Mid	6	3.6	6	4.7	6	5.5	2	4.0	5	3.5	0	0.0
Large	1	0.6	0	0.0	0	0.0	0	0.0	1	0.7	0	0.0
Total	**169**	**100.0**	**127**	**100.0**	**110**	**100.0**	**50**	**100.0**	**144**	**100.0**	**1**	**100.0**

INDEX COMPOSITION

The CMU Manufacturing Index covers all EU companies active in manufacture sector, excluding those with low trading values. The CMU Manufacturing Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU MANUFACTURING INDEX
Number of companies	690
Universe	Manufacture sector companies
Weighting	Market capitalisation adjusted for free-float

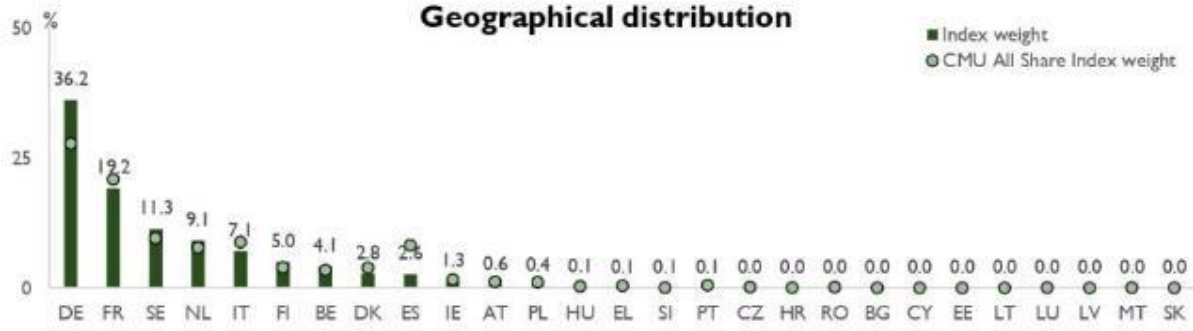
Concentration



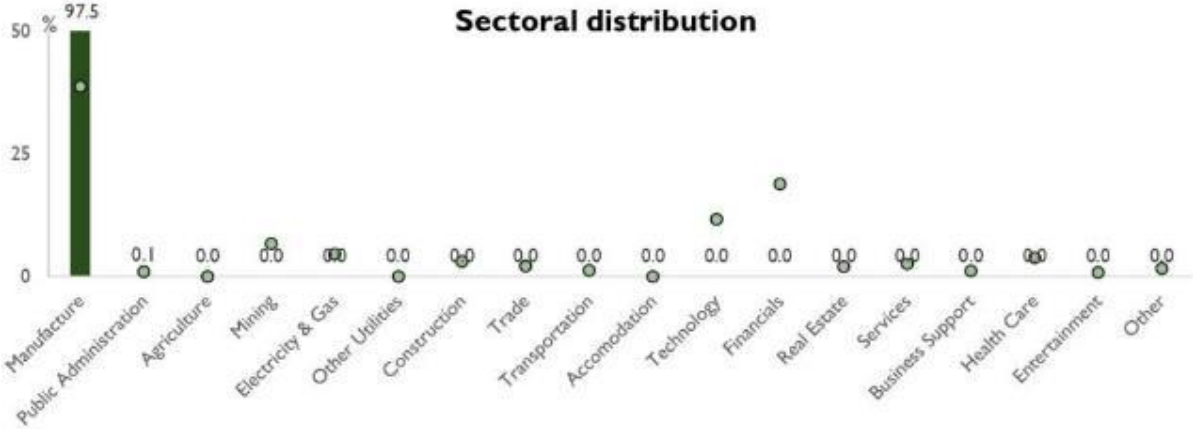
Size distribution

	Companies		Index weight
	NR	%	%
Micro	115	16.7	0.1
Small	294	42.6	3.0
Mid	151	21.9	10.0
Large	130	18.8	86.9
Total	**690**	**100.0**	**100.0**

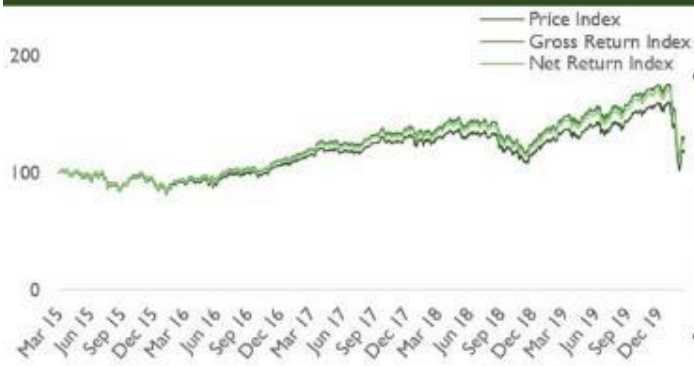
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



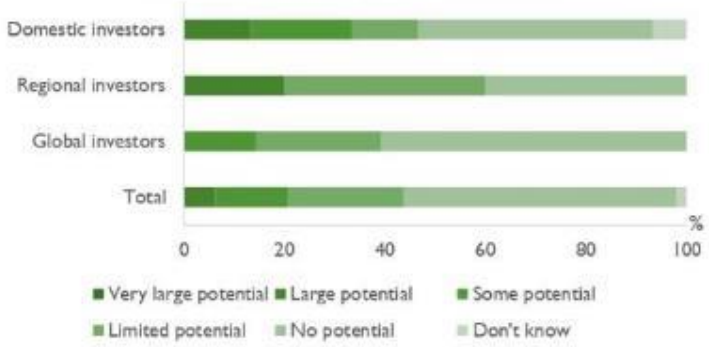
Performance

	Close	Last month	Last year	Last 5 years
Price Index	119.3	-15.2%	-7.6%	+19.3%
Gross Return Index	130.5	-15.4%	-6.3%	+30.5%
Net Return Index	127.1	-15.4%	-6.7%	+27.1%

Liquidity

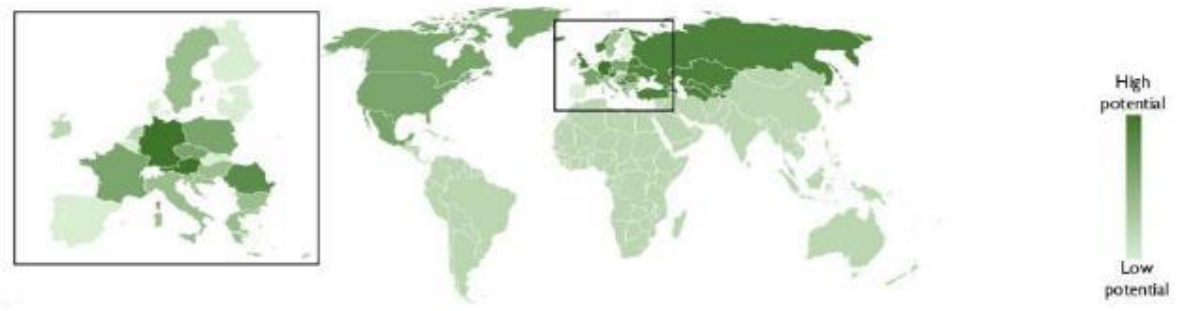
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	45	23.9	9	45.0	7	43.8	0	n.a.	106	36.1	9	2.3
Small	73	38.8	8	40.0	6	37.5	0	n.a.	168	57.1	126	31.8
Mid	30	16.0	3	15.0	3	18.8	0	n.a.	13	4.4	138	34.8
Large	40	21.3	0	0.0	0	0.0	0	n.a.	7	2.4	123	31.1
Total	**188**	**100.0**	**20**	**100.0**	**16**	**100.0**	**0**	**n.a.**	**294**	**100.0**	**396**	**100.0**

Institutional investor interest



Indicated interest

Location investors

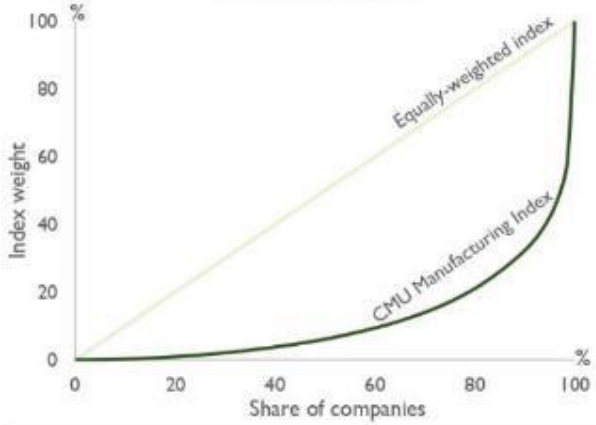


INDEX COMPOSITION

The CMU Manufacturing Convergence Index covers all EU companies with low trading values active in manufacture sector. The CMU Manufacturing Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU MANUFACTURING CONVERGENCE INDEX
Number of companies	546
Universe	Manufacture sector companies with low trading values
Weighting	Market capitalisation adjusted for free-float

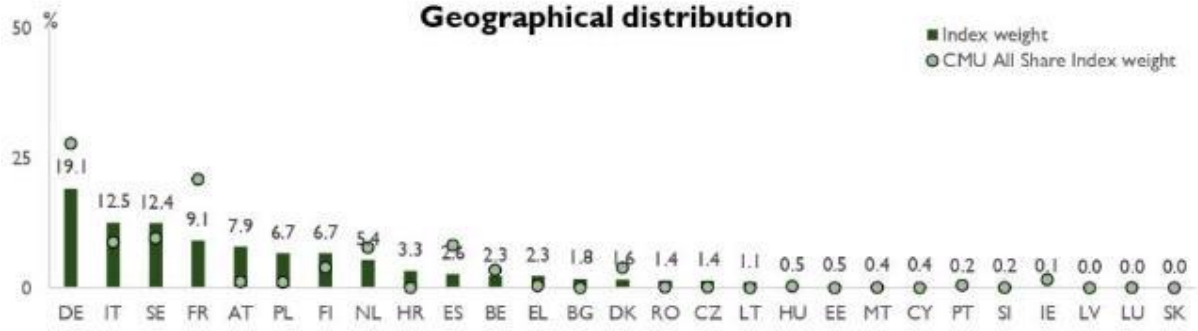
Concentration



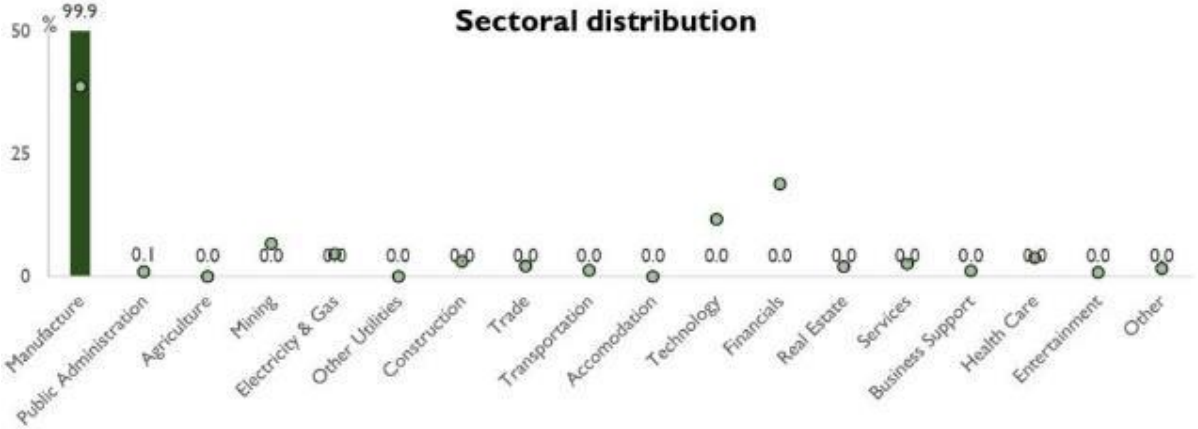
Size distribution

	Companies		Index weight
	NR	%	%
Micro	435	79.7	26.1
Small	93	17.0	28.9
Mid	14	2.6	31.4
Large	4	0.7	13.6
Total	**546**	**100.0**	**100.0**

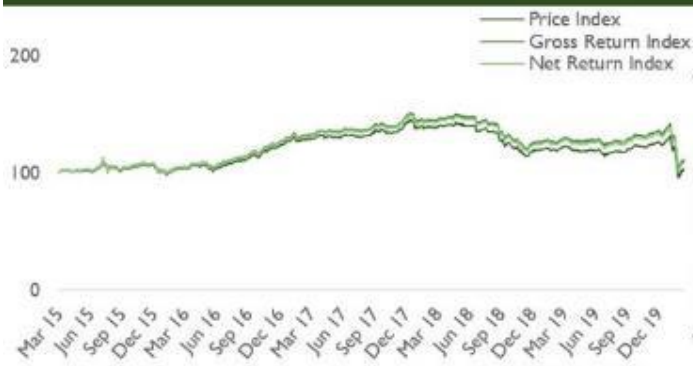
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	103.1	-13.2%	-13.3%	+3.1%
Gross Return Index	111.0	-13.3%	-11.7%	+11.0%
Net Return Index	109.0	-13.3%	-12.2%	+9.0%

Liquidity

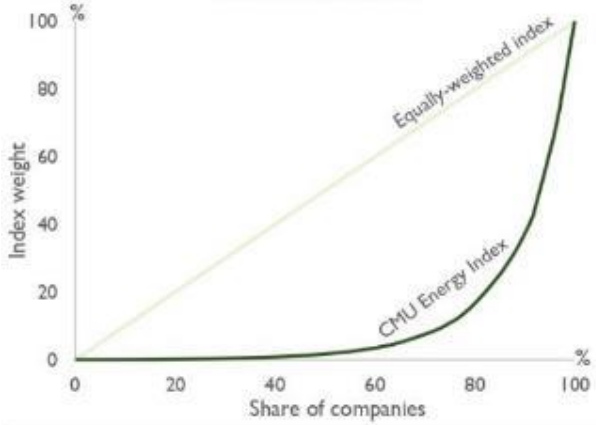
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	326	78.9	186	74.1	150	74.6	48	85.7	385	79.2	2	50.0
Small	71	17.2	52	20.7	40	19.9	7	12.5	85	17.5	1	25.0
Mid	12	2.9	11	4.4	10	5.0	1	1.8	12	2.5	1	25.0
Large	4	1.0	2	0.8	1	0.5	0	0.0	4	0.8	0	0.0
Total	**413**	**100.0**	**251**	**100.0**	**201**	**100.0**	**56**	**100.0**	**486**	**100.0**	**4**	**100.0**

INDEX COMPOSITION

The CMU Energy Index covers all EU companies active in energy sector, excluding those with low trading values. The CMU Energy Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU ENERGY INDEX
Number of companies	96
Universe	Energy sector companies
Weighting	Market capitalisation adjusted for free-float

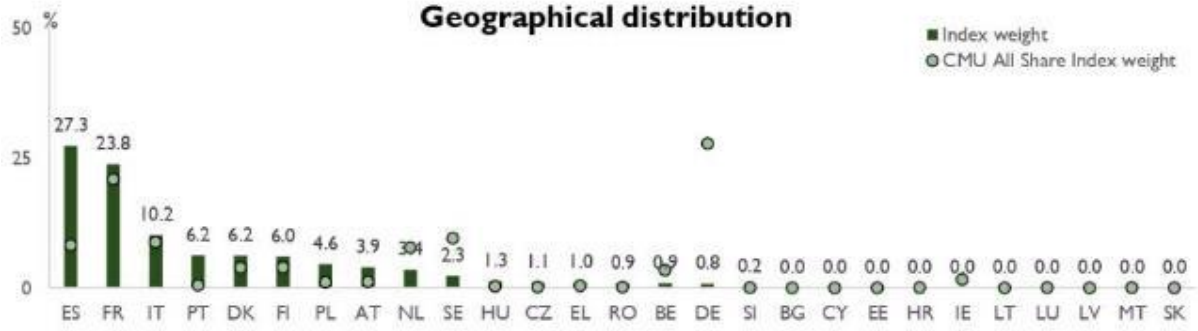
Concentration



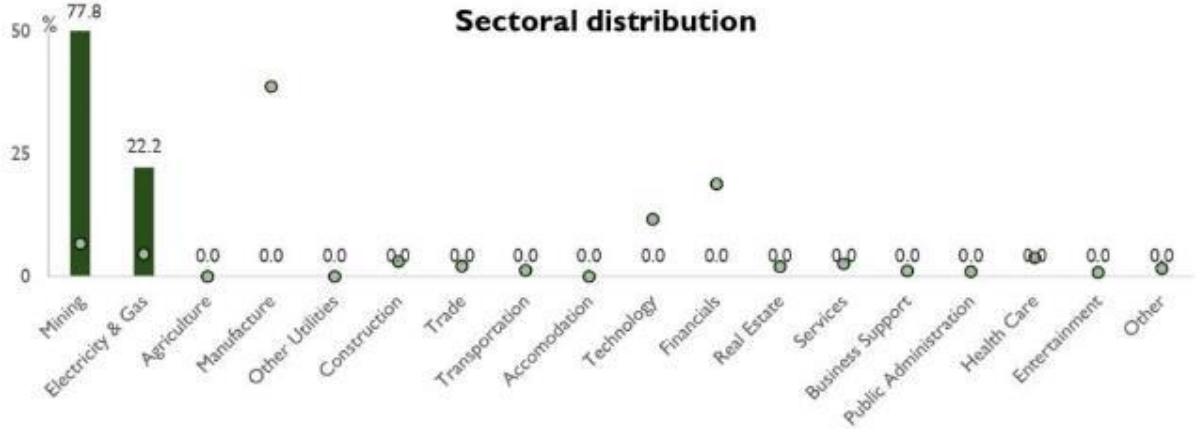
Size distribution

	Companies		Index weight
	NR	%	%
Micro	14	14.6	0.2
Small	32	33.3	2.1
Mid	20	20.8	7.5
Large	30	31.3	90.2
Total	**96**	**100.0**	**100.0**

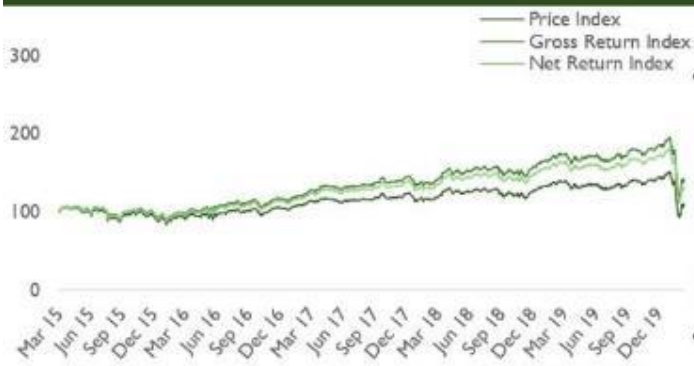
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



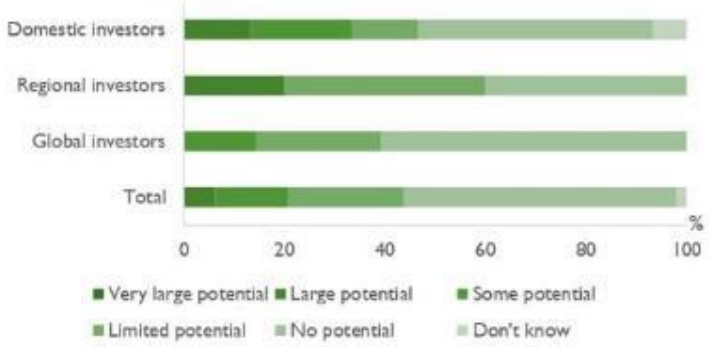
Performance

	Close	Last month	Last year	Last 5 years
Price Index	110.3	-18.9%	-19.1%	+10.3%
Gross Return Index	142.6	-18.7%	-16.1%	+42.6%
Net Return Index	132.4	-18.7%	-17.1%	+32.4%

Liquidity

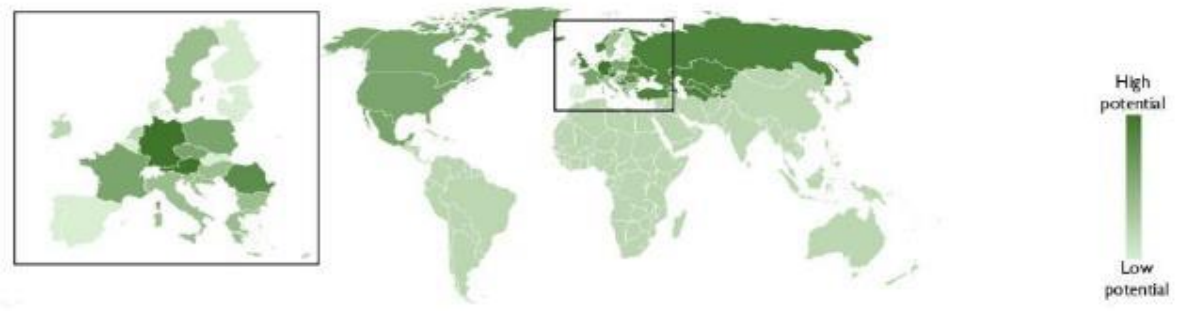
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	6	20.7	0	0.0	0	0.0	0	n.a.	12	38.7	2	3.1
Small	10	34.5	0	0.0	0	0.0	0	n.a.	16	51.6	16	24.6
Mid	5	17.2	0	0.0	0	0.0	0	n.a.	2	6.5	18	27.7
Large	8	27.6	1	100.0	1	100.0	0	n.a.	1	3.2	29	44.6
Total	**29**	**100.0**	**1**	**100.0**	**1**	**100.0**	**0**	**n.a.**	**31**	**100.0**	**65**	**100.0**

Institutional investor interest



Indicated interest

Location investors

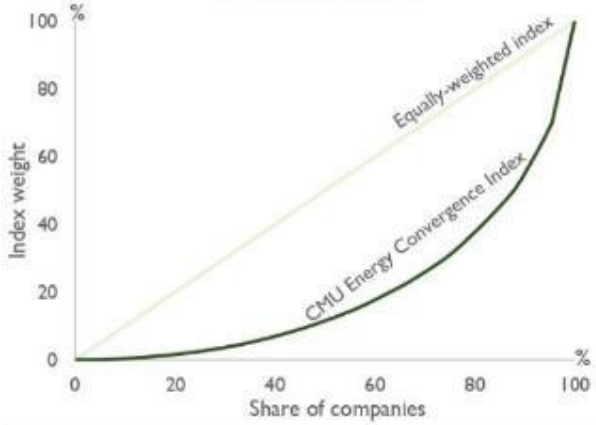


INDEX COMPOSITION

The CMU Energy Convergence Index aims to cover all EU companies with low trading values active in energy sector. The CMU Energy Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU ENERGY CONVERGENCE INDEX
Number of companies	66
Universe	Energy sector companies with low trading values
Weighting	Market capitalisation adjusted for free-float

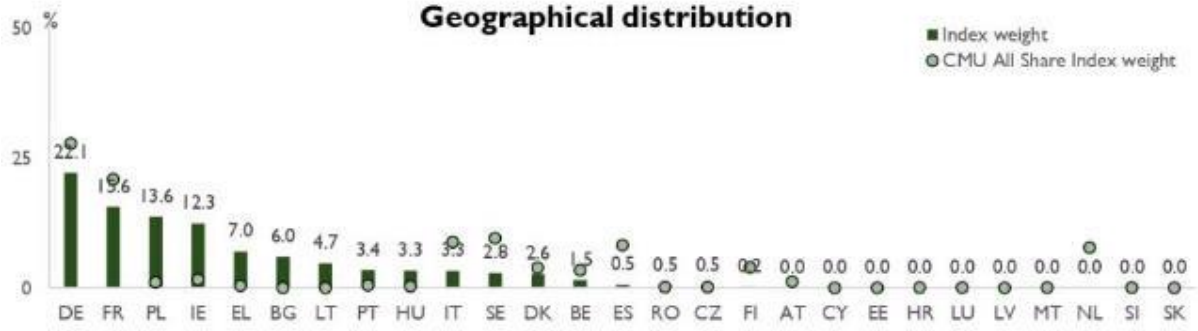
Concentration



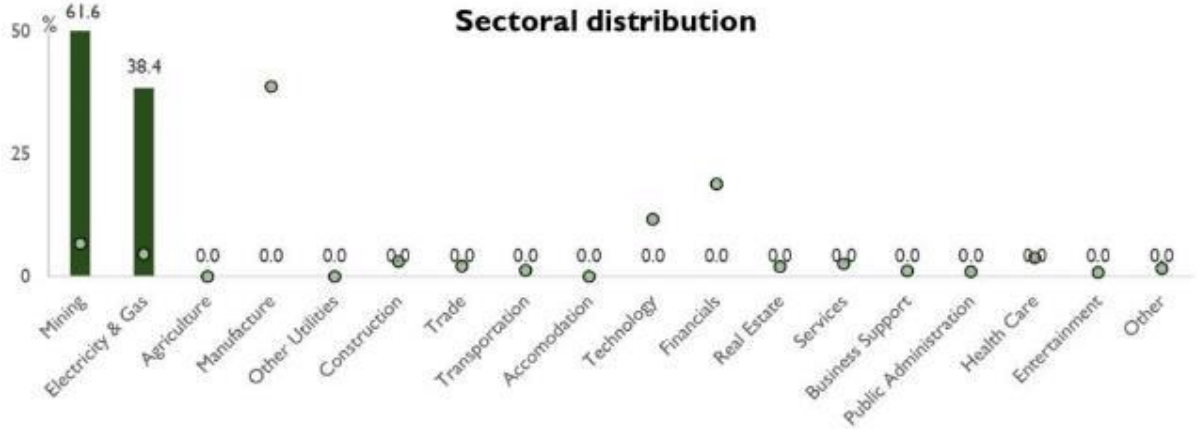
Size distribution

	Companies		Index weight
	NR	%	%
Micro	51	77.3	44.5
Small	13	19.7	51.0
Mid	1	1.5	0.6
Large	1	1.5	3.9
Total	**66**	**100.0**	**100.0**

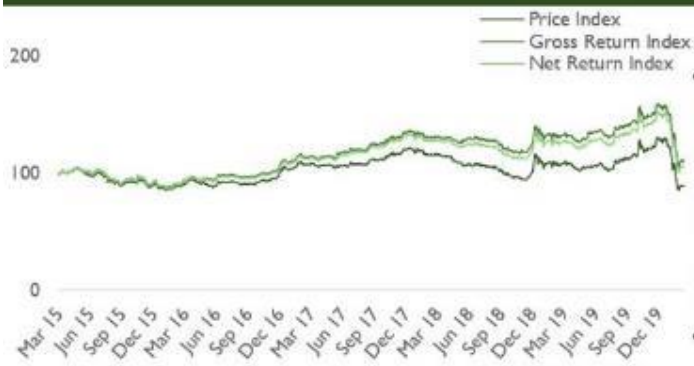
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	88.5	-13.5%	-16.8%	-11.5%
Gross Return Index	110.0	-14.0%	-15.6%	+10.0%
Net Return Index	104.9	-13.7%	-15.9%	+4.9%

Liquidity

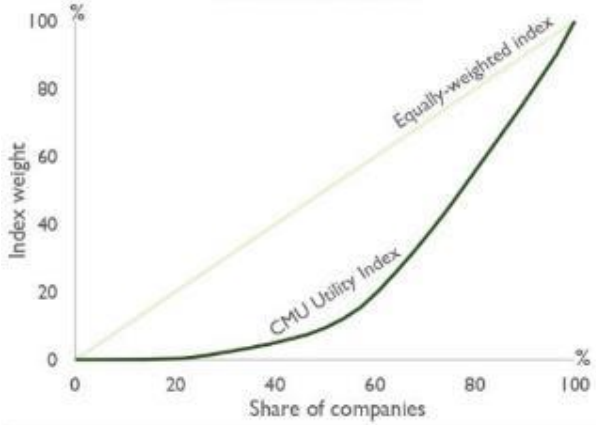
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	42	75.0	24	72.7	21	70.0	7	70.0	44	78.6	0	n.a.
Small	13	23.2	8	24.2	8	26.7	3	30.0	10	17.9	0	n.a.
Mid	0	0.0	0	0.0	0	0.0	0	0.0	1	1.8	0	n.a.
Large	1	1.8	1	3.0	1	3.3	0	0.0	1	1.8	0	n.a.
Total	**56**	**100.0**	**33**	**100.0**	**30**	**100.0**	**10**	**100.0**	**56**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU Utility Index covers all EU companies active in utility sector, excluding those with low trading values. The CMU Utility Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU UTILITY INDEX
Number of companies	28
Universe	Utility sector companies
Weighting	Market capitalisation adjusted for free-float

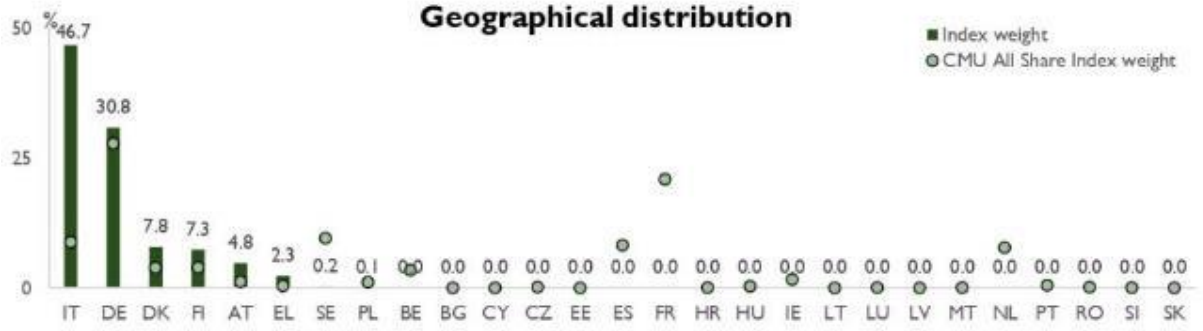
Concentration



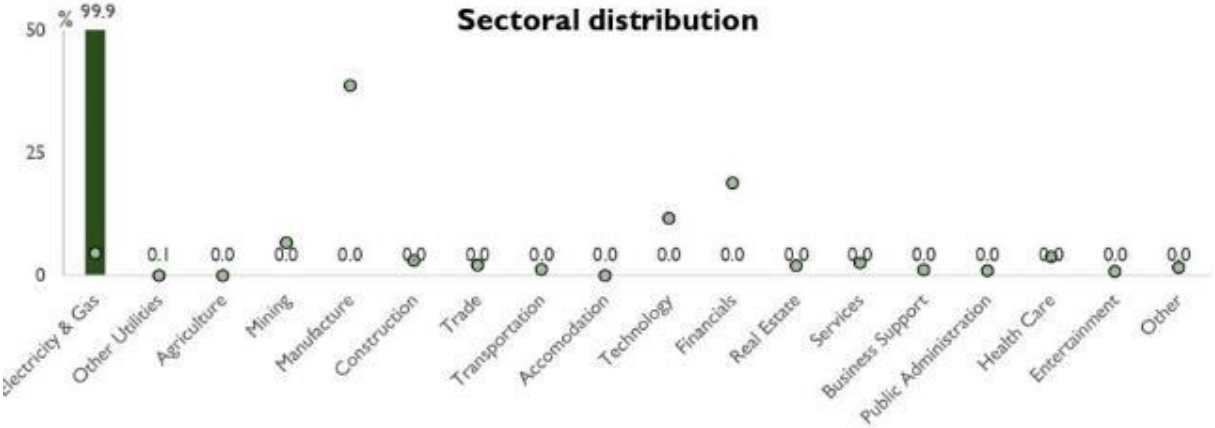
Size distribution

	Companies		Index weight
	NR	%	%
Micro	5	17.9	0.5
Small	6	21.4	4.3
Mid	6	21.4	17.8
Large	11	39.3	77.4
Total	**28**	**100.0**	**100.0**

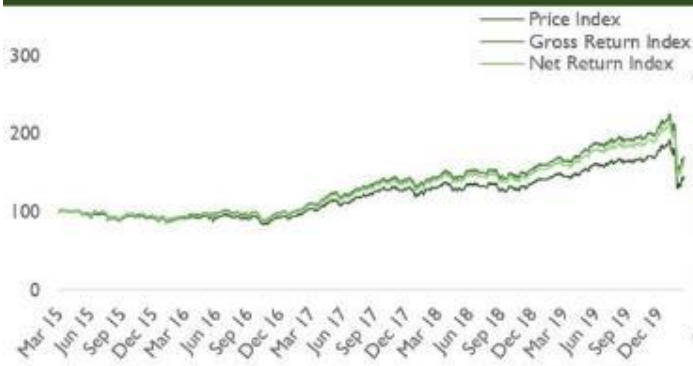
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



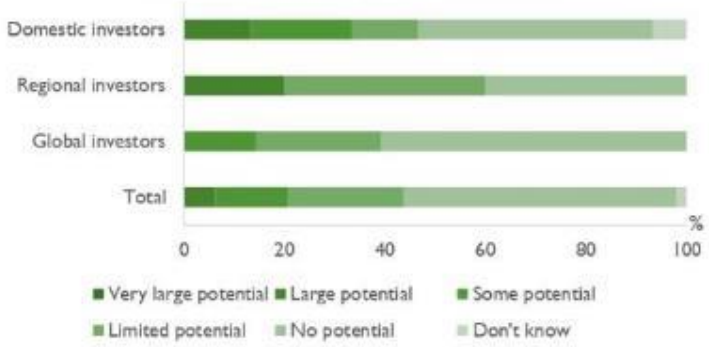
Performance

	Close	Last month	Last year	Last 5 years
Price Index	144.8	-17.0%	-1.9%	+44.8%
Gross Return Index	169.3	-17.2%	+0.9%	+69.3%
Net Return Index	162.1	-17.2%	+0.2%	+62.1%

Liquidity

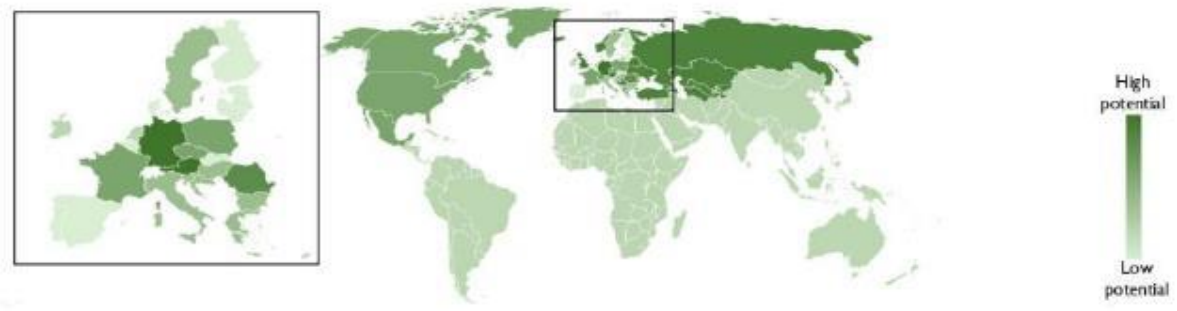
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	0	0.0	0	0.0	0	n.a.	0	n.a.	4	57.1	1	4.8
Small	1	25.0	1	100.0	0	n.a.	0	n.a.	3	42.9	3	14.3
Mid	1	25.0	0	0.0	0	n.a.	0	n.a.	0	0.0	6	28.6
Large	2	50.0	0	0.0	0	n.a.	0	n.a.	0	0.0	11	52.4
Total	**4**	**100.0**	**1**	**100.0**	**0**	**n.a.**	**0**	**n.a.**	**7**	**100.0**	**21**	**100.0**

Institutional investor interest



Indicated interest

Location investors

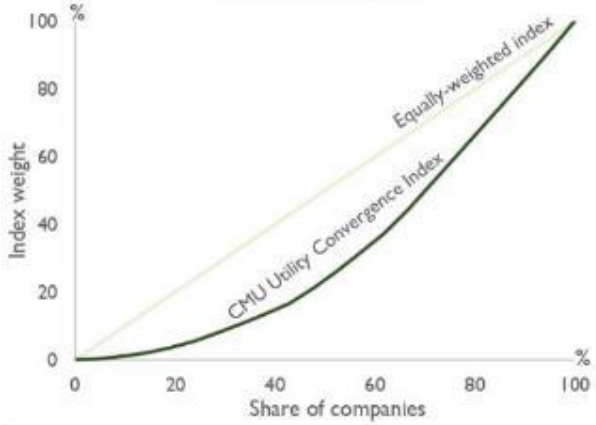


INDEX COMPOSITION

The CMU Utility Convergence Index covers all EU companies with low trading values active in utility sector. The CMU Utility Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU UTILITY CONVERGENCE INDEX
Number of companies	21
Universe	Utility sector companies with low trading values
Weighting	Market capitalisation adjusted for free-float

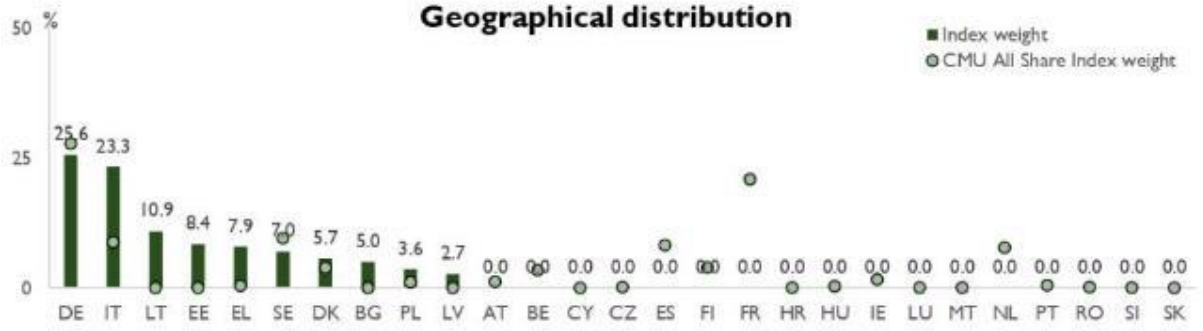
Concentration



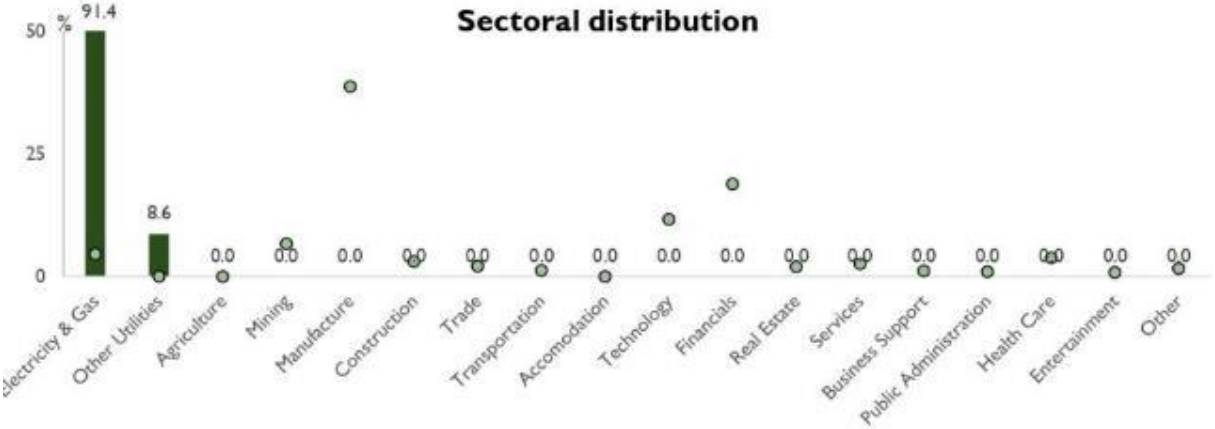
Size distribution

	Companies		Index weight
	NR	%	%
Micro	11	52.4	39.0
Small	6	28.6	35.4
Mid	3	14.3	17.8
Large	1	4.8	7.8
Total	**21**	**100.0**	**100.0**

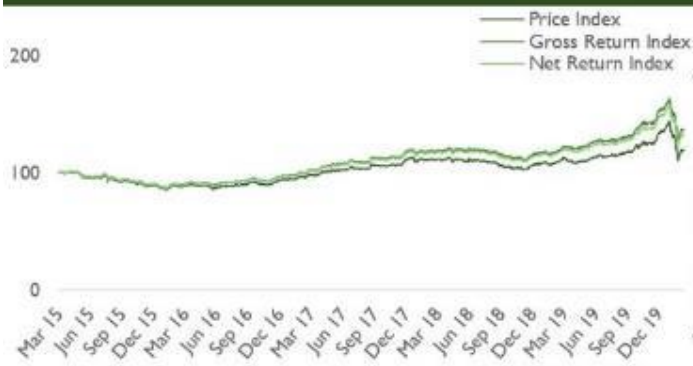
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	119.6	-8.1%	+9.5%	+19.6%
Gross Return Index	136.8	-8.0%	+15.5%	+36.8%
Net Return Index	132.3	-7.9%	+13.3%	+32.3%

Liquidity

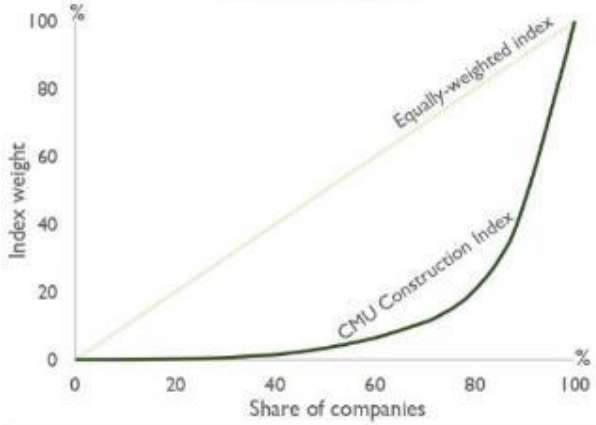
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	6	42.9	6	50.0	5	55.6	2	100.0	9	47.4	0	n.a.
Small	5	35.7	3	25.0	2	22.2	0	0.0	6	31.6	0	n.a.
Mid	2	14.3	2	16.7	2	22.2	0	0.0	3	15.8	0	n.a.
Large	1	7.1	1	8.3	0	0.0	0	0.0	1	5.3	0	n.a.
Total	**14**	**100.0**	**12**	**100.0**	**9**	**100.0**	**2**	**100.0**	**19**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU Construction Index covers all EU companies active in construction, excluding those with low trading values. The CMU Construction Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU CONSTRUCTION INDEX
Number of companies	69
Universe	Construction companies
Weighting	Market capitalisation adjusted for free-float

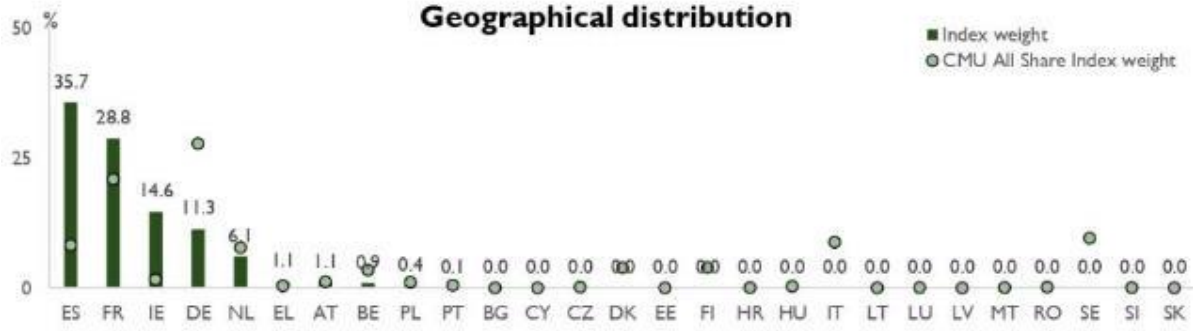
Concentration



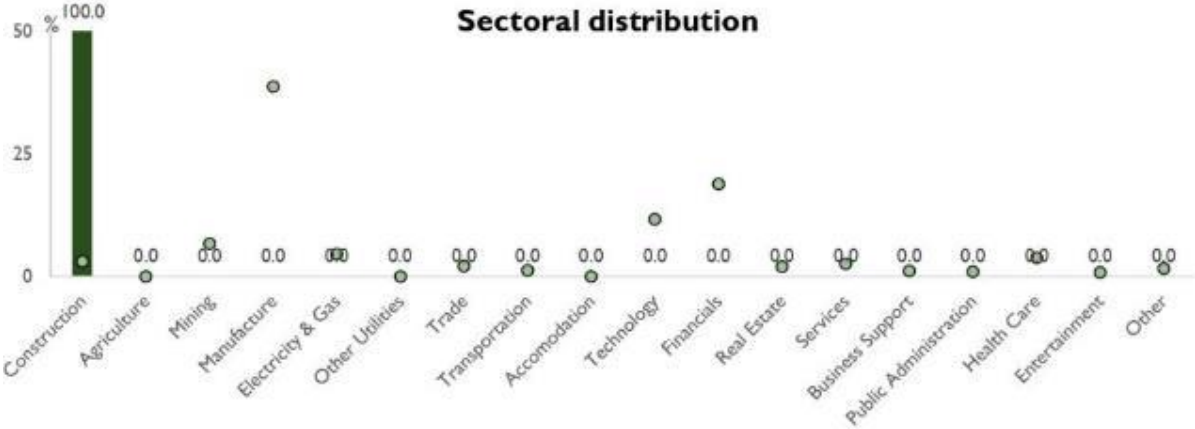
Size distribution

	Companies		Index weight
	NR	%	%
Micro	13	18.8	0.3
Small	24	34.8	5.2
Mid	20	29.0	24.7
Large	12	17.4	69.8
Total	**69**	**100.0**	**100.0**

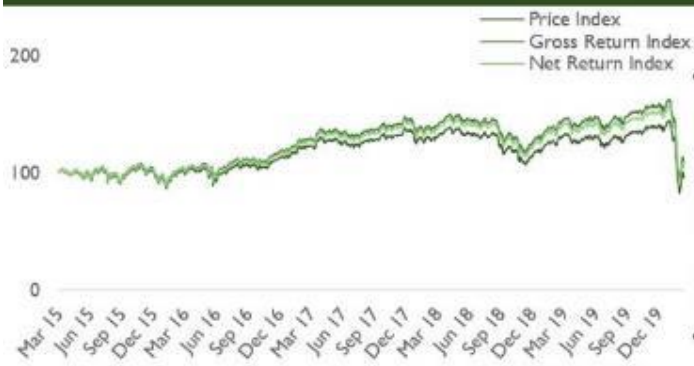
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



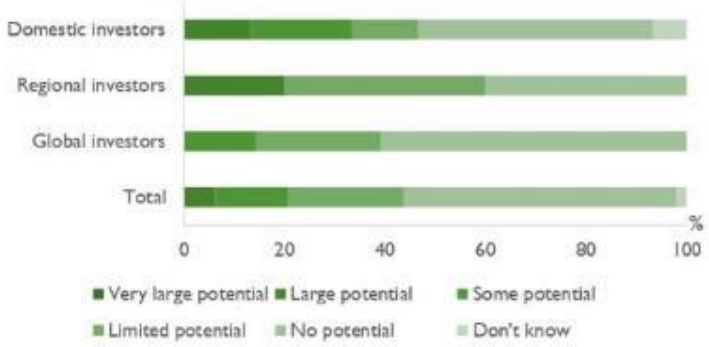
Performance

	Close	Last month	Last year	Last 5 years
Price Index	96.7	-26.1%	-23.0%	-3.3%
Gross Return Index	108.9	-26.0%	-21.1%	+8.9%
Net Return Index	104.9	-26.1%	-21.7%	+4.9%

Liquidity

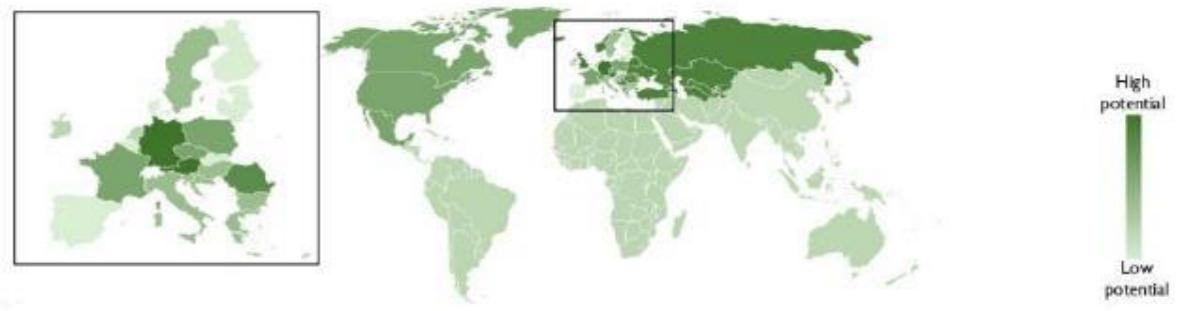
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	1	5.3	1	25.0	1	50.0	0	n.a.	12	48.0	1	2.3
Small	7	36.8	3	75.0	1	50.0	0	n.a.	10	40.0	14	31.8
Mid	5	26.3	0	0.0	0	0.0	0	n.a.	3	12.0	17	38.6
Large	6	31.6	0	0.0	0	0.0	0	n.a.	0	0.0	12	27.3
Total	**19**	**100.0**	**4**	**100.0**	**2**	**100.0**	**0**	**n.a.**	**25**	**100.0**	**44**	**100.0**

Institutional investor interest



Indicated interest

Location investors

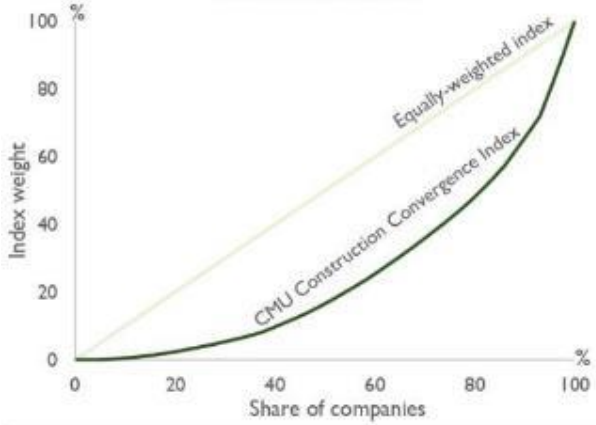


INDEX COMPOSITION

The CMU Construction Convergence Index covers all EU companies with low trading values active in construction. The CMU Construction Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU CONSTRUCTION CONVERGENCE INDEX
Number of companies	43
Universe	Construction companies with low trading values
Weighting	Market capitalisation adjusted for free-float

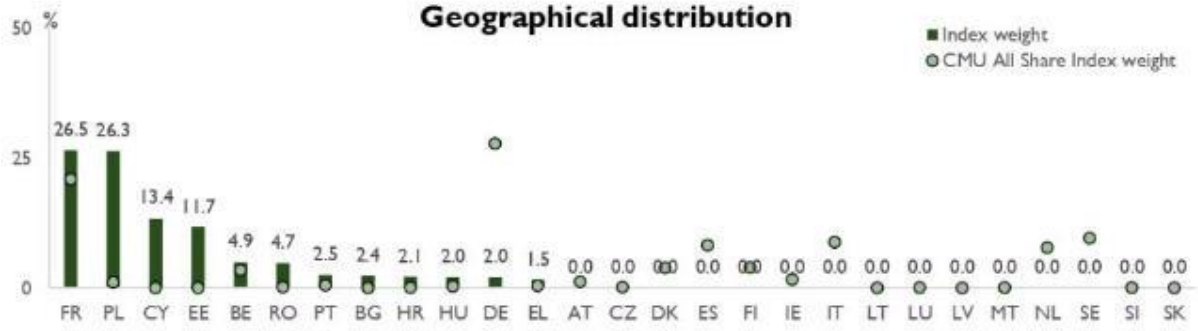
Concentration



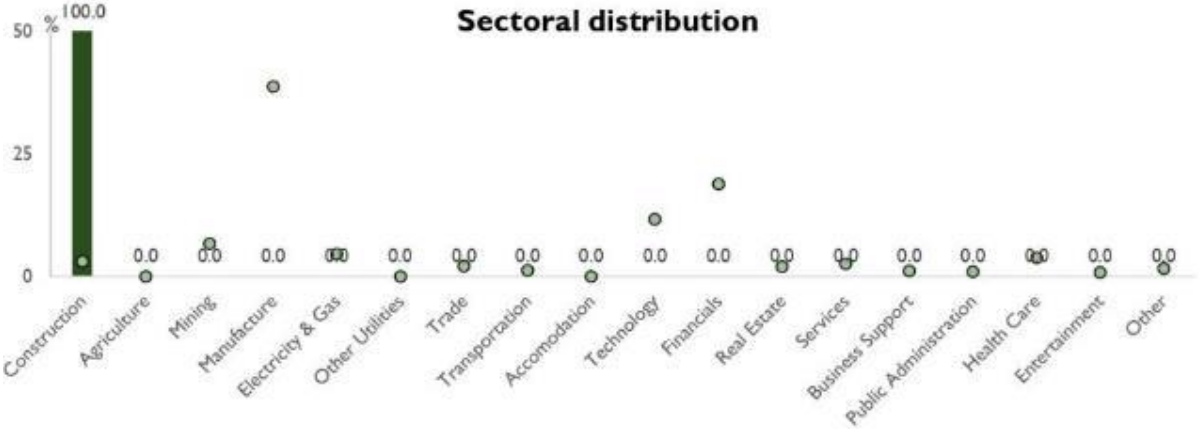
Size distribution

	Companies		Index weight
	NR	%	%
Micro	40	93.0	71.9
Small	3	7.0	28.1
Mid	0	0.0	0.0
Large	0	0.0	0.0
Total	**43**	**100.0**	**100.0**

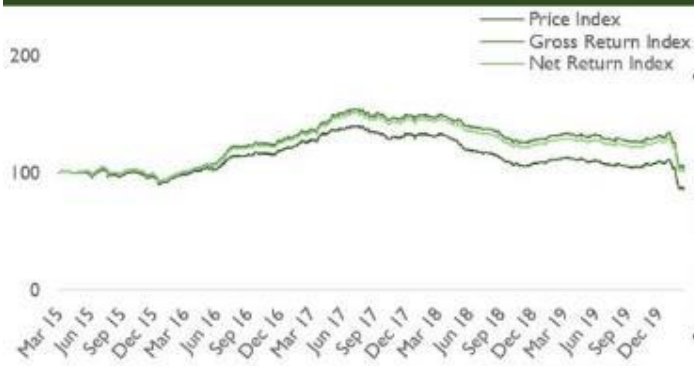
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	87.0	-16.1%	-21.7%	-13.0%
Gross Return Index	105.8	-15.6%	-19.6%	+5.8%
Net Return Index	102.3	-15.6%	-19.8%	+2.3%

Liquidity

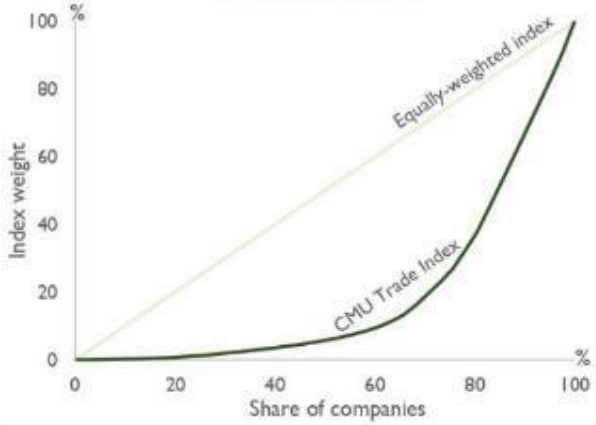
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	29	93.5	18	90.0	9	81.8	6	100.0	34	91.9	0	n.a.
Small	2	6.5	2	10.0	2	18.2	0	0.0	3	8.1	0	n.a.
Mid	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	n.a.
Large	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	n.a.
Total	**31**	**100.0**	**20**	**100.0**	**11**	**100.0**	**6**	**100.0**	**37**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU Trade Index covers EU companies active in wholesale and retail, excluding those with low trading values. The CMU Trade Index is weighted based on market capitalization adjusted for free-float.

Index name	CMU TRADE INDEX
Number of companies	41
Universe	Wholesale and retail companies with low trading values
Weighting	Market capitalisation adjusted for free-float

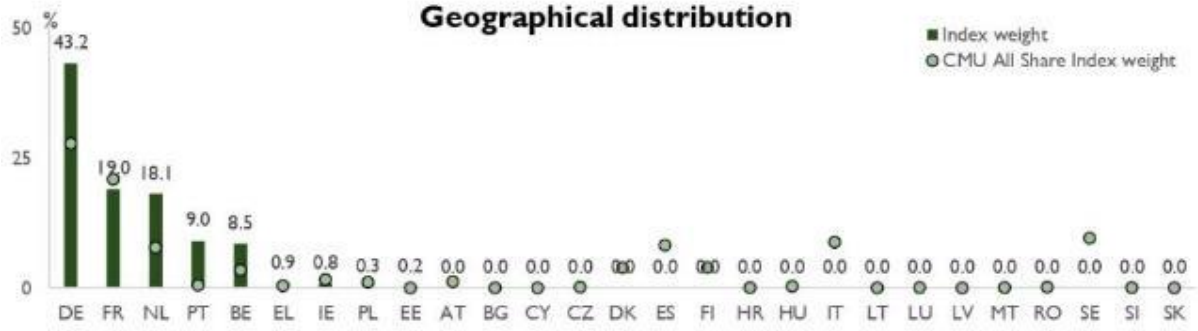
Concentration



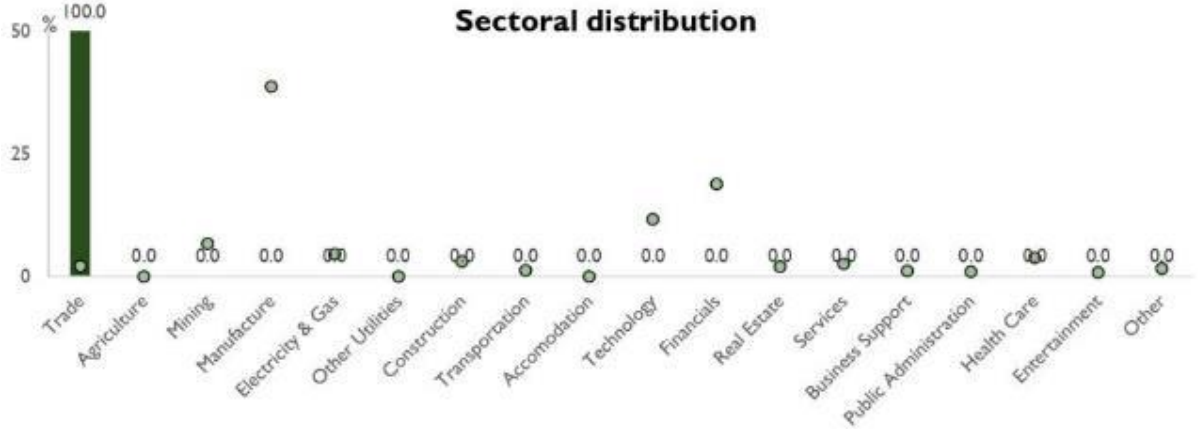
Size distribution

	Companies		Index weight
	NR	%	%
Micro	4	9.8	0.3
Small	17	41.5	7.5
Mid	9	22.0	22.7
Large	11	26.8	69.5
Total	**41**	**100.0**	**100.0**

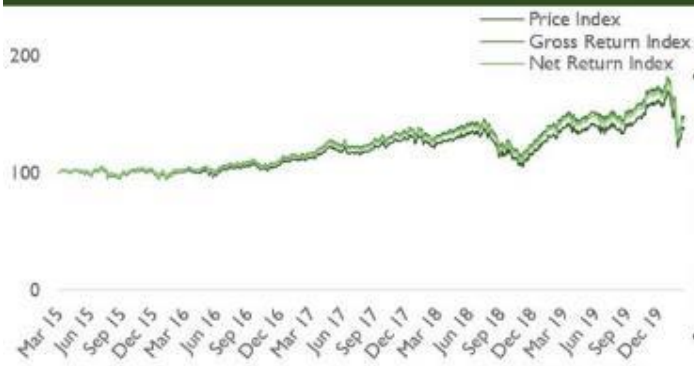
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



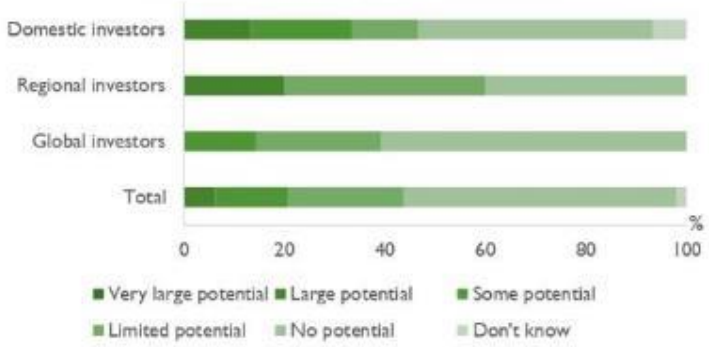
Performance

	Close	Last month	Last year	Last 5 years
Price Index	138.6	-6.6%	+5.6%	+38.6%
Gross Return Index	148.2	-6.7%	+5.7%	+48.2%
Net Return Index	145.2	-6.7%	+5.7%	+45.2%

Liquidity

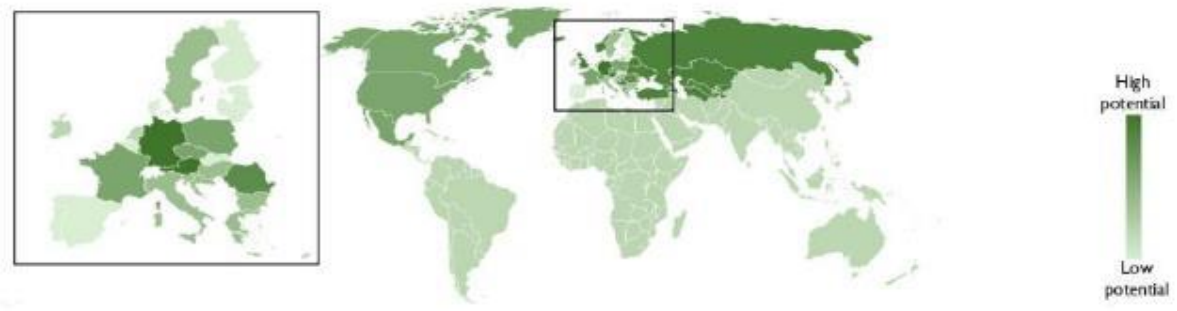
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	3	20.0	0	0.0	0	n.a.	0	n.a.	4	28.6	0	0.0
Small	3	20.0	0	0.0	0	n.a.	0	n.a.	9	64.3	8	29.6
Mid	4	26.7	1	100.0	0	n.a.	0	n.a.	1	7.1	8	29.6
Large	5	33.3	0	0.0	0	n.a.	0	n.a.	0	0.0	11	40.7
Total	**15**	**100.0**	**1**	**100.0**	**0**	**n.a.**	**0**	**n.a.**	**14**	**100.0**	**27**	**100.0**

Institutional investor interest



Indicated interest

Location investors

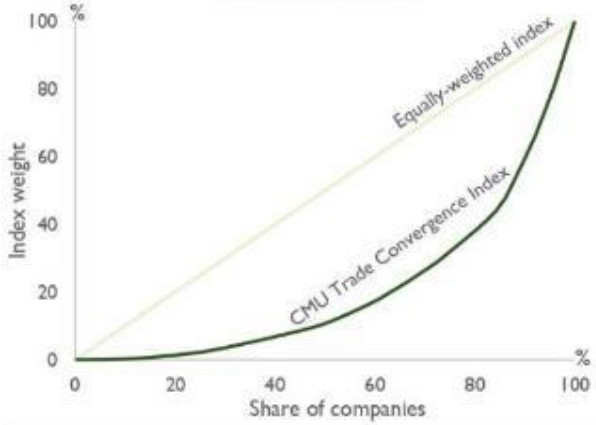


INDEX COMPOSITION

The CMU Trade Convergence Index covers all EU companies with low trading values active in wholesale and retail. The CMU Trade Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU TRADE CONVERGENCE INDEX
Number of companies	51
Universe	Wholesale and retail companies
Weighting	Market capitalisation adjusted for free-float

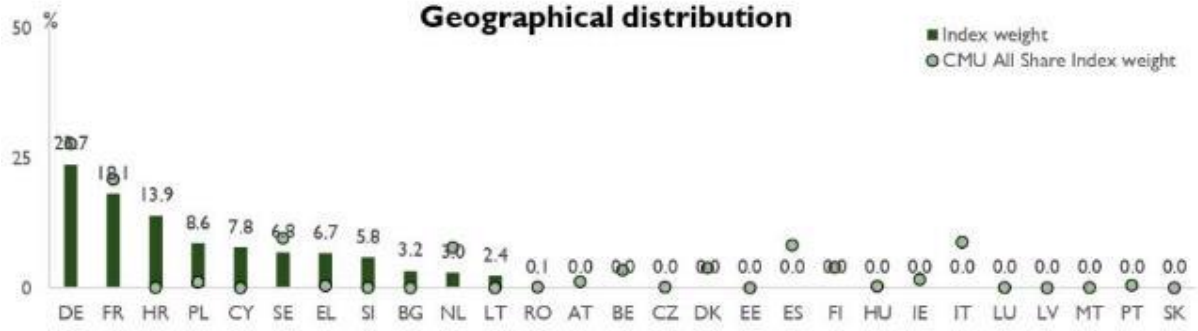
Concentration



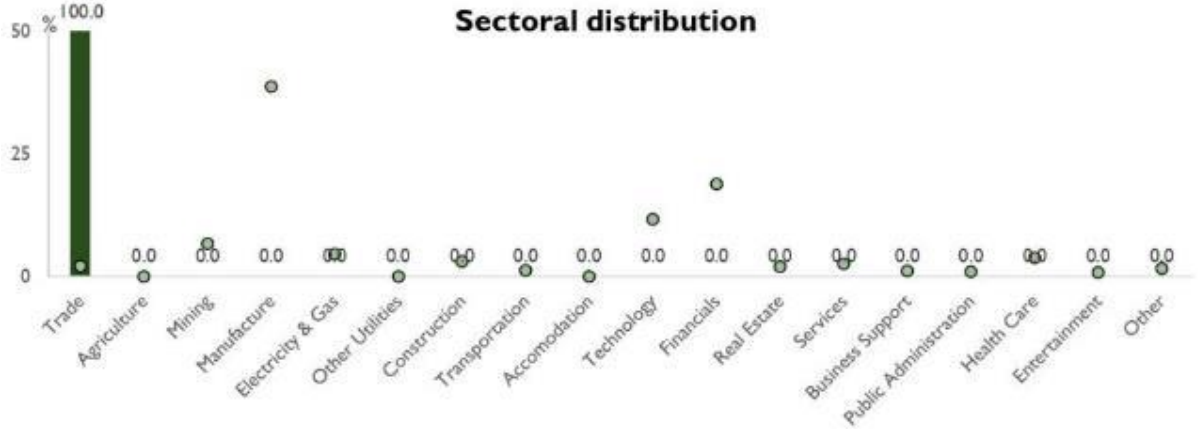
Size distribution

	Companies		Index weight
	NR	%	%
Micro	41	80.4	63.4
Small	9	17.6	27.3
Mid	0	0.0	0.0
Large	1	2.0	9.3
Total	**51**	**100.0**	**100.0**

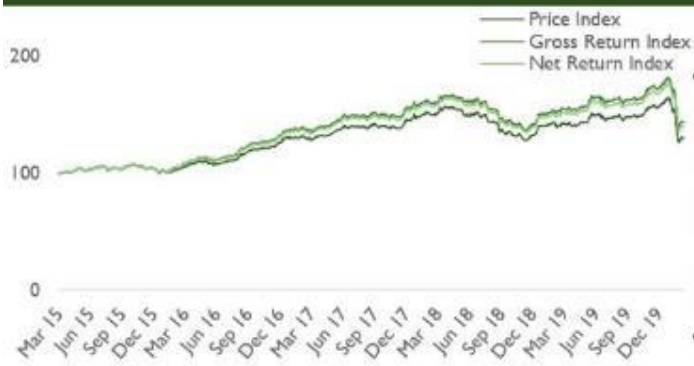
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	129.4	-15.1%	-7.1%	+29.4%
Gross Return Index	142.5	-15.7%	-6.1%	+42.5%
Net Return Index	138.8	-15.5%	-6.4%	+38.8%

Liquidity

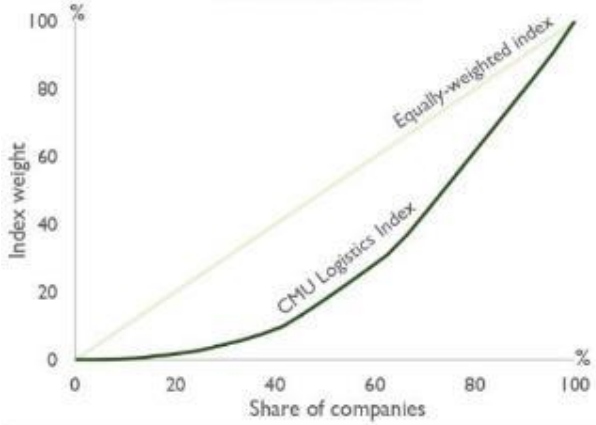
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	34	77.3	23	79.3	18	78.3	5	83.3	36	80.0	0	n.a.
Small	9	20.5	5	17.2	4	17.4	1	16.7	8	17.8	0	n.a.
Mid	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	n.a.
Large	1	2.3	1	3.4	1	4.3	0	0.0	1	2.2	0	n.a.
Total	**44**	**100.0**	**29**	**100.0**	**23**	**100.0**	**6**	**100.0**	**45**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU Logistics Index covers all EU companies active in logistics and transportation, excluding those with low trading values. The CMU Logistics Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU LOGISTICS INDEX
Number of companies	24
Universe	Logistics companies
Weighting	Market capitalisation adjusted for free-float

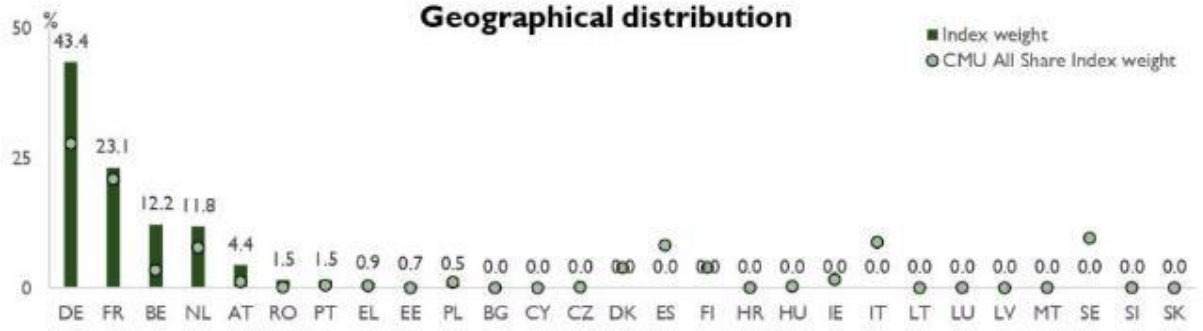
Concentration



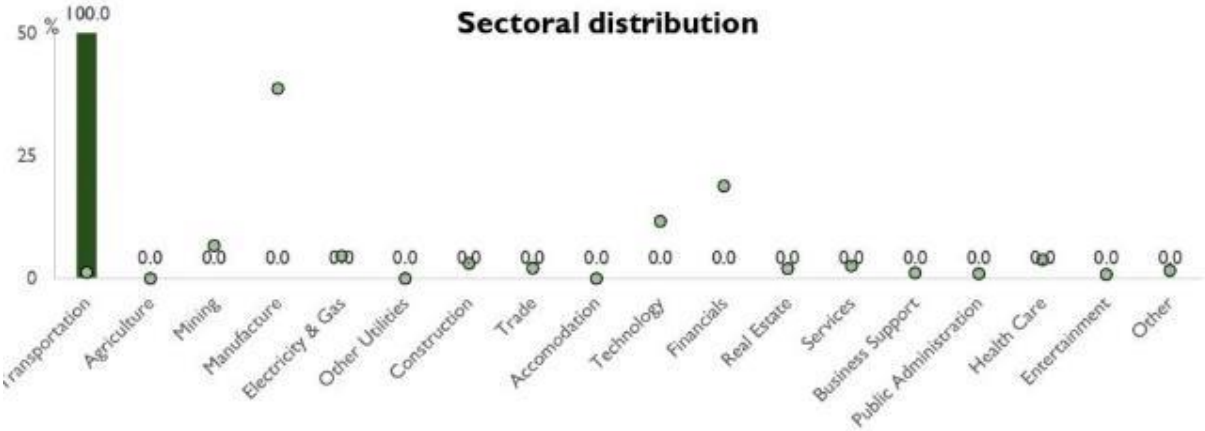
Size distribution

	Companies		Index weight
	NR	%	%
Micro	0	0.0	0.0
Small	8	33.3	9.6
Mid	5	20.8	18.2
Large	11	45.8	72.2
Total	**24**	**100.0**	**100.0**

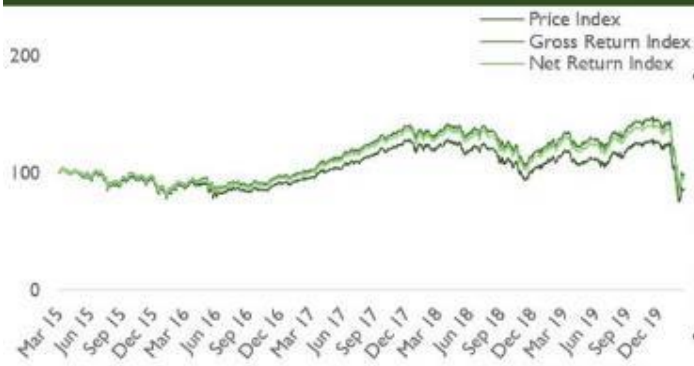
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



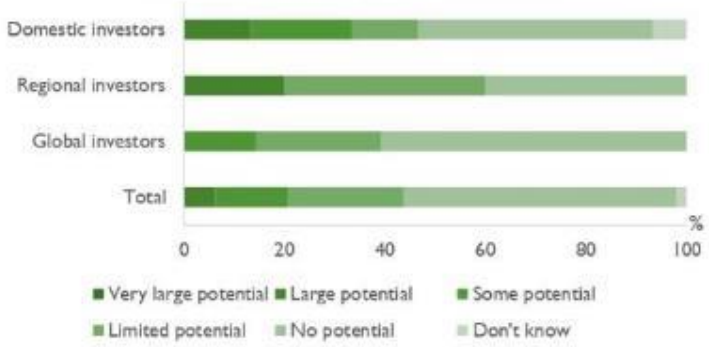
Performance

	Close	Last month	Last year	Last 5 years
Price Index	86.2	-19.1%	-22.4%	-13.8%
Gross Return Index	99.0	-18.8%	-21.0%	-1.0%
Net Return Index	95.4	-18.9%	-21.4%	-4.6%

Liquidity

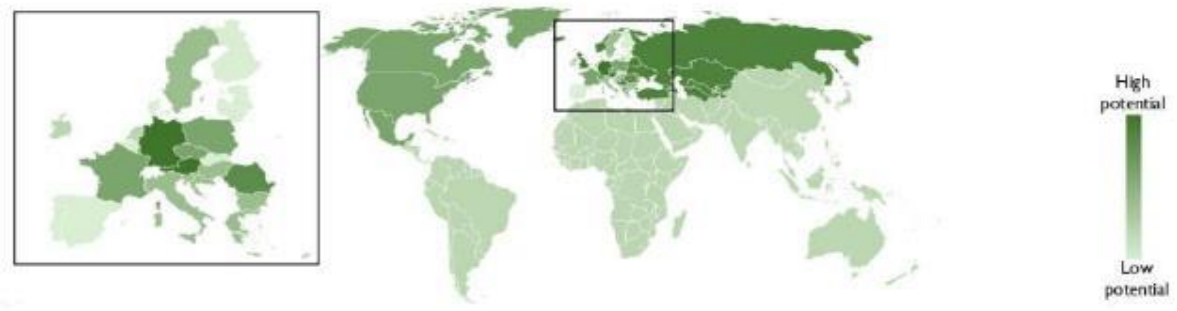
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	0	0.0	0	n.a.	0	n.a.	0	n.a.	0	0.0	0	0.0
Small	1	14.3	0	n.a.	0	n.a.	0	n.a.	5	71.4	3	17.6
Mid	1	14.3	0	n.a.	0	n.a.	0	n.a.	1	14.3	4	23.5
Large	5	71.4	0	n.a.	0	n.a.	0	n.a.	1	14.3	10	58.8
Total	**7**	**100.0**	**0**	**n.a.**	**0**	**n.a.**	**0**	**n.a.**	**7**	**100.0**	**17**	**100.0**

Institutional investor interest



Indicated interest

Location investors

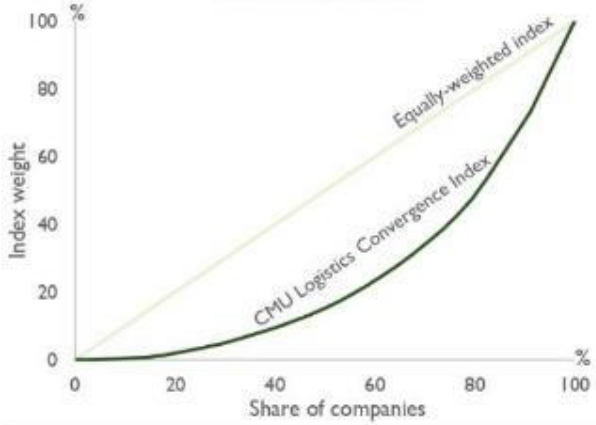


INDEX COMPOSITION

The CMU Logistics Convergence Index covers all EU companies with low trading values active in logistics and transportation. The CMU Logistics Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU LOGISTICS CONVERGENCE INDEX
Number of companies	34
Universe	Logistics companies with low trading values
Weighting	Market capitalisation adjusted for free-float

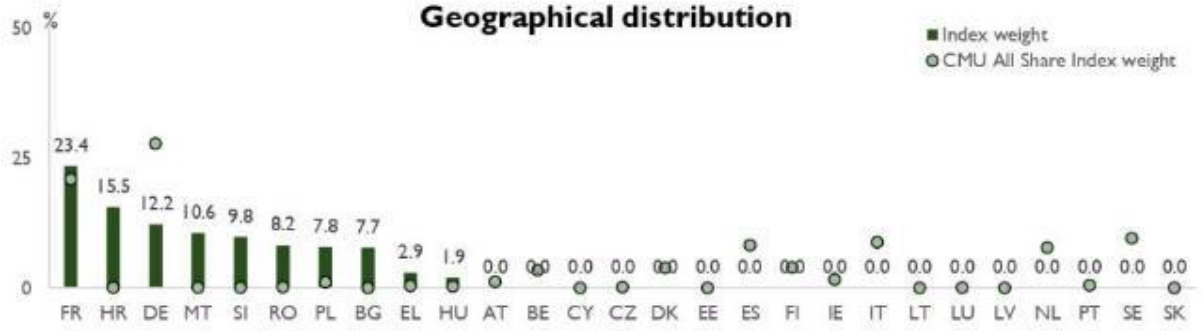
Concentration



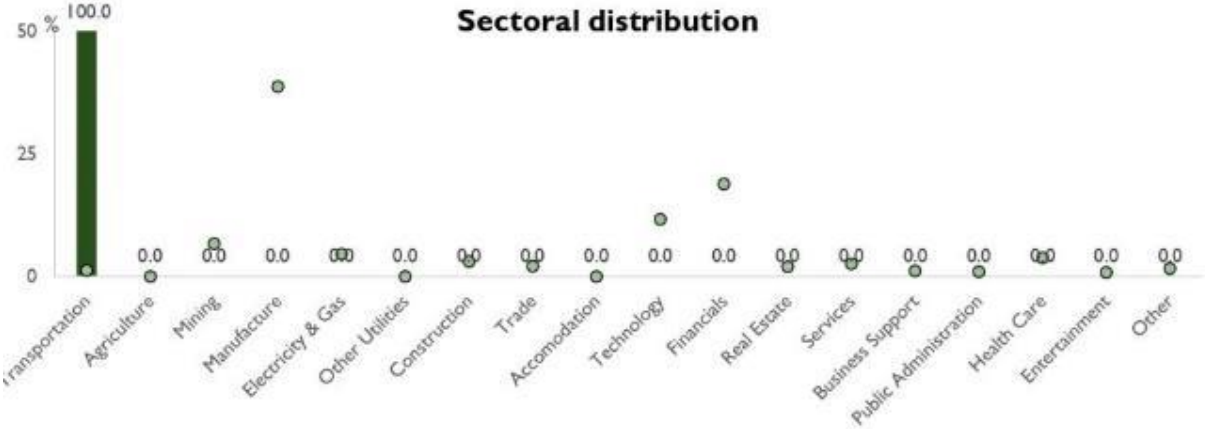
Size distribution

	Companies		Index weight
	NR	%	%
Micro	21	61.8	31.6
Small	11	32.4	57.4
Mid	1	2.9	8.9
Large	1	2.9	2.1
Total	**34**	**100.0**	**100.0**

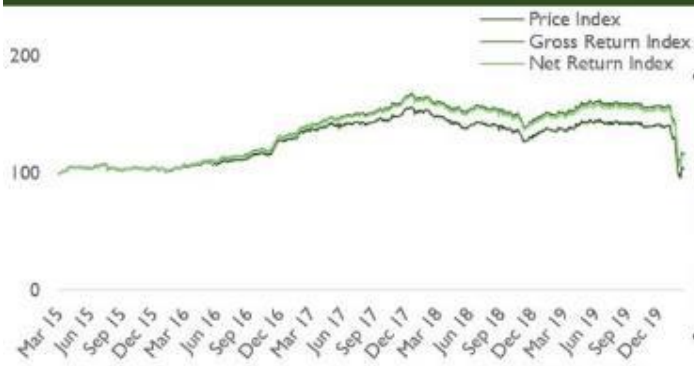
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	103.8	-19.6%	-23.4%	+3.8%
Gross Return Index	116.5	-19.3%	-21.8%	+16.5%
Net Return Index	114.1	-19.3%	-22.2%	+14.1%

Liquidity

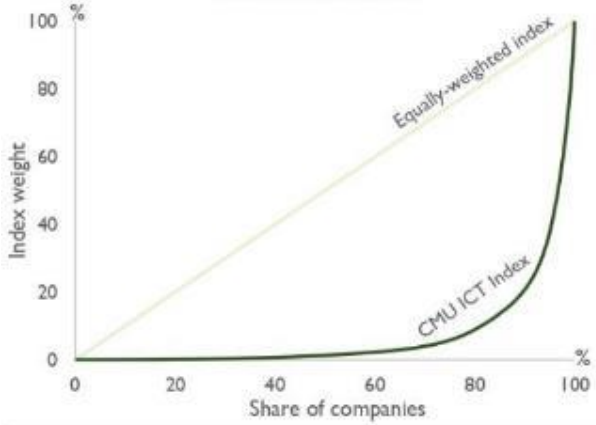
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	20	64.5	16	64.0	13	61.9	5	83.3	16	57.1	0	n.a.
Small	9	29.0	7	28.0	6	28.6	1	16.7	10	35.7	0	n.a.
Mid	1	3.2	1	4.0	1	4.8	0	0.0	1	3.6	0	n.a.
Large	1	3.2	1	4.0	1	4.8	0	0.0	1	3.6	0	n.a.
Total	**31**	**100.0**	**25**	**100.0**	**21**	**100.0**	**6**	**100.0**	**28**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU ICT Index covers all EU companies active in information, communication and technology sectors, excluding those with low trading values. The CMU ICT Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU ICT INDEX
Number of companies	270
Universe	Information, communication and technology companies
Weighting	Market capitalisation adjusted for free-float

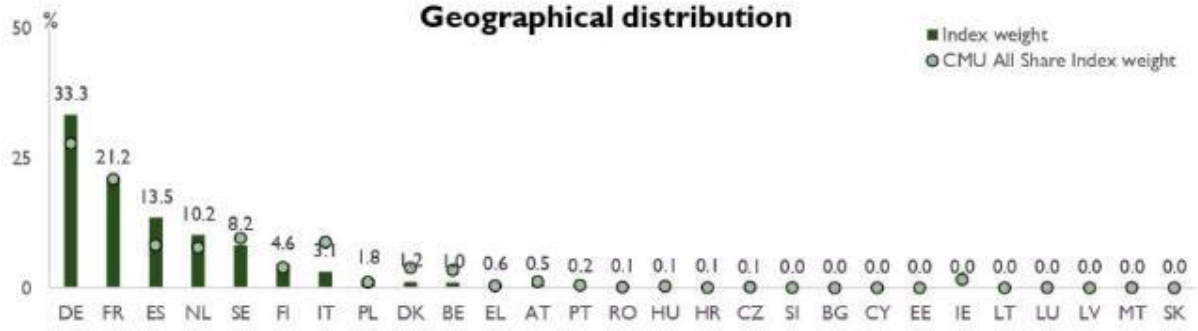
Concentration



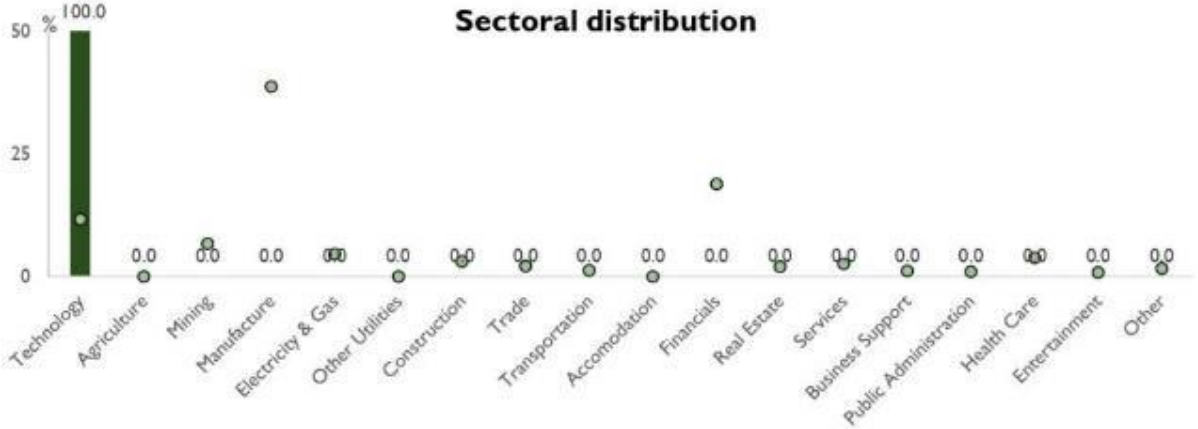
Size distribution

	Companies		Index weight
	NR	%	%
Micro	67	24.8	0.3
Small	116	43.0	3.8
Mid	42	15.6	11.8
Large	45	16.7	84.1
Total	**270**	**100.0**	**100.0**

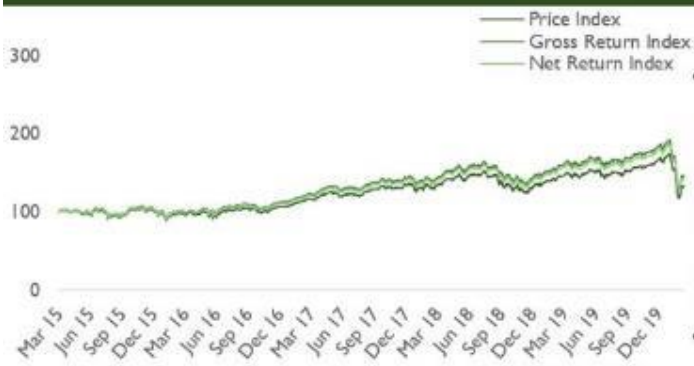
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



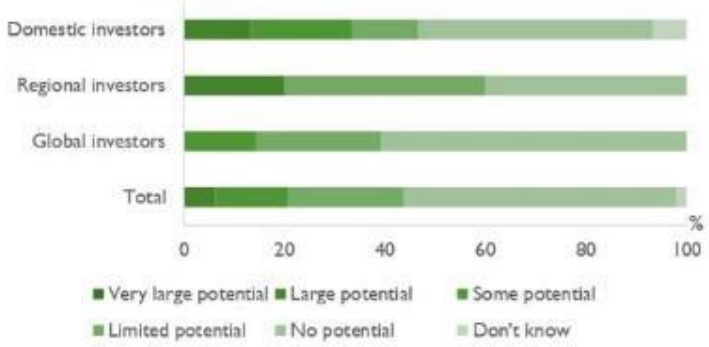
Performance

	Close	Last month	Last year	Last 5 years
Price Index	133.5	-13.4%	-6.6%	+33.5%
Gross Return Index	146.8	-13.7%	-5.9%	+46.8%
Net Return Index	142.9	-13.6%	-6.1%	+42.9%

Liquidity

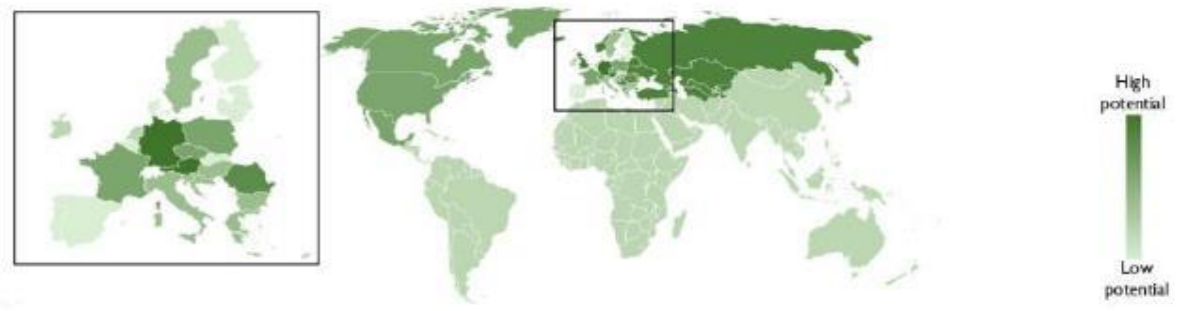
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	24	25.3	7	70.0	4	80.0	0	n.a.	62	45.3	5	3.8
Small	42	44.2	1	10.0	0	0.0	0	n.a.	74	54.0	42	31.6
Mid	11	11.6	0	0.0	0	0.0	0	n.a.	1	0.7	41	30.8
Large	18	18.9	2	20.0	1	20.0	0	n.a.	0	0.0	45	33.8
Total	**95**	**100.0**	**10**	**100.0**	**5**	**100.0**	**0**	**n.a.**	**137**	**100.0**	**133**	**100.0**

Institutional investor interest



Indicated interest

Location investors

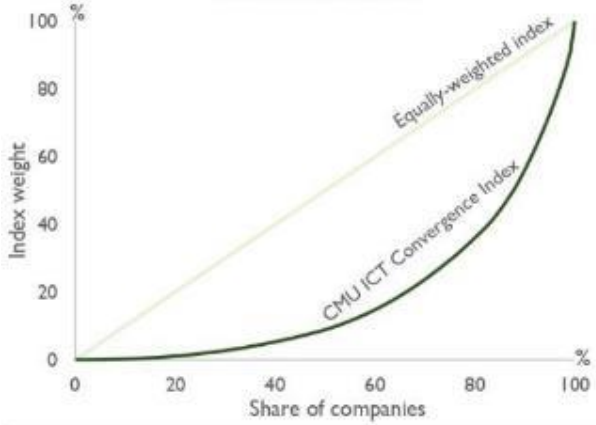


INDEX COMPOSITION

The CMU ICT Convergence Index covers all EU companies with low trading values active in information, communication and technology sectors. The CMU ICT Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU ICT CONVERGENCE INDEX
Number of companies	245
Universe	Information, communication and technology companies with low trading values
Weighting	Market capitalisation adjusted for free-float

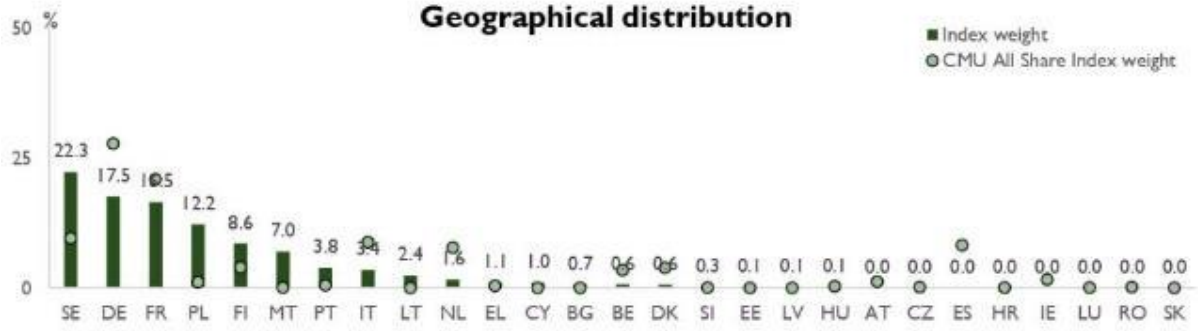
Concentration



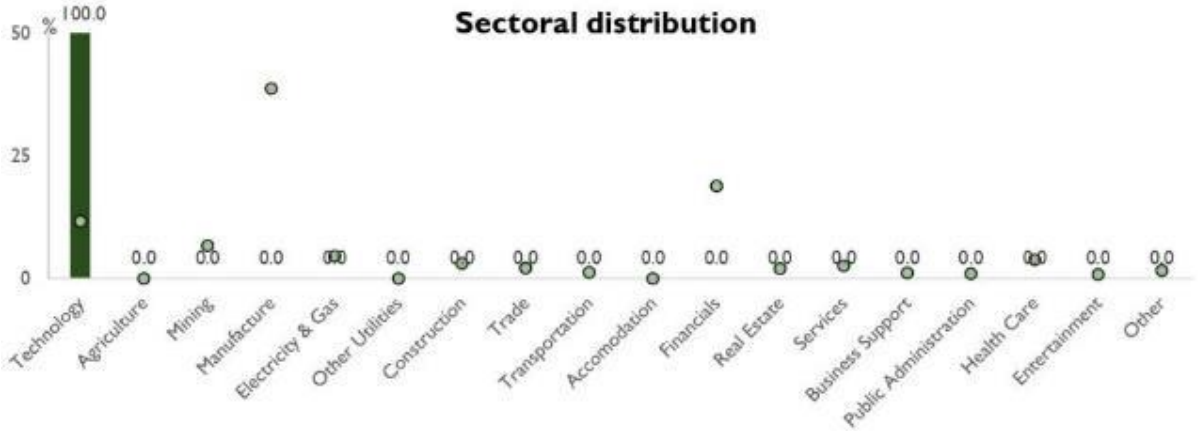
Size distribution

	Companies		Index weight
	NR	%	%
Micro	224	91.4	66.1
Small	20	8.2	29.3
Mid	0	0.0	0.0
Large	1	0.4	4.6
Total	**245**	**100.0**	**100.0**

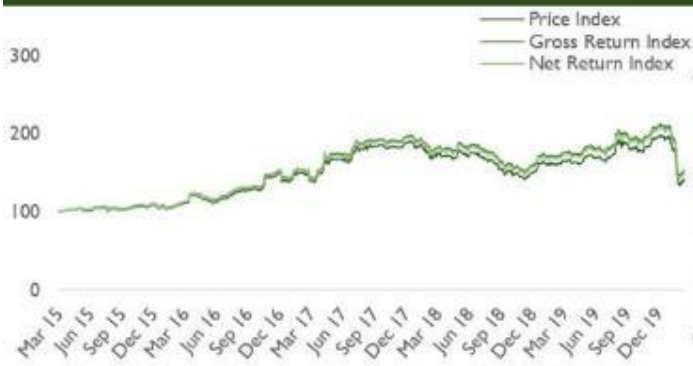
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	141.3	-21.0%	-12.0%	+41.3%
Gross Return Index	152.7	-20.6%	-10.7%	+52.7%
Net Return Index	149.5	-20.7%	-11.1%	+49.5%

Liquidity

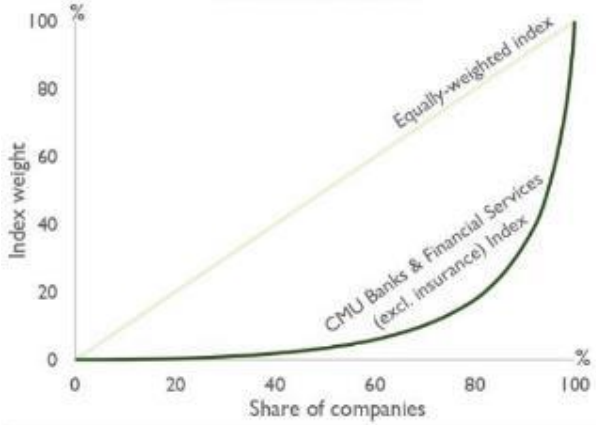
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	169	90.9	106	92.2	84	91.3	29	100.0	195	90.3	0	n.a.
Small	17	9.1	9	7.8	8	8.7	0	0.0	20	9.3	0	n.a.
Mid	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	n.a.
Large	0	0.0	0	0.0	0	0.0	0	0.0	1	0.5	0	n.a.
Total	**186**	**100.0**	**115**	**100.0**	**92**	**100.0**	**29**	**100.0**	**216**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU Banks & Financial Services (excl. insurance) Index covers all EU companies active in financial sector excluding insurance companies and companies with low trading values. The CMU Banks & Financial Services (excl. insurance) Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU BANKS & FINANCIAL SERVICES (EXCL. INSURANCE) INDEX
Number of companies	252
Universe	Banks and financial services companies (excl. insurers)
Weighting	Market capitalisation adjusted for free-float

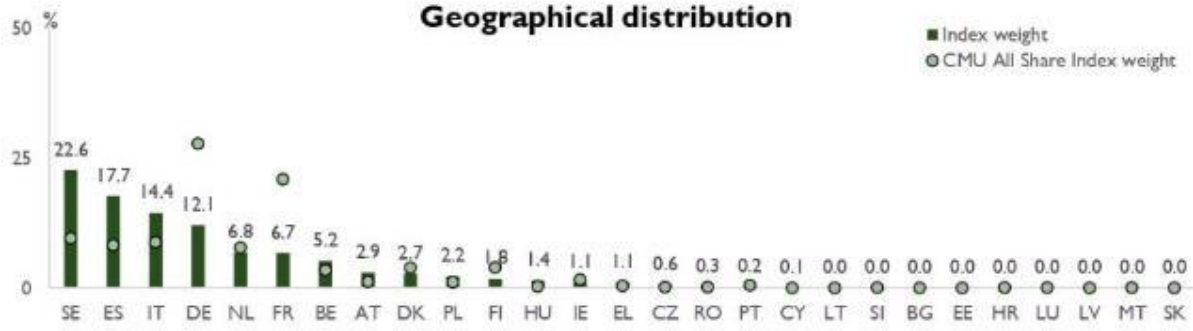
Concentration



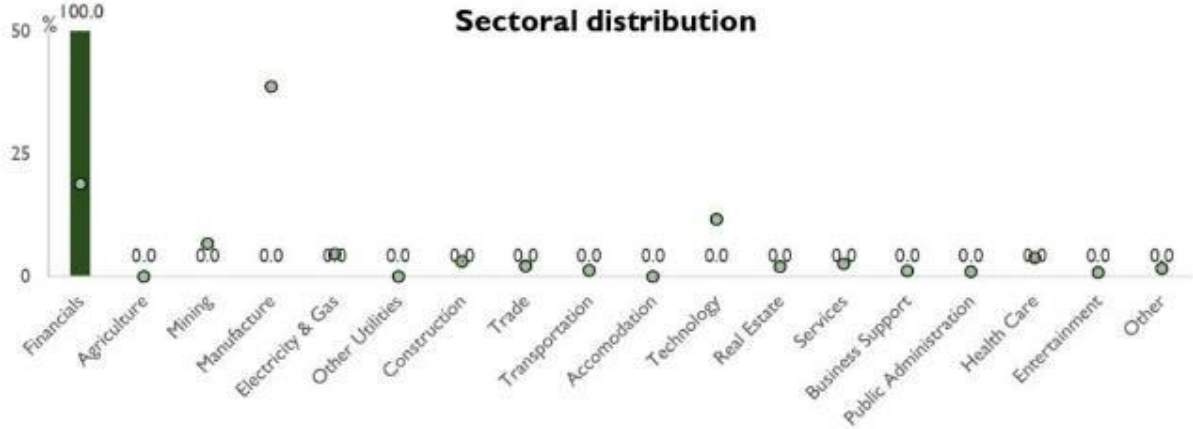
Size distribution

	Companies		Index weight
	NR	%	%
Micro	26	10.3	0.2
Small	86	34.1	3.1
Mid	78	31.0	14.5
Large	62	24.6	82.2
Total	**252**	**100.0**	**100.0**

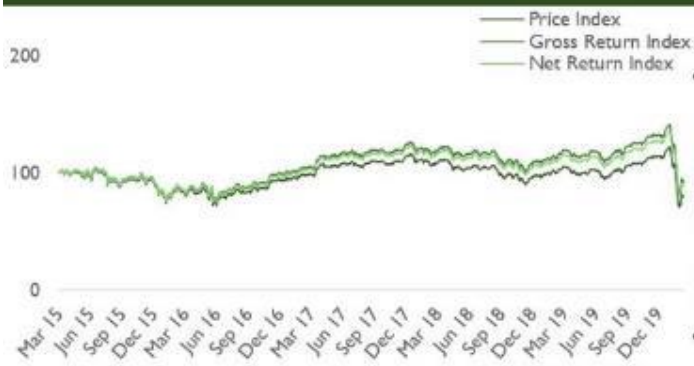
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



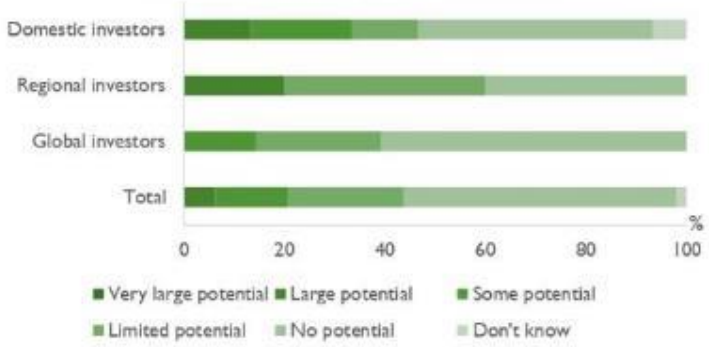
Performance

	Close	Last month	Last year	Last 5 years
Price Index	79.9	-24.6%	-19.7%	-20.1%
Gross Return Index	92.2	-24.9%	-18.1%	-7.8%
Net Return Index	88.6	-24.9%	-18.6%	-11.4%

Liquidity

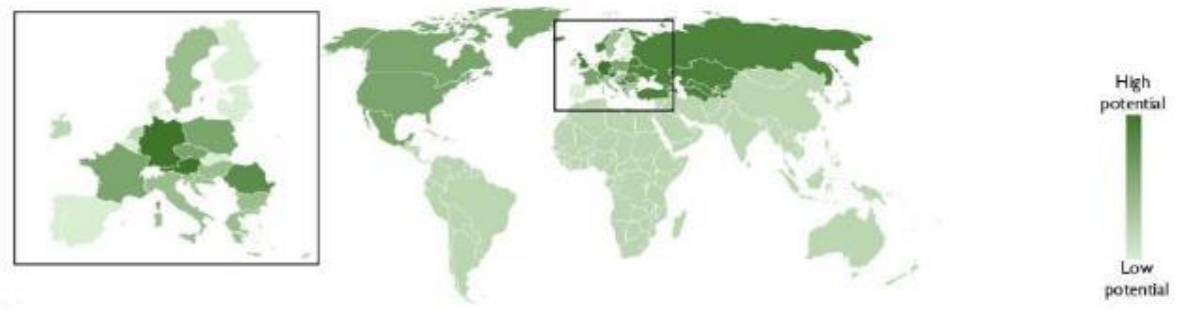
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	7	15.6	3	50.0	2	40.0	0	n.a.	24	28.6	2	1.2
Small	15	33.3	2	33.3	2	40.0	0	n.a.	54	64.3	32	19.0
Mid	11	24.4	0	0.0	0	0.0	0	n.a.	4	4.8	74	44.0
Large	12	26.7	1	16.7	1	20.0	0	n.a.	2	2.4	60	35.7
Total	**45**	**100.0**	**6**	**100.0**	**5**	**100.0**	**0**	**n.a.**	**84**	**100.0**	**168**	**100.0**

Institutional investor interest



Indicated interest

Location investors

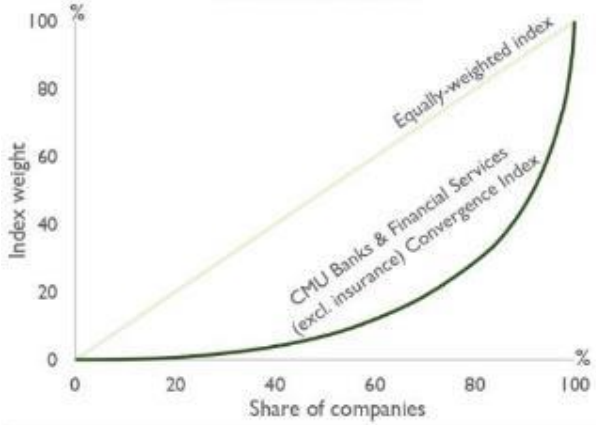


INDEX COMPOSITION

The CMU Banks & Financial Services (excl. insurance) Convergence Index covers all EU companies with low trading values active in financial sector excluding insurance companies. The CMU Banks & Financial Services (excl. insurance) Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU BANKS & FINANCIAL SERVICES (EXCL. INSURANCE) CONVERGENCE INDEX
Number of companies	209
Universe	Banks and financial services companies (excl. insurers) with low trading values
Weighting	Market capitalisation adjusted for free-float

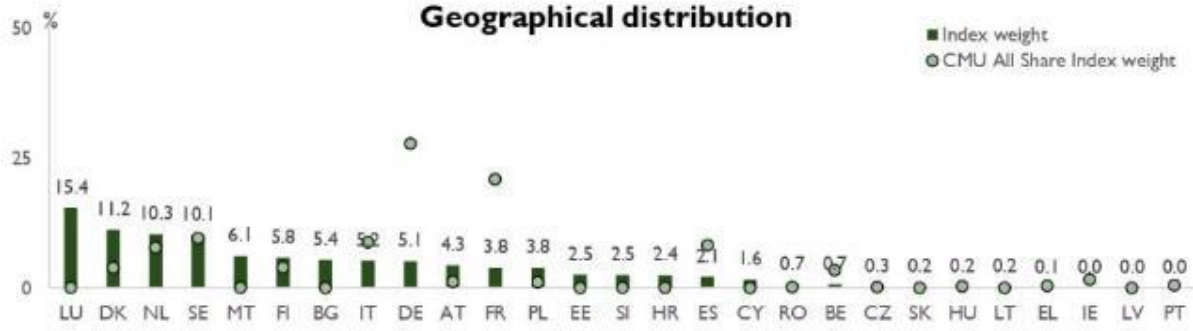
Concentration



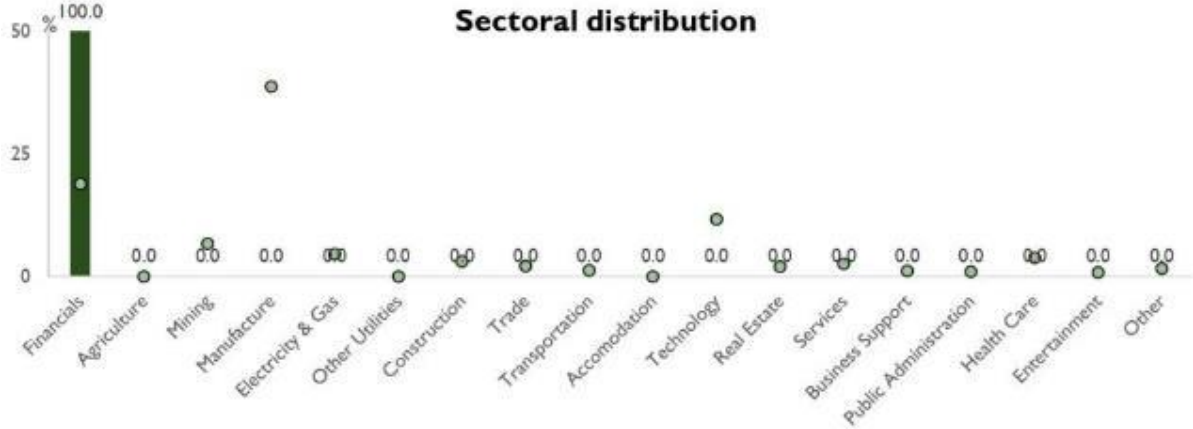
Size distribution

	Companies		Index weight
	NR	%	%
Micro	138	66.0	23.8
Small	56	26.8	46.6
Mid	12	5.7	29.4
Large	3	1.4	0.2
Total	**209**	**100.0**	**100.0**

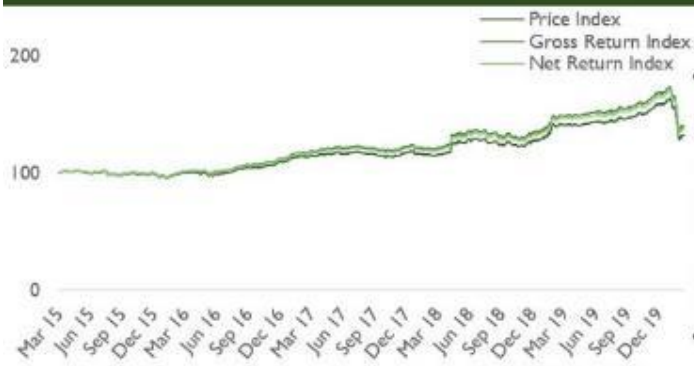
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	132.3	-14.8%	-5.3%	+32.3%
Gross Return Index	140.5	-14.7%	-4.5%	+40.5%
Net Return Index	137.9	-14.8%	-4.8%	+37.9%

Liquidity

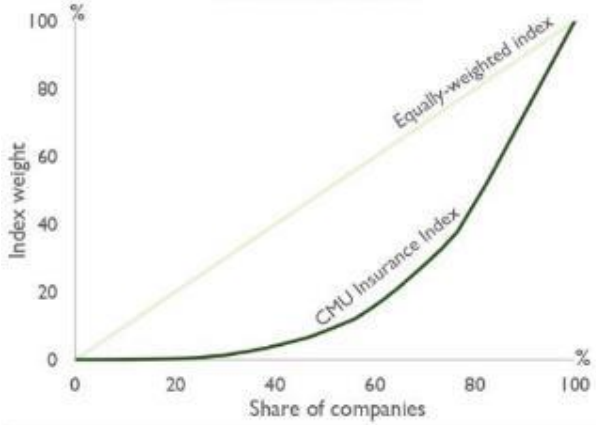
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	119	66.9	92	69.7	76	70.4	27	93.1	111	61.7	0	n.a.
Small	49	27.5	31	23.5	24	22.2	1	3.4	55	30.6	0	n.a.
Mid	7	3.9	7	5.3	7	6.5	1	3.4	11	6.1	0	n.a.
Large	3	1.7	2	1.5	1	0.9	0	0.0	3	1.7	0	n.a.
Total	**178**	**100.0**	**132**	**100.0**	**108**	**100.0**	**29**	**100.0**	**180**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU Insurance Index covers all EU companies active in insurance sector, excluding those with low trading values. The CMU Insurance Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU INSURANCE INDEX
Number of companies	34
Universe	Insurance companies
Weighting	Market capitalisation adjusted for free-float

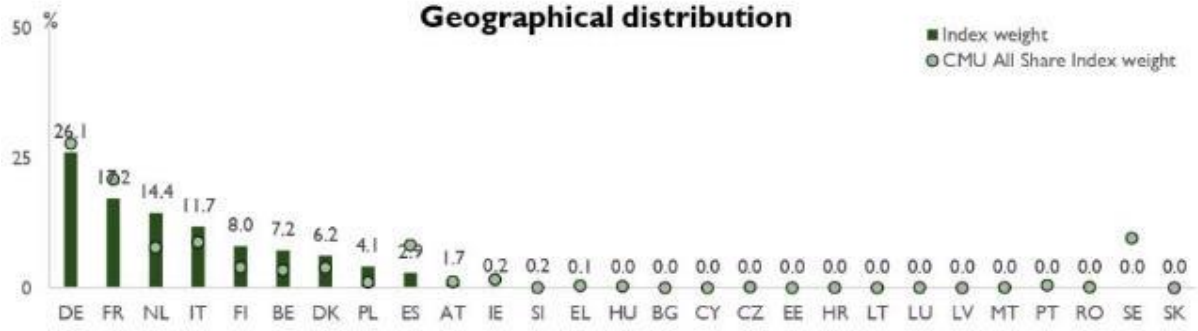
Concentration



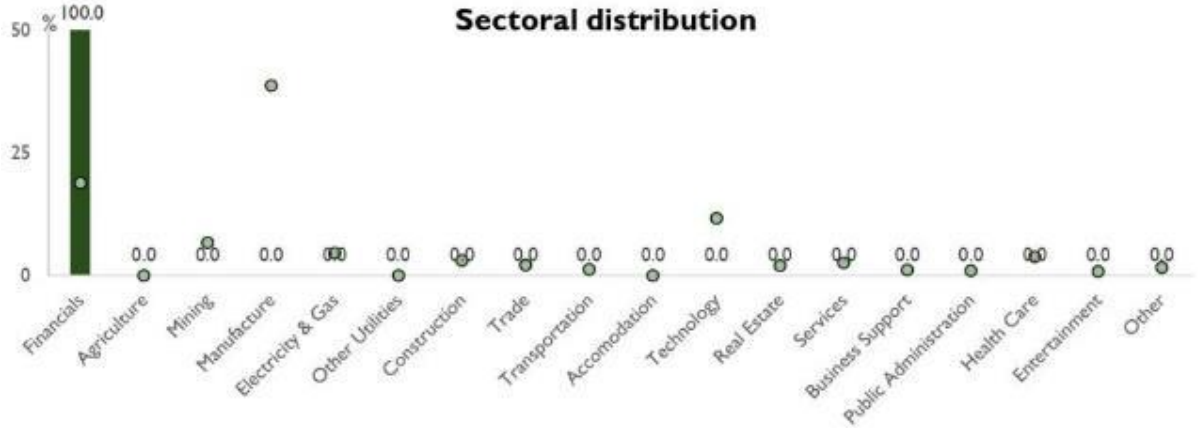
Size distribution

	Companies		Index weight
	NR	%	%
Micro	2	5.9	0.1
Small	6	17.6	0.5
Mid	10	29.4	12.9
Large	16	47.1	86.5
Total	**34**	**100.0**	**100.0**

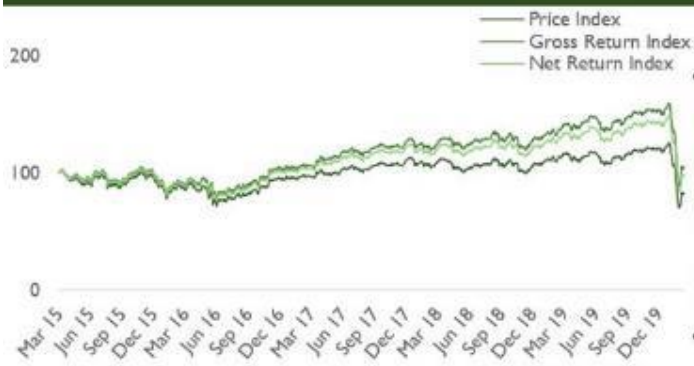
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



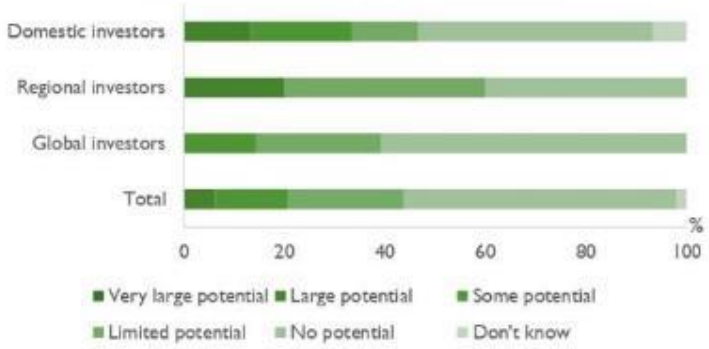
Performance

	Close	Last month	Last year	Last 5 years
Price Index	82.8	-23.3%	-25.0%	-17.2%
Gross Return Index	105.0	-23.4%	-21.1%	+5.0%
Net Return Index	98.2	-23.4%	-22.2%	-1.8%

Liquidity

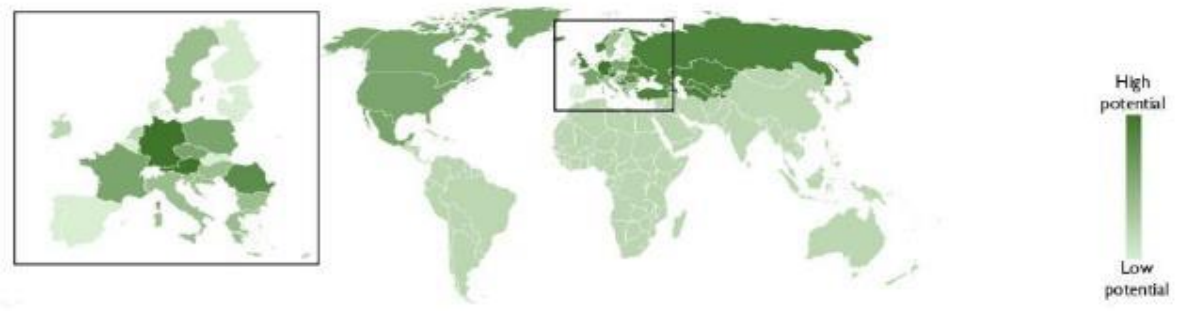
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	2	13.3	1	33.3	1	50.0	0	n.a.	2	25.0	0	0.0
Small	4	26.7	2	66.7	1	50.0	0	n.a.	6	75.0	0	0.0
Mid	3	20.0	0	0.0	0	0.0	0	n.a.	0	0.0	10	38.5
Large	6	40.0	0	0.0	0	0.0	0	n.a.	0	0.0	16	61.5
Total	**15**	**100.0**	**3**	**100.0**	**2**	**100.0**	**0**	**n.a.**	**8**	**100.0**	**26**	**100.0**

Institutional investor interest



Indicated interest

Location investors

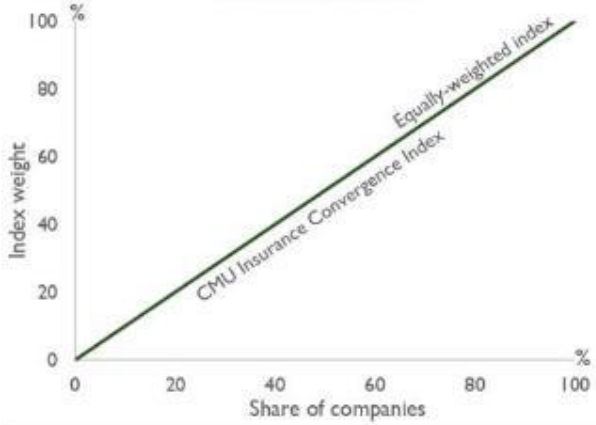


INDEX COMPOSITION

The CMU Insurance Convergence Index covers all EU companies with low trading values active in insurance sector. The CMU Insurance Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU INSURANCE CONVERGENCE INDEX
Number of companies	6
Universe	Insurance companies with low trading values
Weighting	Market capitalisation adjusted for free-float

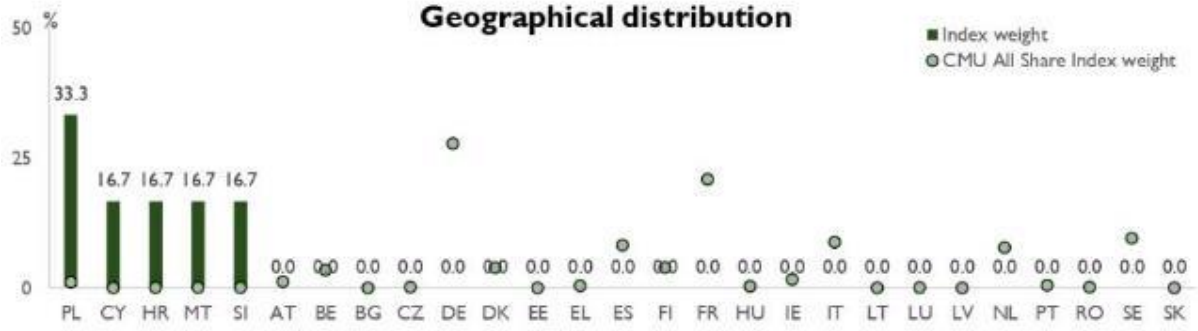
Concentration



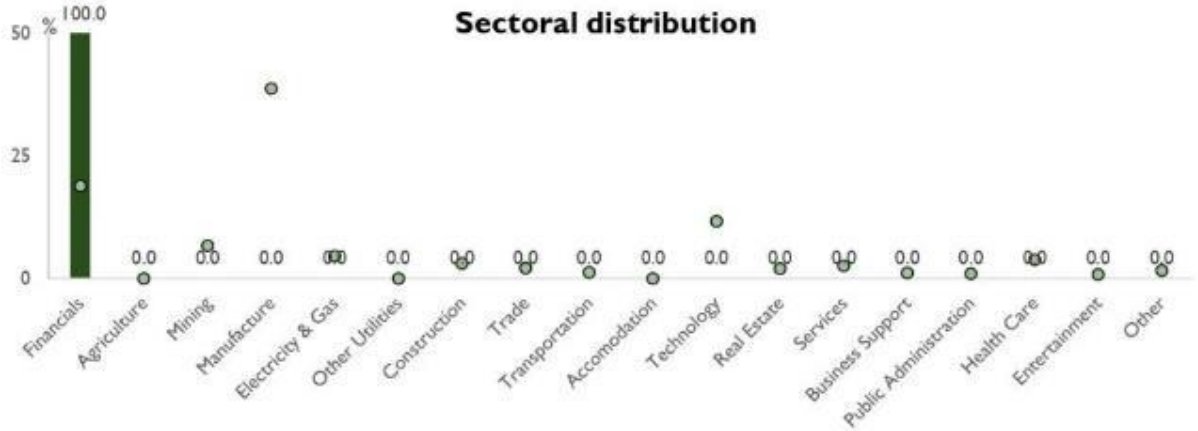
Size distribution

	Companies		Index weight
	NR	%	%
Micro	3	50.0	50.0
Small	3	50.0	50.0
Mid	0	0.0	0.0
Large	0	0.0	0.0
Total	**6**	**100.0**	**100.0**

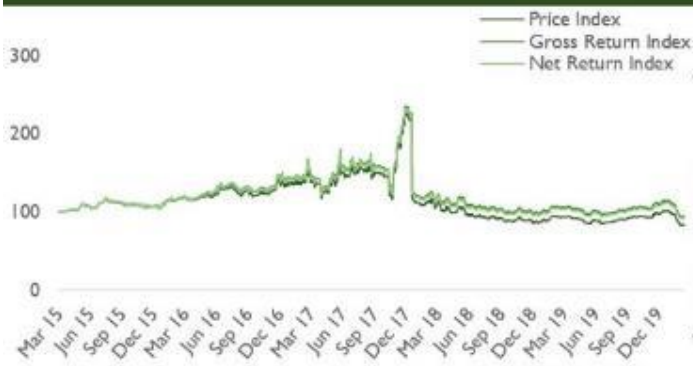
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	84.1	-13.3%	-11.2%	-15.9%
Gross Return Index	94.8	-13.6%	-11.5%	-5.2%
Net Return Index	92.5	-13.5%	-11.5%	-7.5%

Liquidity

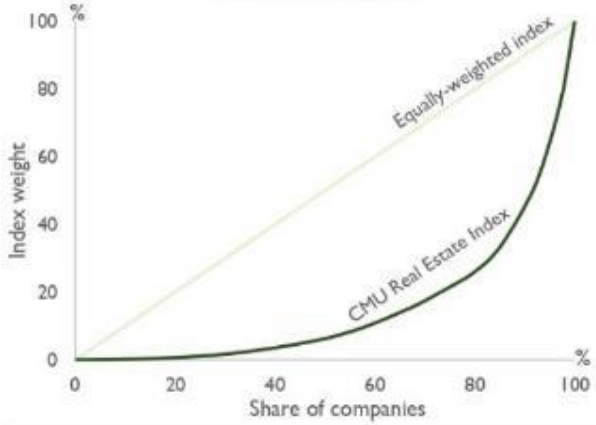
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	2	40.0	1	25.0	1	33.3	0	0.0	3	60.0	0	n.a.
Small	3	60.0	3	75.0	2	66.7	1	100.0	2	40.0	0	n.a.
Mid	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	n.a.
Large	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	n.a.
Total	**5**	**100.0**	**4**	**100.0**	**3**	**100.0**	**1**	**100.0**	**5**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU Real Estate Index covers all EU companies active in real estate, excluding those with low trading values. The CMU Real Estate Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU REAL ESTATE INDEX
Number of companies	92
Universe	Real estate companies
Weighting	Market capitalisation adjusted for free-float

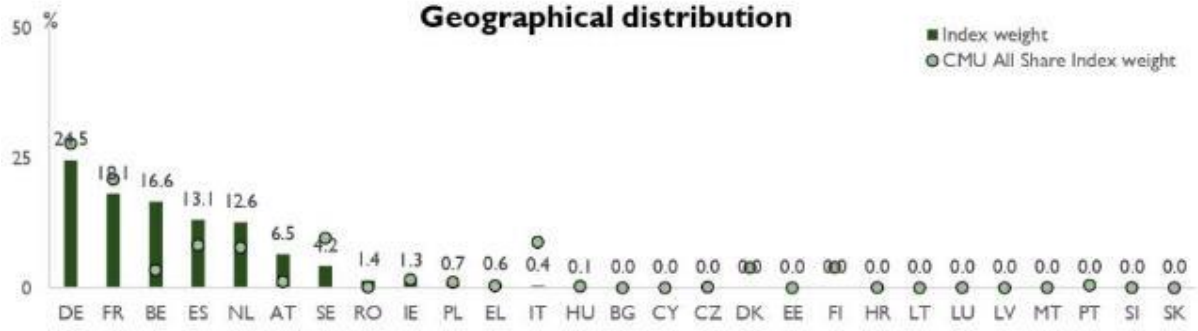
Concentration



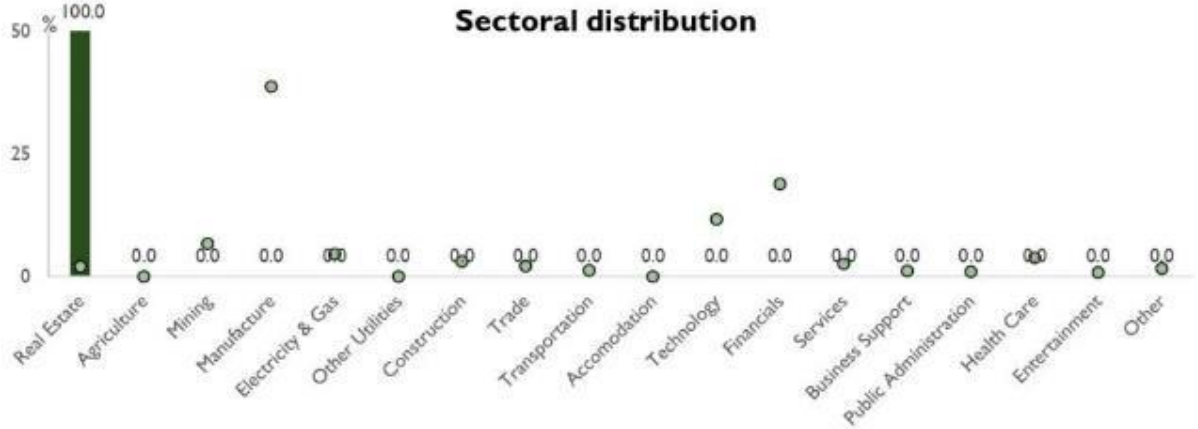
Size distribution

	Companies		Index weight
	NR	%	%
Micro	10	10.9	0.3
Small	40	43.5	11.3
Mid	32	34.8	39.6
Large	10	10.9	48.8
Total	**92**	**100.0**	**100.0**

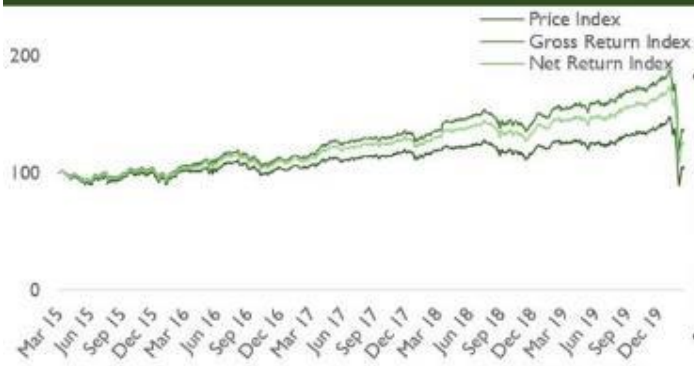
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



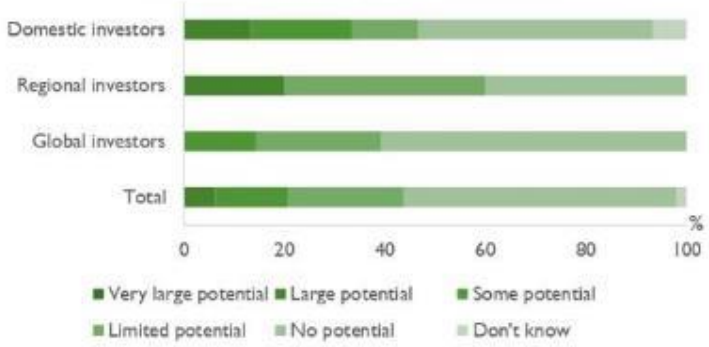
Performance

	Close	Last month	Last year	Last 5 years
Price Index	105.0	-21.7%	-17.0%	+5.0%
Gross Return Index	137.0	-20.3%	-12.0%	+37.0%
Net Return Index	125.7	-20.8%	-13.6%	+25.7%

Liquidity

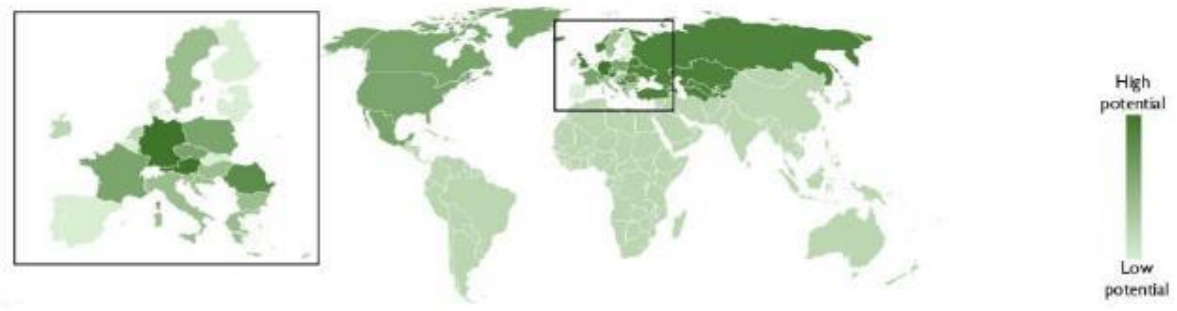
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	2	6.9	0	0.0	0	0.0	0	n.a.	10	26.3	0	0.0
Small	13	44.8	4	80.0	4	80.0	0	n.a.	22	57.9	18	33.3
Mid	9	31.0	1	20.0	1	20.0	0	n.a.	5	13.2	27	50.0
Large	5	17.2	0	0.0	0	0.0	0	n.a.	1	2.6	9	16.7
Total	**29**	**100.0**	**5**	**100.0**	**5**	**100.0**	**0**	**n.a.**	**38**	**100.0**	**54**	**100.0**

Institutional investor interest



Indicated interest

Location investors

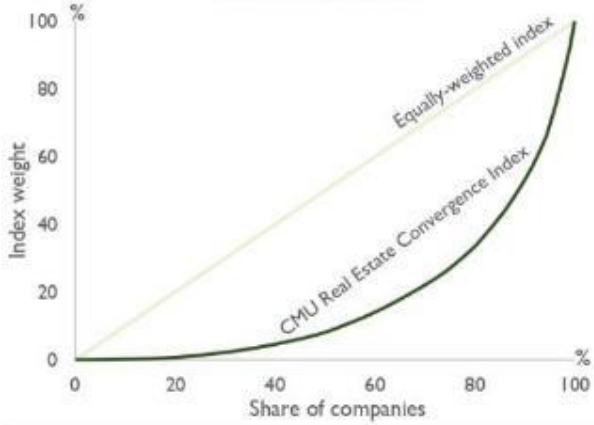


INDEX COMPOSITION

The CMU Real Estate Convergence Index covers all EU companies with low trading values active in real estate. The CMU Real Estate Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU REAL ESTATE CONVERGENCE INDEX
Number of companies	107
Universe	Real estate companies with low trading values
Weighting	Market capitalisation adjusted for free-float

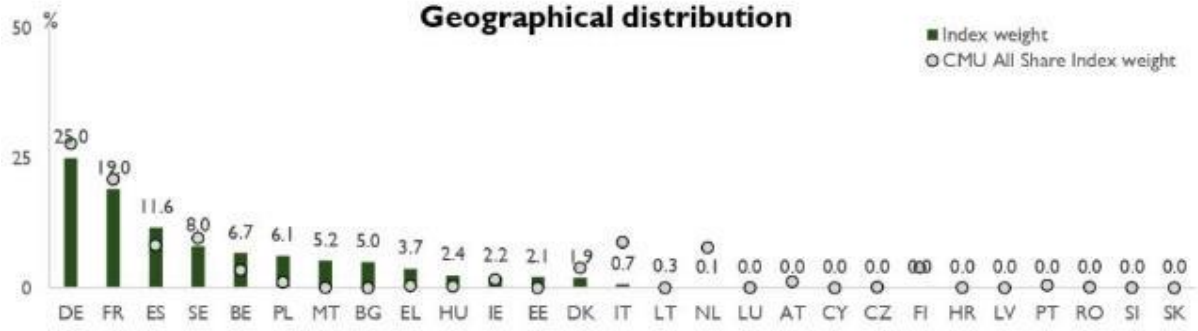
Concentration



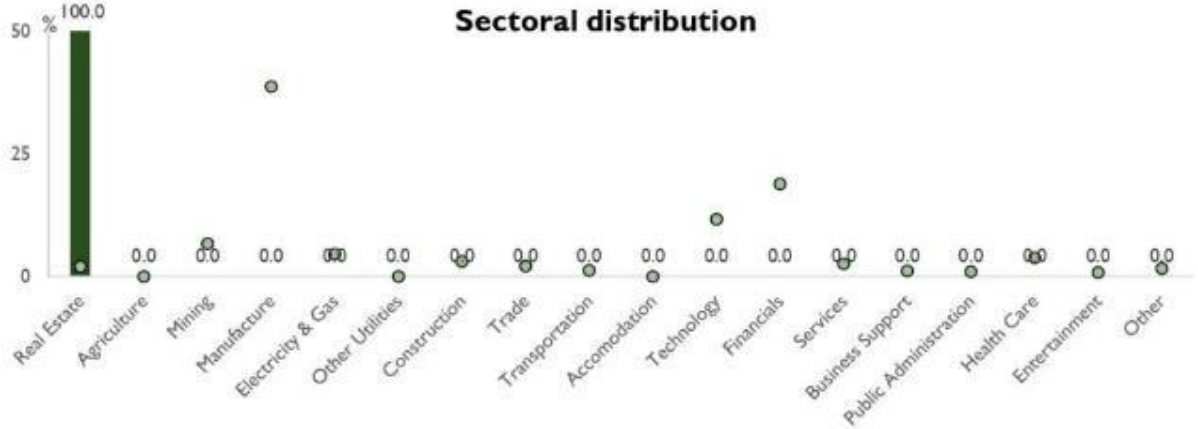
Size distribution

	Companies		Index weight
	NR	%	%
Micro	75	70.1	32.2
Small	27	25.2	58.9
Mid	5	4.7	8.9
Large	0	0.0	0.0
Total	**107**	**100.0**	**100.0**

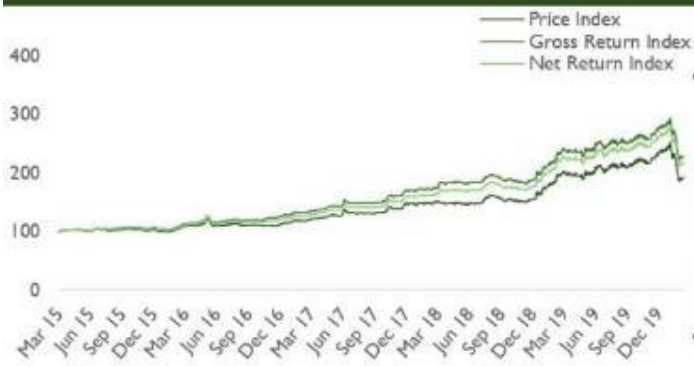
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	191.5	-16.9%	-3.0%	+91.5%
Gross Return Index	228.1	-15.5%	-2.8%	+128.1%
Net Return Index	216.7	-15.7%	-2.5%	+116.7%

Liquidity

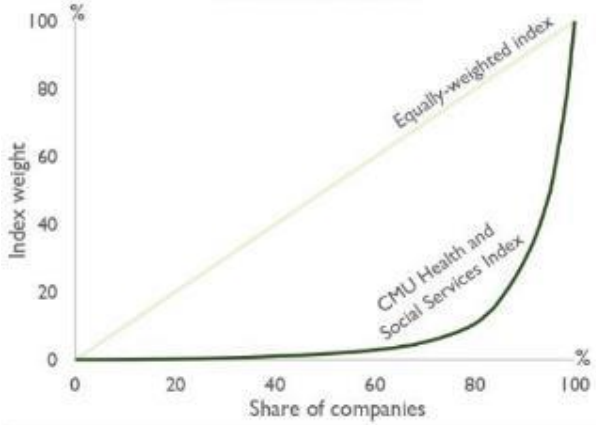
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	61	68.5	43	67.2	40	71.4	18	85.7	57	66.3	0	n.a.
Small	23	25.8	17	26.6	12	21.4	2	9.5	25	29.1	0	n.a.
Mid	5	5.6	4	6.3	4	7.1	1	4.8	4	4.7	0	n.a.
Large	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	n.a.
Total	**89**	**100.0**	**64**	**100.0**	**56**	**100.0**	**21**	**100.0**	**86**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU Health and Social Services Index covers all EU companies active in health care sector, excluding those with low trading values. The CMU Health and Social Services Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU HEALTH AND SOCIAL SERVICES INDEX
Number of companies	143
Universe	Health care companies
Weighting	Market capitalisation adjusted for free-float

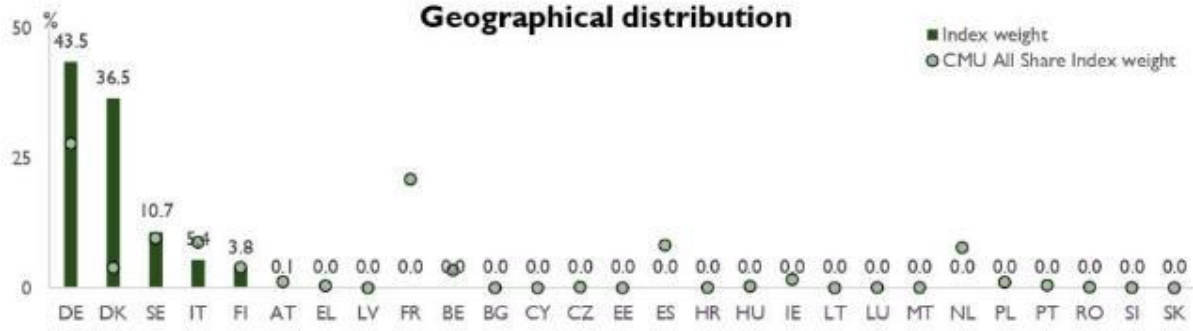
Concentration



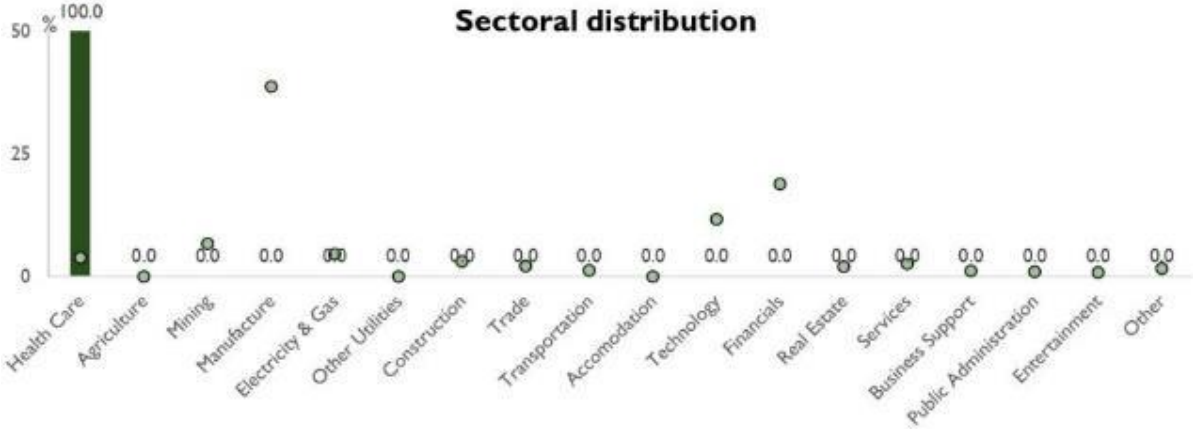
Size distribution

	Companies		Index weight
	NR	%	%
Micro	46	32.2	0.7
Small	57	39.9	6.1
Mid	17	11.9	13.8
Large	23	16.1	79.4
Total	**143**	**100.0**	**100.0**

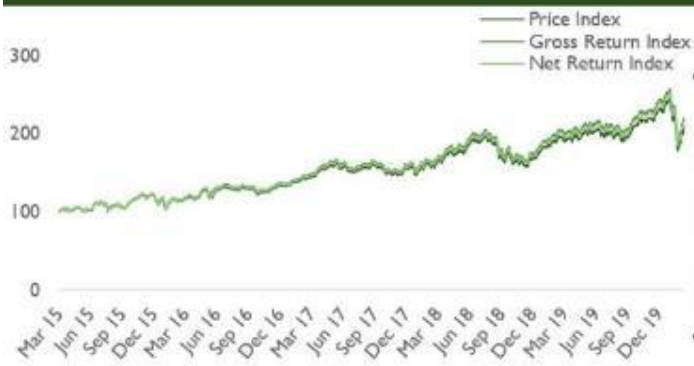
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



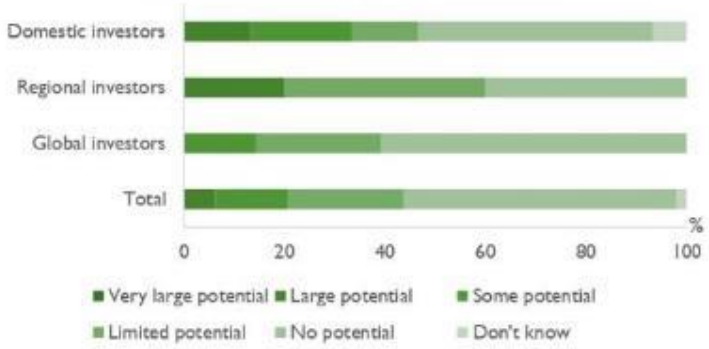
Performance

	Close	Last month	Last year	Last 5 years
Price Index	209.1	-3.2%	+9.3%	+109.1%
Gross Return Index	219.2	-3.1%	+9.8%	+119.2%
Net Return Index	216.2	-3.1%	+9.7%	+116.2%

Liquidity

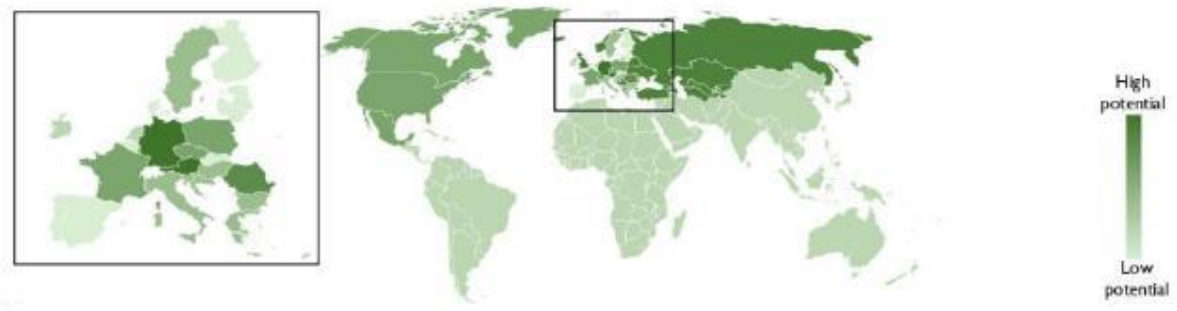
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	9	52.9	4	80.0	3	100.0	0	n.a.	41	55.4	5	7.2
Small	4	23.5	1	20.0	0	0.0	0	n.a.	30	40.5	27	39.1
Mid	1	5.9	0	0.0	0	0.0	0	n.a.	1	1.4	16	23.2
Large	3	17.6	0	0.0	0	0.0	0	n.a.	2	2.7	21	30.4
Total	**17**	**100.0**	**5**	**100.0**	**3**	**100.0**	**0**	**n.a.**	**74**	**100.0**	**69**	**100.0**

Institutional investor interest



Indicated interest

Location investors

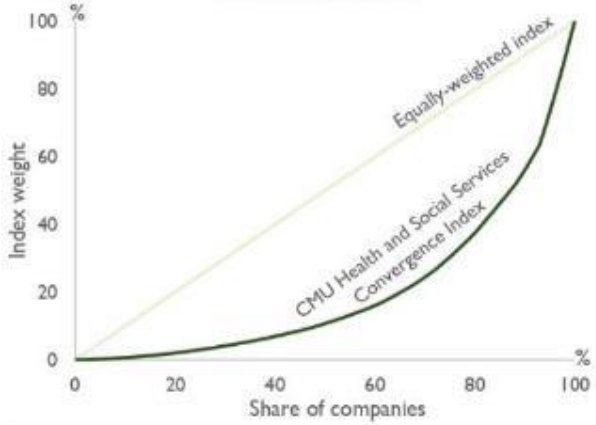


INDEX COMPOSITION

The CMU Health and Social Services Convergence Index covers all EU companies with low trading values active in health care sector. The CMU Health and Social Services Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU HEALTH AND SOCIAL SERVICES CONVERGENCE INDEX
Number of companies	85
Universe	Health care companies with low trading values
Weighting	Market capitalisation adjusted for free-float

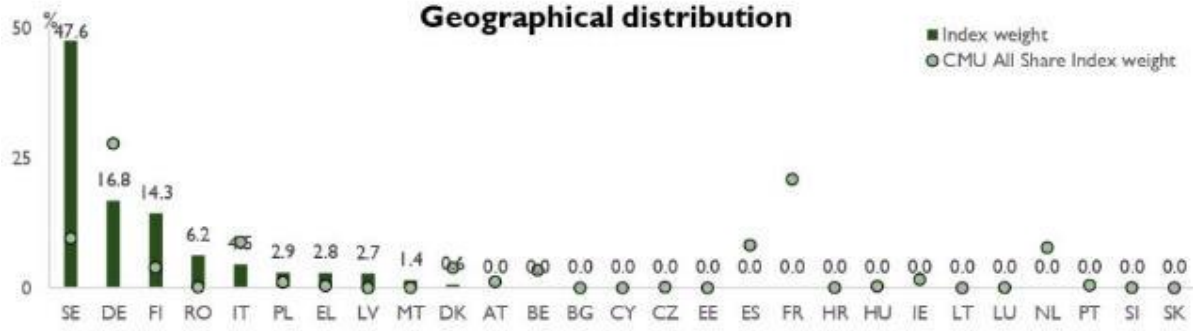
Concentration



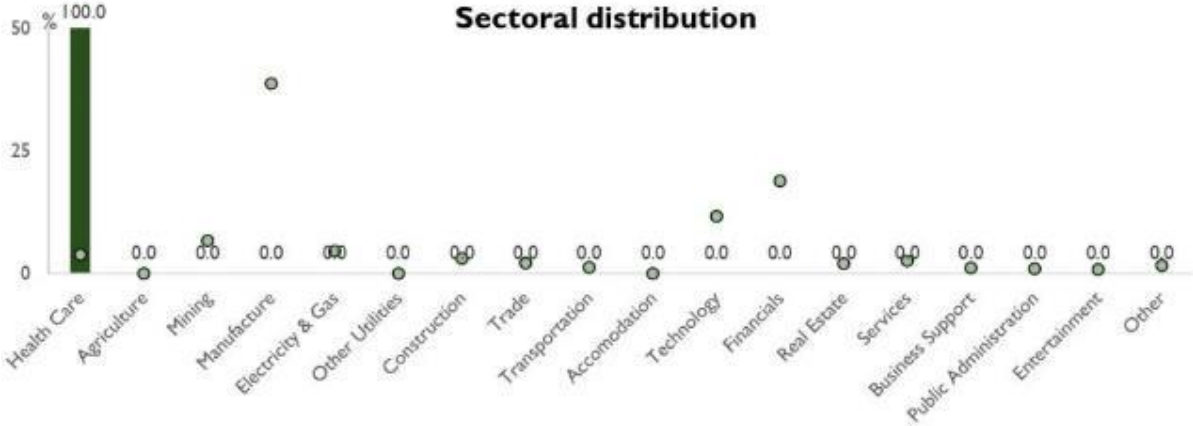
Size distribution

	Companies		Index weight
	NR	%	%
Micro	78	91.8	68.6
Small	6	7.1	26.0
Mid	1	1.2	5.4
Large	0	0.0	0.0
Total	**85**	**100.0**	**100.0**

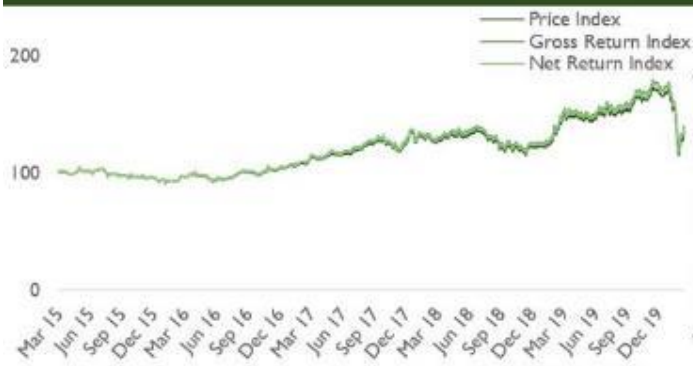
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	135.0	-11.8%	-1.0%	+35.0%
Gross Return Index	139.6	-11.7%	+0.0%	+39.6%
Net Return Index	138.6	-11.7%	-0.1%	+38.6%

Liquidity

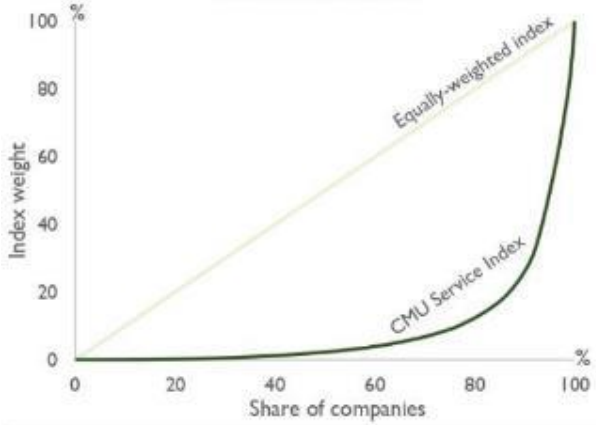
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	37	86.0	23	82.1	16	76.2	3	100.0	75	91.5	0	n.a.
Small	5	11.6	4	14.3	4	19.0	0	0.0	6	7.3	0	n.a.
Mid	1	2.3	1	3.6	1	4.8	0	0.0	1	1.2	0	n.a.
Large	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	n.a.
Total	**43**	**100.0**	**28**	**100.0**	**21**	**100.0**	**3**	**100.0**	**82**	**100.0**	**0**	**n.a.**

INDEX COMPOSITION

The CMU Services Index covers all EU companies active in services and other sectors, excluding those with low trading values. The CMU Services Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU SERVICE INDEX
Number of companies	216
Universe	Services and other companies
Weighting	Market capitalisation adjusted for free-float

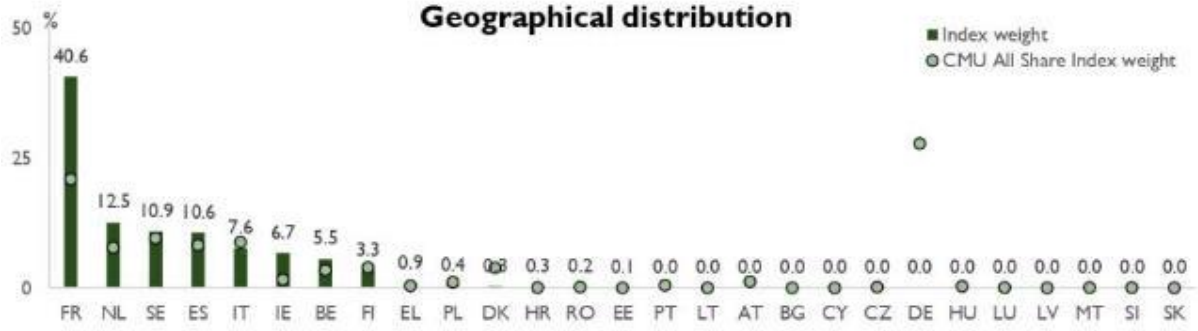
Concentration



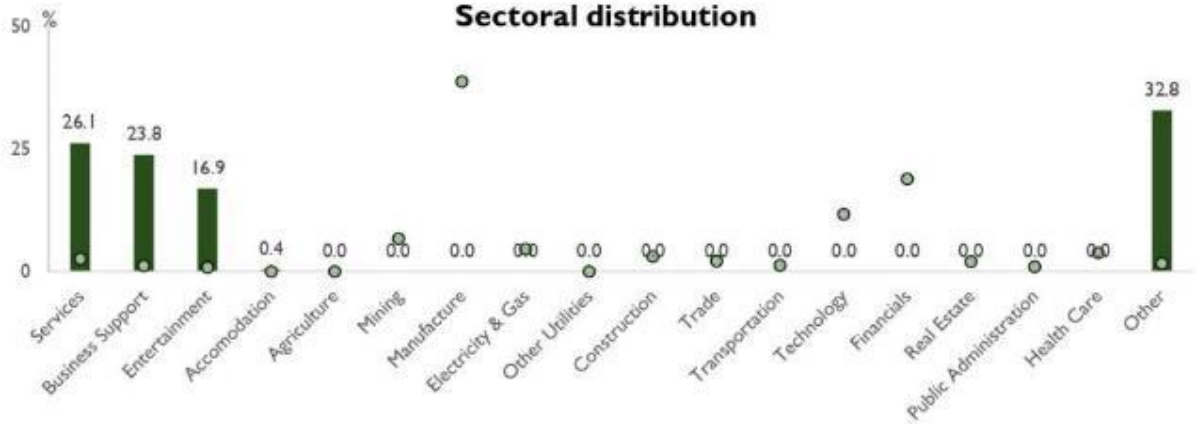
Size distribution

	Companies		Index weight
	NR	%	%
Micro	45	20.8	0.4
Small	109	50.5	8.0
Mid	38	17.6	16.6
Large	24	11.1	75.0
Total	**216**	**100.0**	**100.0**

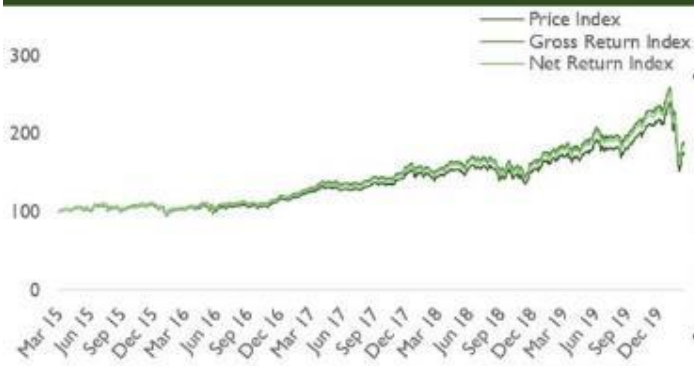
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE AND POTENTIAL



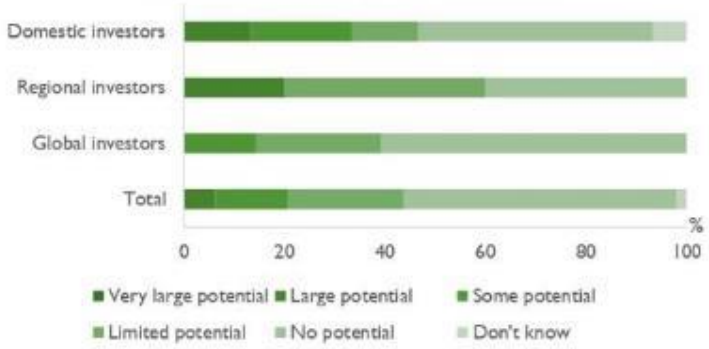
Performance

	Close	Last month	Last year	Last 5 years
Price Index	175.8	-16.4%	+3.8%	+75.8%
Gross Return Index	189.4	-16.6%	+4.7%	+89.4%
Net Return Index	185.0	-16.5%	+4.4%	+85.0%

Liquidity

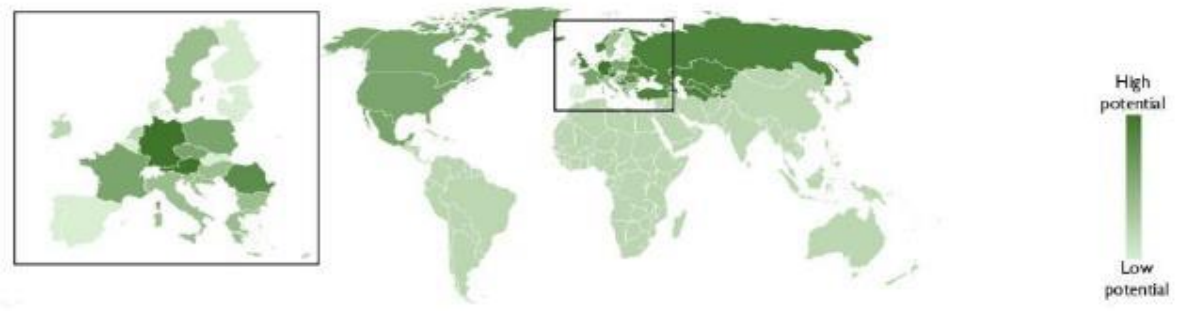
	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	21	20.0	5	45.5	1	16.7	0	n.a.	40	37.7	5	4.5
Small	55	52.4	4	36.4	3	50.0	0	n.a.	61	57.5	48	43.6
Mid	16	15.2	1	9.1	1	16.7	0	n.a.	5	4.7	33	30.0
Large	13	12.4	1	9.1	1	16.7	0	n.a.	0	0.0	24	21.8
Total	**105**	**100.0**	**11**	**100.0**	**6**	**100.0**	**0**	**n.a.**	**106**	**100.0**	**110**	**100.0**

Institutional investor interest



Indicated interest

Location investors

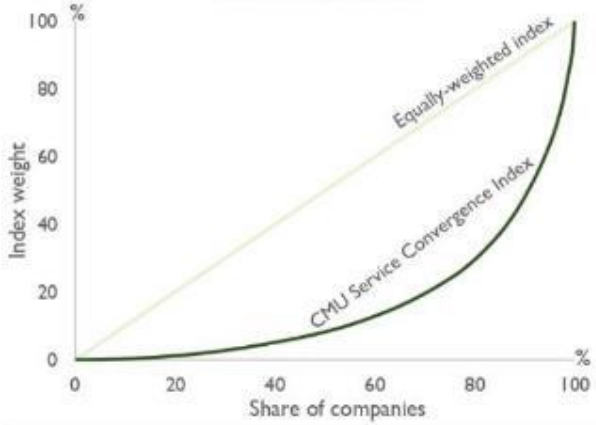


INDEX COMPOSITION

The CMU Services Convergence Index covers all EU companies with low trading values active in services and other sectors. The CMU Services Convergence Index is weighted based on market capitalisation adjusted for free-float.

Index name	CMU SERVICE CONVERGENCE INDEX
Number of companies	196
Universe	Services and other companies with low trading values
Weighting	Market capitalisation adjusted for free-float

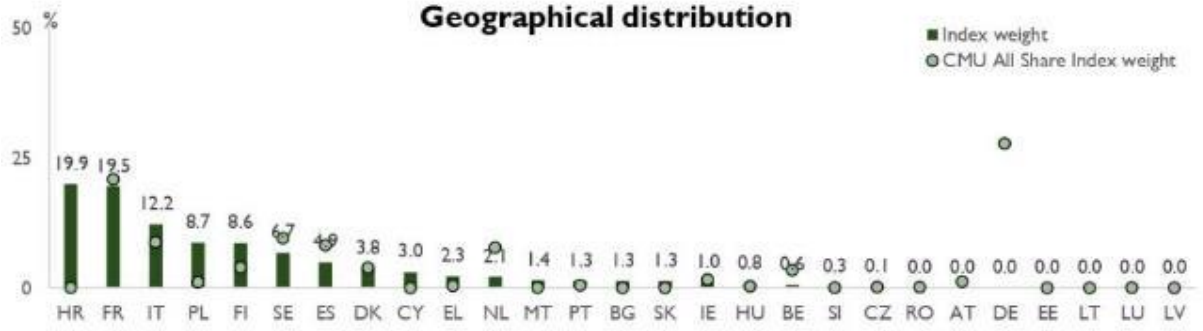
Concentration



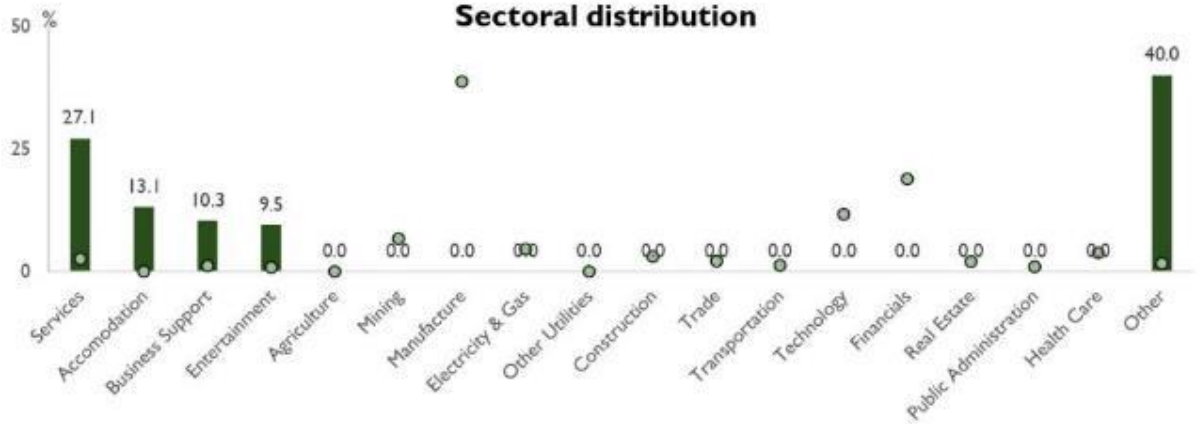
Size distribution

	Companies		Index weight
	NR	%	%
Micro	158	80.6	45.7
Small	35	17.9	42.7
Mid	3	1.5	11.6
Large	0	0.0	0.0
Total	**196**	**100.0**	**100.0**

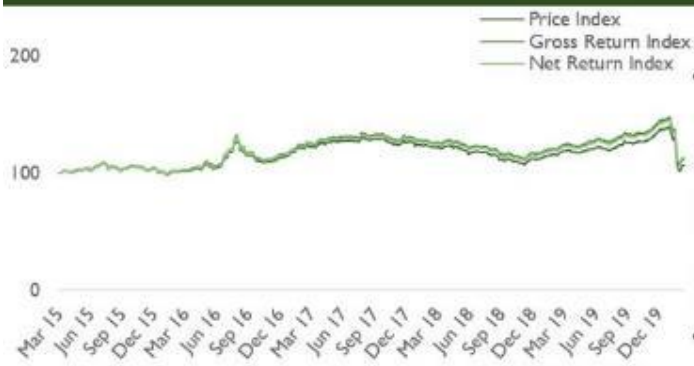
Geographical distribution



Sectoral distribution



INDEX PERFORMANCE



Performance

	Close	Last month	Last year	Last 5 years
Price Index	106.6	-16.9%	-7.4%	+6.6%
Gross Return Index	112.5	-17.1%	-6.3%	+12.5%
Net Return Index	110.9	-17.0%	-6.4%	+10.9%

Liquidity

	Non-trading days						Trading volume					
	≥1		≥5		≥10		Bottom 25%		25%-75%		Top 25%	
	NR	%	NR	%	NR	%	NR	%	NR	%	NR	%
Micro	121	77.1	72	73.5	63	73.3	22	75.9	134	81.2	2	100.0
Small	33	21.0	24	24.5	21	24.4	7	24.1	28	17.0	0	0.0
Mid	3	1.9	2	2.0	2	2.3	0	0.0	3	1.8	0	0.0
Large	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	**157**	**100.0**	**98**	**100.0**	**86**	**100.0**	**29**	**100.0**	**165**	**100.0**	**2**	**100.0**

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