European Small & Mid Caps

AlphaDossier 010
Small and mid cap equities: a key component of an asset allocation

Lupus alpha.
Bright minds developing innovative alpha strategies.

As an independent, owner-operated asset management company, Lupus alpha has been synonymous with specialised investment solutions for more than 15 years. Lupus alpha are pioneers in the European small and mid cap segment and are now one of the continent's leading providers of liquid alternative investment concepts. More than 80 employees, including 30 portfolio management specialists, are committed to delivering above-average performance and a service fully tailored to the individual needs of our investors. We aim to provide sustained added value through active, innovative investment strategies for intelligent portfolio diversification.

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Management Summary

Many studies prove the importance of strategic asset allocation as the most important driver of total portfolio returns. Equities, unlike secure government bonds, are one of the few asset classes that yield positive real returns over long time periods, and are therefore an essential component of a diversified portfolio.

Most investors' portfolios are generally dominated by well-known large caps. However, second-tier stocks offer additional diversification and significant performance potential.

In this dossier we show how small and mid caps can contribute to higher returns and lower risk as part of an equity allocation and how an investment in this segment can be efficiently implemented. Unlike with large caps, active management is the first choice for small and mid caps. Only this way it is possible to identify promising individual securities and their respective performance drivers and manage portfolios in a risk-controlled manner over time.

The specialist team at Lupus alpha provides investors with access to the performance contribution of European small and mid caps in a focused way. Strategies with a regional focus are available and various ESG approaches can be implemented. Moreover, tailored equity allocation management, long-short strategies and an innovative dividend-based approach enable access in line with the individual risk-return profile.

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Small and mid-cap equities: a key component of an asset allocation

"Investors who limit themselves to large caps in their equity portfolios miss out on important sources of performance. Even in the difficult market phases of the last decade, small and mid caps were a step ahead, with less volatility and better performance."

Dr. Götz Albert, CFA, Partner, Head of Portfolio Management Small & Mid Caps

Outperformance of small and mid caps

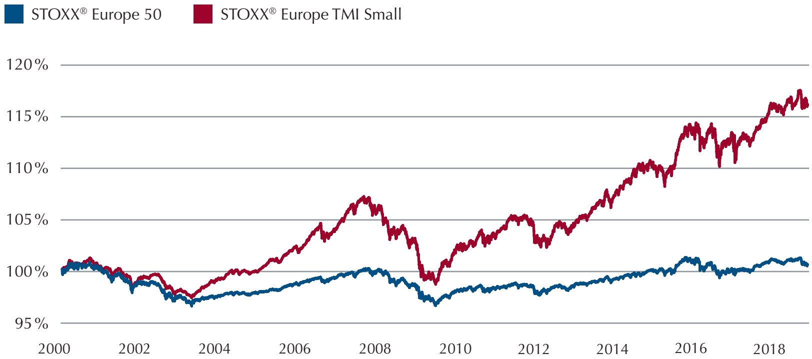
Small and mid-cap equities outperform the wider equity market over the long term. Numerous academic studies have proven that this so-called size premium is one of the best-known factor premiums for equities.
The size premium is basically explained by the following approaches:

- the higher systematic risk of small and mid-cap equities (Fama/French)
- the (at times) lower liquidity
- information asymmetries[1]

A more recent study provides empirical evidence that, taking into account comparable quality characteristics, equities of smaller companies yield significantly higher returns than those of larger companies[2].

[1] Source: Zhang, Information Uncertainty and Stock Returns, 2006.
[2] Cf. AQR: Size Matters, If You Control Your Junk, Asness et al., January 2015.

1. Outperformance potential
Long-term comparison of large caps and small and mid caps



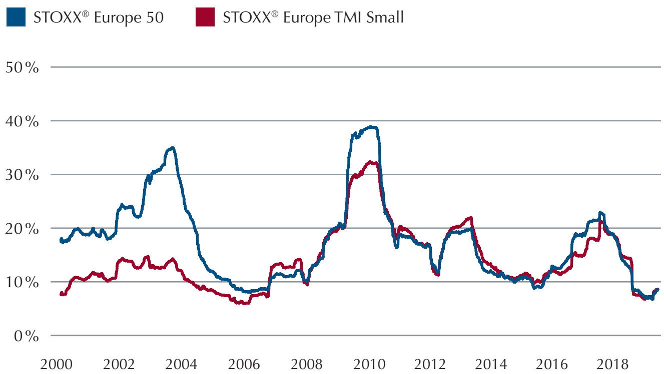
Sources: Bloomberg, own calculations; observation period 01/01/2000–31/03/2018

	STOXX® Europe TMI Small	STOXX® Europe 50
Performance p.a.		
1 year	7.47%	-2.81%
3 years	5.46%	-1.49%
5 years	11.7%	5.28%
Since 01/01/2000	7.21%	0.4%
Volatility 5 years	14.88%	15.64%
Max. drawdown 5 years	-20.76%	-26.88%

Sources: Bloomberg, own calculations; observation period: 01/01/2000–31/03/2018

Volatility over the 5-year period from 31/03/2013 to 31/03/2018 was lower for small and mid caps at around 15% p.a. than for large caps at almost 16% p.a. It is striking that large caps were more volatile than small and mid caps, particularly in periods of high volatility. Reasons for this may include high-frequency trading and derivatives trading as well as the increasing use of ETFs for trading purposes.

2. Volatility comparison of large caps vs. small and mid caps
European equities: 1 year roll. volatility



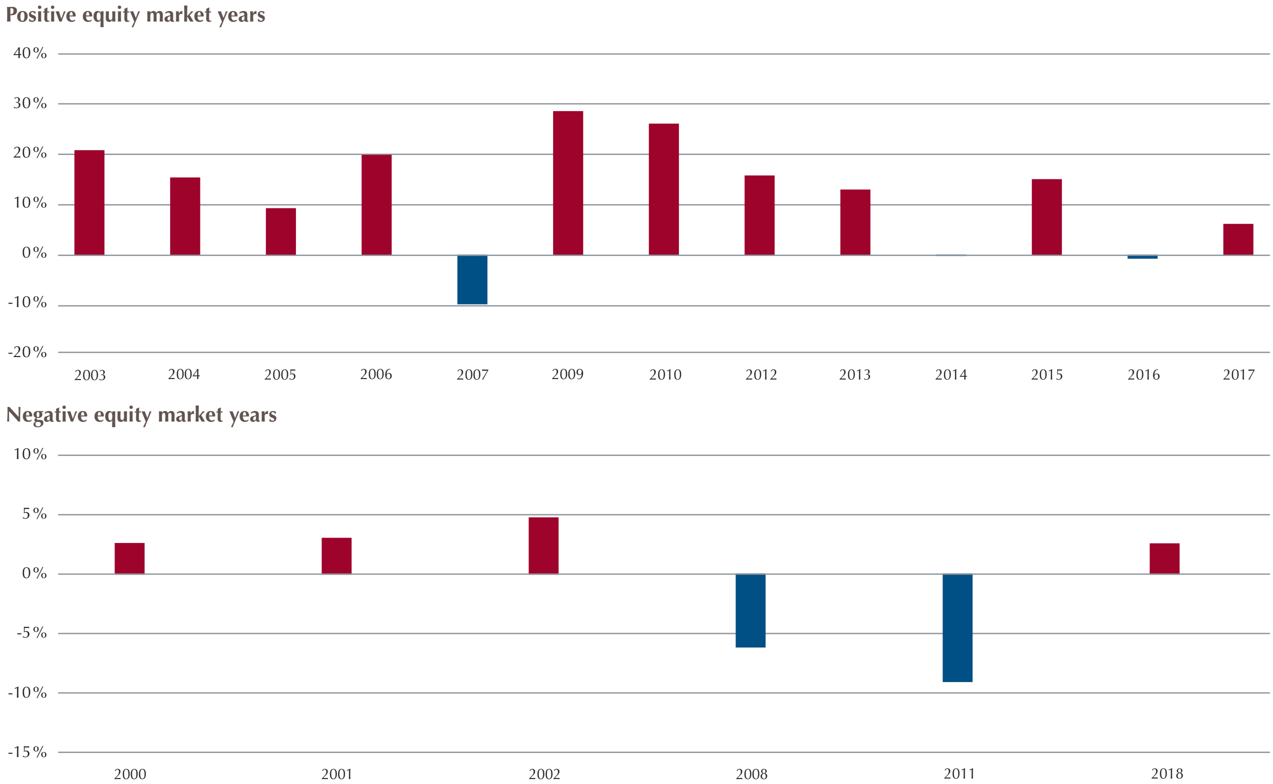
Volatility since 01/01/2000 p.a.	
STOXX® Europe TMI Small: 16.82%	STOXX® Europe 50: 20.46%

Sources: Bloomberg, own calculations; observation period 01/01/2000–31/03/2018

These play only a minor role in the small and mid-cap space. The volatility of small and mid caps and that of large caps have moved at similar levels, since the financial crisis in 2008.

If you look at volatility, it is therefore clear that the widely held opinion that small and mid caps are fundamentally riskier is untenable. This is also true of the view that small and mid caps generally suffer greater losses than large caps in negative equity market years. This was the case in 2008 and 2011. However, after the Internet bubble burst, large caps performed worse than small and mid caps from 2000 to 2002. On the other hand, small and mid caps performed much better than large caps, during almost all positive equity market years (cf. Figure 3). Liquidity is also higher than is often assumed. While liquidity is lower for small and mid caps than for large caps, the universe includes more than 1,000 investable stocks with an average daily turnover of more than EUR 1 million. These stocks therefore have sufficient liquidity for them to be bought and sold even during crisis periods.

3. Advantages for investors in small and mid caps
Performance relative to large caps in positive and negative equity market years

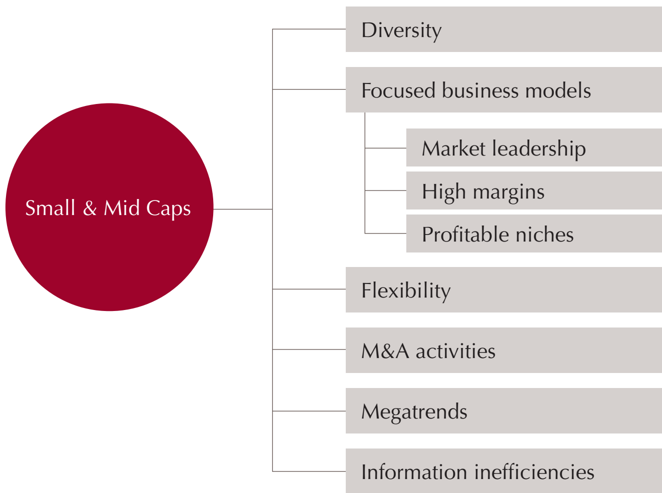


The chart shows the relative performance of the STOXX® Europe TMI Small against the STOXX® Europe 50 in the respective calendar year.
Sources: Bloomberg, own calculations; observation period 01/01/2000–31/03/2018

Basis for above-average performance: the key drivers

The European equity market is characterised by the large number of listed companies. However, investors still focus predominantly on large, well-known corporations like Nestlé, Total or Siemens and their portfolios are often dominated by large cap investments. In contrast, companies like Greencore, Nanogate or Outotec are only known to a few investors even though all three are leading providers in their respective fields (please also see the In focus section on "Market leaders almost no-one knows about..." on the following page). Yet it was exactly such small and mid caps that achieved above-average performance in balanced equity portfolios in the past.

4. Performance drivers of small and mid caps
An overview



Source: Lupus alpha. For illustration purposes only.

In focus: Market leaders almost no-one knows about...

greencore group

Ireland's Greencore Group is one of the world's leading producers of ready meals. The company emerged from the privatisation of Irish Sugar in 1991. Today it mainly operates in Great Britain and the United States of America with its 'food to go' (sandwiches, wraps, salads, sushi), convenience foods (chilled ready-made products, soups, quiches), cooking oil and trading in sugar syrup.

nanogate

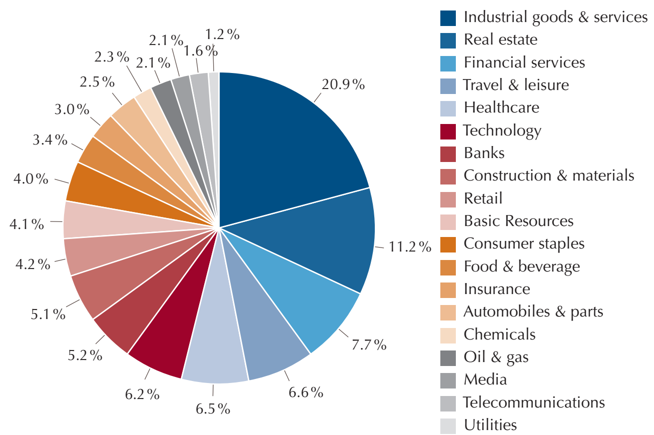
The Saarland-based company is an internationally leading provider of high-tech surfaces and plastic components. Nanogate provides companies in a wide range of sectors with technologically and optically high-quality solutions for surface finishing to give plastic and metal surfaces new functions and characteristics such as scratch resistance, UV protection and chemical resistance. The company has locations in Germany, the Netherlands, the USA, Austria and Slovakia.

Outotec

Outotec is a Finnish company specialising in plant engineering and production methods in metal and mineral extraction. Outotec develops technologies and services for sustainable use of natural resources, including procedures for processing and finishing iron and other ores. The company also offers solutions for industrial water purification, the use of alternative energy sources and the chemicals industry.

With a universe of more than 1,000 investable stocks, European small and mid caps offer significantly more opportunities for truly diversified investment than large caps. The largest sector within small and mid caps (Industrial goods & services) alone comprises a range of very different sub segments, from machine makers for beverage filling systems, classical machine tool manufacturers and payment services to packaging manufacturers for McDonald's, Subway and Starbucks.

5. Significant diversity a prerequisite for active diversification
Sectoral split of European small and mid caps



Sources: Bloomberg, own calculations; as at: 31/12/2017; as at: 31/12/2017

Focused business models

Most small and mid caps have a clearly focused business model. Even in the 2008/2009 crisis, many companies with good negotiation and pricing power as global market leaders in a niche could hold their ground very well. This strong position is generally reflected in higher margins. Many small and mid caps could also tap new markets in less-developed economic regions and establish themselves there with expertise gained over many years. Many large-cap companies face growing competition in these markets, whereas small and mid caps are generally less affected. The strategic promotion of some companies in developing and emerging markets by their respective governments is mainly concentrated on larger companies and therefore affects niches less.

Flexibility

Small and mid caps can react faster to both economic fluctuations and market trends, as their structures are leaner and decision paths are therefore shorter. In addition, small and mid caps are not so much in the political and public eye, which means they can make tough but necessary decisions more easily during downturns. The same applies during upturns, when they can quickly add the staff they need. What's more, this flexibility repeatedly means that small and medium-sized businesses do their homework well in advance. For example, many small and mid caps had already disposed of loss-makers, pushed forward with product development and tapped new markets before 2008. Many small and mid caps have also confronted the challenges of advancing digitalisation for production and operational processes at an early stage and successfully positioned themselves. A striking example of this is world-leading machine and equipment manufacturer Dürr and its Industry 4.0 project. On the other hand, payment services such as Wirecard only emerged and grew as a result of digitalisation. This flexibility will continue to be a decisive factor in the success of small and mid caps in the future.

M&A activities

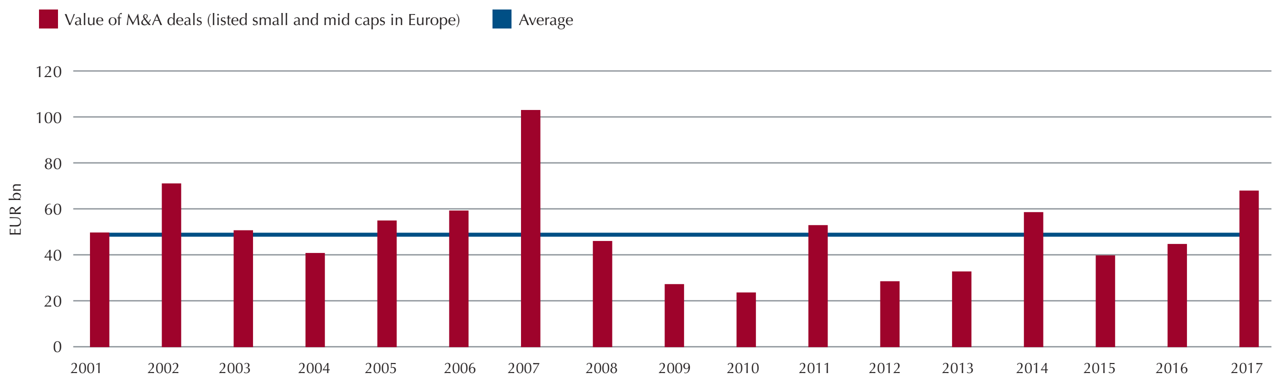
Large caps are always looking for up-and-coming smaller and medium-sized companies with which they can usefully complement their corporate strategy. The takeover premiums paid mostly range between 20% and 50%, making M&A activities a sustainable driver in the small and mid-cap sector.

While M&A volumes were below average for small and mid caps for a long time, there has been an increase in recent years that offers additional performance potential.

Megatrends and future technologies

Small and mid caps specialising in niches also benefit from megatrends: major societal and economic developments such as urbanisation, demographic change, digitalisation, access to and supply of foodstuffs and water. The issue of future technologies plays a particularly important role in this respect. Worth mentioning here, for example, are developments in 3D printing, robotics and technological development trends such as personalised medicine, autonomous driving and the Internet of Things. Technological trends typically

6. Mergers and acquisitions: volumes increase again
Value of M&A deals for listed small and mid caps in Europe



Sources: Bloomberg, own calculations; as at: 31/12/2017 start small, with small and mid caps often playing a leading role. As a result, the opportunities provided by a targeted investment in small and mid caps always involve their above-average participation in megatrends.

Information inefficiencies

The lower the market capitalisation of a stock, the fewer the analysts and investors who monitor it. This generates information inefficiencies that specialists can exploit. Regular company visits give them a good insight into processes within both companies and sectors. In addition, established market players almost always get access to the senior management (CEO and CFO) of small and mid caps and thus direct contact and dialogue with the company's strategic decision-makers. In contrast, with large caps it is generally only possible to contact them via their Investor Relations department, while the many levels of hierarchy mean investors can only exert a very indirect influence.

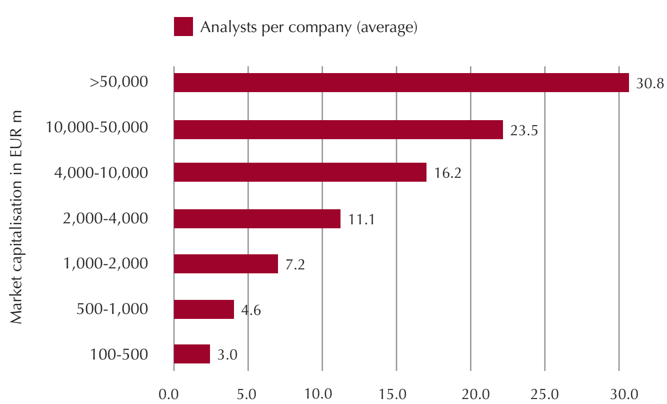
These drivers have ensured that small and mid caps were the performance engine in institutional equity portfolios Although the choice of single securities makes a smaller contribution to overall investment success than strategic asset allocation, a clear excess return (alpha) against the relevant index can be achieved through careful stock selection and active management, particularly in less information-efficient asset classes such as small and mid-cap equities (cf. “In focus: Small and mid caps - a case for active management” in this dossier).

Asset allocation with small and mid caps

The key to investment success is diversifying assets across various classes, i. e. strategic asset allocation. The effects of timing and the selection of single stocks are secondary factors. The prolonged period of low interest rates has led to clear shifts in the traditionally bond-heavy portfolios of institutional investors in Germany and Europe[3]. The share of bonds has been continuously falling since 2010, while real estate and alternative investments have experienced strong growth. Although the trend towards illiquid assets continues, equities as a liquid portfolio component play a key role in generating returns. In recent years, investors have increasingly diversified their equity portfolios, thus not only reducing their 'home bias' but also increasingly addressing special themes such as emerging markets, low volatility and small and mid-cap equities.

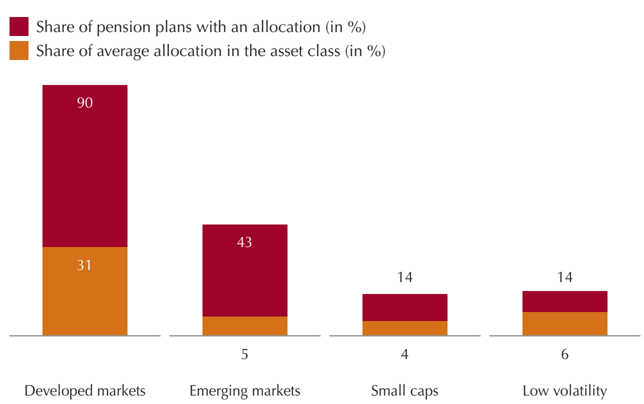
Another investor survey of a wider group of investors, which has been conducted by AXA in 2017, found that 80% of those surveyed worldwide

7. Small and mid caps: market with information inefficiencies
Smaller and medium-sized companies are less analysed



Sources: Bloomberg, own calculations; reference date 31/12/2017

8. Small and mid caps remain under-allocated
Strategic equity allocation of European pension plans



Source: Mercer Asset Allocation Survey 2017

[3]Source: Mercer Asset Allocation Survey 2017.

In focus:
Small and mid caps - a case for active management

For every asset class, the question of the fundamental choice between passive and active investment arises. Various studies conclude that there are essentially three factors, the interplay of which decides the success of active management:

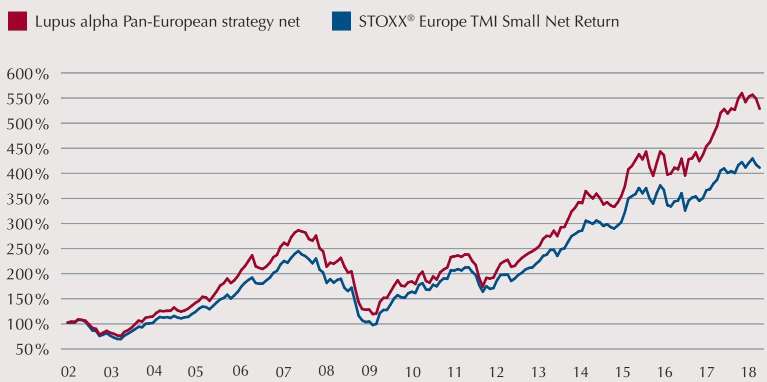
- Alpha potential
- Active share[4]
- Skill in selecting single stocks

The alpha potential indicates how high the likelihood is of achieving a positive active return in a particular asset class or market. This primarily depends on the dispersion[5]; that is, how differently stocks within an investment universe develop. The more aligned the development, the harder it is to obtain advantages from active management.

The active share is the degree to which a portfolio deviates from its benchmark and is therefore an indicator of how much the manager is following his own convictions. The selection of securities reflects the portfolio manager's skill. If the portfolio manager uses a high degree of freedom for a large active share and is also skilled at selecting stocks, all the prerequisites for successful active management are in place. At best, this enables higher returns and/or lower volatility compared with passive investment.

Small and mid caps clearly satisfy all three of these factors. Above all, markets and asset classes where there are information asymmetries exhibit particularly high dispersion. As shown, the number of analysts and investors declines and less information on the individual stocks is publicly available (cf. Figure 7). Small and mid caps thereby offer high alpha potential, which can particularly be exploited if an active manager makes regular corporate visits with access to top management. Moreover, European small and mid caps offer the portfolio manager a wide range of opportunities to make active investment decisions due to the size of the universe and the high number of stocks in the benchmark, which means that each stock only accounts for a low proportion of it. If the manager only includes high conviction stocks in the portfolio, this also increases the active share.

9. Outperformance through active management
Lupus alpha Pan-Europe: Performance since inception



Sources: Bloomberg, own calculations (representative mandate), monthly returns; observation period: 01/01/2002–31/03/2018. All performance data stated after costs in Euro

		Lupus alpha Pan-European strategy net	STOXX® Europe TMI Small Net Return
Performance p.a.			
since inception		10.78%	9.08%
5 years		14.06%	11.70%
3 years		8.49%	5.12%
1 year		7.11%	6.35%
Key risk figures			
Volatility 5 years		13.29%	12.27%
Max. drawdown 5 years		-10.89%	-13.35%

Sources: Bloomberg, own calculations (representative mandate), monthly returns; observation period: 01/01/2002–31/03/2018

[4]Cf. Antti Petajisto, Active Share and Mutual Fund Performance, 2013.
[5]Cf. Vanguard, Is Active Management More Challenging Than Ever?, October 2017.

In focus (continued): Small and mid Caps - a case for active management

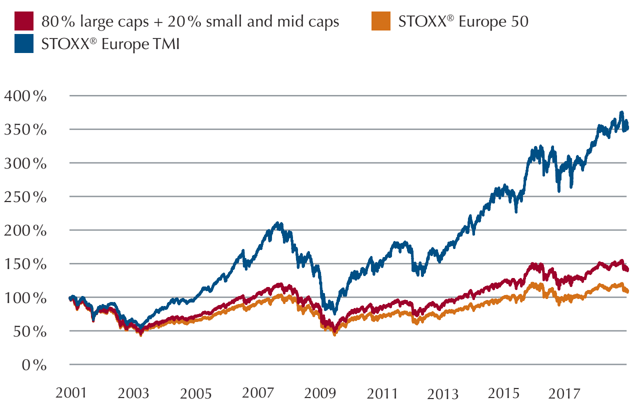
The asset class therefore provides the fundamental conditions for successful active management. In this segment, managers like Lupus alpha can target sustainable outperformance against the relevant small and mid cap indices and keep risks in check. Investors who want to effectively participate in the opportunities offered by the small and mid caps market segment need specialised processes and resources. Small and mid caps require an active management approach in order to do justice to the size of the investment universe, limited research coverage and focused business models.

already invest in small and mid-cap equities. The average allocation was between 6% and 10%[6]. If we consider that the share of European small and mid caps make up some 20% of the capitalisation of all European equities, most investors are therefore clearly far from a neutral allocation.

In order to determine the extent to which including small and mid cap equities makes sense in a strategic asset allocation, we consider an European equity portfolio with an allocation to European small and mid cap equities.
The following charts show that adding small and mid caps to an existing broad equity portfolio always improves the risk-return profile.
While returns increase because of the long-term outperformance of small and mid caps, the portfolio risk also falls slightly. This is explained by the lower volatility of small and mid caps in recent years as well as a correlation effect – albeit a minor one. The correlation coefficient over 5 years is 0.87.

The above examples were based solely on index performance. Additional returns (alpha) resulting from active management in the small and mid cap sector can improve the result even further.

10. Equity portfolio: results improve
Effect of adding small and mid caps



Sources: Bloomberg, own calculations; observation period: 01/01/2001–29/03/2018

[6]Source: AXA Market Commentary 12 June 2017. https://institutionelle.axa-im.de/de/content/-/asset_publisher/6J0xZuJIi6fp/content/investoreninteresse-an-small-caps-verdoppelt/25277; as at: 01/06/2018.

11. Better performance and lower risk
Adding small and mid caps to a large cap portfolio

	100 % STOXX® Europe TMI	100 % STOXX® Europe 50	80 % large caps + 20 % small and mid caps
Return p. a. 1 year	7.47 %	-2.81 %	-0.81 %
Return p. a. 3 years	5.12 %	-1.85 %	-0.43 %
Return p. a. 5 years	11.70 %	5.28 %	6.59 %
Return p. a. since 01/01/2001	7.59 %	0.58 %	2.09 %
ann. volatility p. a. 5 years	14.67 %	15.43 %	14.96 %
max. drawdown 5 years	-20.76 %	-26.88 %	-25.31 %

Sources: Bloomberg, own calculations; as at: 29/03/2018

In focus:
Investing sustainably in small and mid cap equities

For more than 15 years, Lupus alpha has been working closely with imug rating, a leading provider of sustainability research specialising in evaluating companies and governments according to sustainability criteria. imug rating is part of a worldwide network of independent research houses in cooperation with Vigeo Eiris. They offer tailored sustainability research based on the Vigeo Eiris database to more than 4,000 companies and over 200 governments and regional authorities. We signed the UNPRI in 2015. In managing our small and mid cap mandates, we implement ESG criteria at various levels:

- Integration
- Engagement
- Support through external research

We see taking ESG criteria into account as an integral part of portfolio risk management. Considering environmental risks, social standards and good corporate governance is a precondition for identifying high-quality stocks.

For ESG mandates, the investment process is complemented by an additional ESG screening using Vigeo Eiris data. This involves examining

In focus (continued):
Investing sustainably in small and mid cap equities

"Our corporate culture as an independent, partnership-led asset manager is clearly oriented towards sustainability. Lupus alpha has more than 15 years of experience with investment concepts using ethical sustainability investment criteria."

Ralf Lochmüller,
Partner Spokesman

250 detailed criteria in 60 areas, including environment, stakeholder relationships, governance, human rights and working conditions in the supply chain as well as so-called 'sins' such as armaments, alcohol, tobacco and gambling.

We demonstrate our engagement by maintaining an active dialogue with companies, taking part in general meetings and proxy voting. We only invest in companies whose strategy and management we are convinced of in the long term. Hence, active negotiation at shareholder meetings or a vote against management is only required on a case-by-case basis. Outside of shareholder meetings, portfolio managers also proactively address SRI issues in company meetings. By maintaining close contact with the companies, we work towards resolving known problem areas as much as possible. We also use on-site visits to gain an overview of how these issues are being tackled.

Implementing individual approaches

For segregated accounts and mandates, all criteria can be individually defined and the ESG strategy parameterised. This means that positive criteria can also be used alongside exclusion criteria. A notable example would be the 17 'Sustainable Development Goals' of the United Nations[7]. The Sustainable Goods & Services approach of imug/Vigeo Eiris helps measure companies' contribution to the Sustainable Development Goals with corresponding scoring, which can, for example, be implemented as part of a best-in-class approach.

[7] https://www.un.org/sustainabledevelopment/sustainable-development-goals/; as at: May 2018.

Our investment process for European small and mid caps

"By maintaining contact with companies and conducting on-site visits, Lupus alpha's Small & Mid Cap team is always very close to the individual firms. The depth at which the team engages with the company is at the heart of our bottom-up investment process."

Marcus Ratz, Partner, Portfolio Management Small & Mid Caps Europe

Active by conviction and with comprehensive experience in the small and mid caps segment, Lupus alpha has an investment process that has been tried and tested over many years. It aims to analyse small and mid-cap companies across Europe in detail and thereby identify assets where above-average performance is expected. Lupus alpha utilizes a bottom-up approach to selecting securities, whereby every investment decision is made based on variables and assessments specific to the individual stock. Intense conversations with the management of the identified companies and on-site visits are of pivotal importance to decision-making.

The investment philosophy of Lupus alpha

- **Exploiting opportunities arising from information inefficiencies**

  Lupus alpha focuses on European small and mid caps, because this special market segment is characterised by information inefficiencies. These can be capitalised upon using expert research and deep fundamental analysis.

- **Active portfolio management**

  Active portfolio management is a clear priority. Only portfolio managers who deviate from consensus based on sound knowledge can exploit market opportunities. As a result, following benchmarks is a secondary consideration.

- **Product clarity and focus**

  Clarity and transparency towards the investor are paramount at Lupus alpha. Lupus alpha's strategies are clearly focused on particular segments so that investors can decide for themselves how much of each asset class they wish to include within their overall allocation.

- **Performance responsibility is indivisible**

  Responsibility for performance is personalized. This means that every investor knows which portfolio manager is in charge of their fund or strategy.

- **Convinced of the asset class**

  To bring these principles to life, a team must not only contribute the necessary expertise but also be enthusiastic about the asset class. This passion is an integral part of our corporate philosophy.

- **Consistent process orientation**

  Once a decision to buy or sell has been taken, it is rapidly and consistently implemented. Strict process orientation puts Lupus alpha in a position to react flexibly to changing market conditions.

12. How Lupus alpha invests
Overview of small and mid caps investment process

Source: Lupus alpha. For illustrative purposes only

The small and mid cap investment process at Lupus alpha includes all stages from research all the way through actual portfolio management and its sub-functions to portfolio controlling. The different steps in the process are strictly defined and consistently interconnected at the interfaces.

Research and analysis

Company-specific research and analysis is the core element of the investment process. This research and analysis focuses on personal conversations with the management of the companies we analyse. The

In focus:
On site with BRAIN AG

Dr. Jürgen Eck, CEO of BRAIN AG, and Björn Glück, CFA, Portfolio Management Small & Mid Caps Europe

Since BRAIN AG was founded in 1993, the company has developed into one of the leading players in the white biotechnology sector. The company uses biodiversity to produce innovative products for applications in chemistry, cosmetics and the food industry. The share price has more than doubled since the initial public offering in 2016, equivalent to a performance of more than 60% p.a. The enterprise value of the company has risen from EUR 176.7 million in 2016 to more than EUR 355 million at the end of 2017 – with revenue of around EUR 26 million. Experts in politics, economics and science agree that the era of bioeconomics started long ago and the biologisation of industry is in full swing. Björn Glück discussed this with Dr. Jürgen Eck, CEO of BRAIN AG, during a company visit.

What do we mean by bioeconomics? What is the relationship between this concept and industrial biotechnology?

Dr. Eck: Bioeconomics describes the transition to a sustainable type of economics: sustainable in the sense that it comprises renewable resources or new products with a biological background. The innovation driver of all this is what is known as industrial or white biotechnology. This is exactly what we practise at BRAIN every day.

In focus (continued):
On site with BRAIN AG

What exactly is BRAIN AG's business model, and how do you bring the products you make to the market?

Dr. Eck: At BRAIN we work on new products and new procedures with the help of innovative technologies. These are based on biological and sustainable solutions that are not only energy-efficient but also resource-efficient. We use nature's toolbox in the form of enzymes, micro-organisms and natural substances. The products we develop and produce are then either sold by a BRAIN Group company directly to our clients or we bring them to the market in collaboration with external partners and licence holders.

Could you give us an example of the partnerships you've just mentioned and explain what this collaboration involves?

Dr. Eck: Last year we concluded a partnership for a programme to develop a biological sweetener. We then sought a partner for the production and delivery aspects of this natural sweetener and found Roquette in France. We also concluded partnerships last year with large consumer goods companies that want to use this new biological sweetener in their products.

What is the motivation for BRAIN AG to research and manufacture biotechnological products and bring them to the market?

Dr. Eck: The most exciting part is that we can not only participate in biologisation but can actively shape it too. This means that we can turn some things completely on their head with our biological products in both consumer goods and technical applications, thus driving the modern bioeconomy forward.

Are you convinced that the bioeconomy has the potential to produce further marketable innovations?

Dr. Eck: Certainly – if you consider that today we have identified micro-organisms that can produce bioplastics with nothing more than CO_2 as a source of raw materials and others that can isolate gold from all potential sources without chemistry, which is already absolutely astounding. Even a few years ago, the idea of being able to develop an innovative and tasty natural product that strengthens the sweetness of normal sugar and thereby reduces the sugar content of a meal or drink without compromising on taste would have seemed almost impossible. That's why even I am surprised at all that we have achieved with bioeconomics in recent years.

13. Assessment levels for individual stock analysis

Management

Market environment/position

Results

Fundamental valuation of the company

Market valuation

Assessment of price potential

Source: Lupus alpha. For illustrative purposes only

team has around 1,000 contacts with companies each year. To identify the stocks for which above-average performance can be expected, individual companies are analysed on two levels. The first level determines the fundamental quality of the company. Earnings trends are analysed using key indicators such as EBITDA, EBIT and net profit, which are determined and forecasted based on the balance sheet, P&L and cash flow statement. Beyond these quantitative variables, the company is also assessed in qualitative terms by critically evaluating the market environment and market position of the company in question as well as its management on the ground. The second level involves assessing the attractiveness of the company in relation to its market valuation. The valuation of a company is based on many criteria and key figures such as the P/E ratio, market capitalisation/turnover, market capitalisation/book value, ROI and return on equity.

Portfolio construction

The weightings of individual stocks are actively determined as part of the portfolio construction process. The initial weightings of individual equities are systematically derived from quantitative and qualitative factors resulting from the research &

14. Overview of portfolio construction

Stock ranking

Single security	Country breakdown	Sector breakdown (for information only)
– Minimum weighting 1%[1] – Maximum weighting 3%[1] – Number of stocks c. 60–80	– Deviation of country allocation from the benchmark up to +/–10 percentage points	– Deviation of sector allocation from the benchmark

Target portfolio

Portfolio analysis regarding volatility, portfolio beta, tracking error

Source: Lupus alpha. For illustration only [1]For initial investments.

analysis process. The decisive element is the fundamental assessment of the individual stock, taking liquidity into account.

"Long before 'high conviction' was a buzzword, at Lupus alpha we built portfolios exclusively from stocks that we were convinced about. Fundamental analysis is always the decisive factor. The index is only used for comparative purposes."

Peter C. Conzatti,
Portfolio Management
Small & Mid Caps Europe

The country and sector allocation result entirely from the single stock selection, both are residual factors. While this means that portfolio managers examine the origins of any significant deviations from the index, this does not necessarily mean that the allocation is adjusted. Overall, the portfolios comprise some 60 to 80 individual positions in our long-only strategies. The benchmark plays only a minor and purely informative role in portfolio construction. Our quality ranking means that the highest-ranked equities have higher weightings relative to the benchmark, while stocks towards the bottom of the assessment scale are not included.

Portfolio implementation

Portfolio implementation comprises all steps that are taken to implement the target portfolio allocation (model portfolio) in the actual portfolio. Here too, specialised procedures for small and mid cap stocks pose particular challenges for portfolio management and trading.

The experts at Lupus alpha therefore emphasise complete quality control during the portfolio implementation process. After checking the predefined investment restrictions from the portfolio management system, an order list is automatically generated and submitted. Orders are sent to external brokers based on a broker list agreed with the investment management company. The selection and regular monitoring of the listed brokers is based on defined criteria such as research quality, market position of the broker, best execution and execution expertise. In trading, execution of orders in the small and mid cap segment requires in-depth market knowledge and sensitivity to minimise market impact and ensure efficient execution.

Portfolio controlling

As part of a comprehensive approach, to us portfolio controlling means all measures of planning, managing and monitoring the portfolio that serve to manage the risks of the portfolio. Portfolio controlling involves a two-stage quality-assured process consisting of portfolio risk management and portfolio surveillance.

The responsible portfolio manager carries out portfolio screening and portfolio risk management. At the individual stock level, business development data is regularly updated and adherence to milestones reviewed.

At the fund level, key performance indicators (e.g. average P/E ratio, average dividend returns etc.) are continuously analysed. Individual stock and country allocations in the funds are constantly checked and adjusted as needed. The relative strengths of the stocks are then controlled.
If a stock underperforms the benchmark by 10%, it is put on watch and a new assessment is carried out (see section on "Sell discipline" below).
Both legal and contractual investment restrictions are checked ex ante and monitored (in collaboration with Compliance).

Portfolio surveillance, which is undertaken by Middle Office and Risk Management, includes the preparation of risk analyses (separation of duties), deviation analyses such as maximum single stock weighting, as well as calculations of the value at risk and various ex-post key risk figures (e.g. information ratio) for the model and client portfolio, checking/monitoring of the order process (settlement) and ex-post checking/monitoring of both legal and contractual investment restrictions.

For risk analysis and risk management, the SimCorp Dimension, FactSet and RiskMetrics systems are used in particular.

Sell discipline

Portfolio management follows a strict sell discipline: If a stock clearly underperforms its benchmark, it is put on the watchlist. If the underperformance against the benchmark persists for a prolonged period, the fund managers check their assessment. Thus it is ensured that underperformance always leads to a reassessment of the position. Either the market is recognising a weakness in the stock that we did not identify in the fundamental analysis, in which case a critical review is followed by reassessment and sale of the position. Else the market is overreacting (e. g. because of a correlation with other markets or comparable companies), and we still view the stock as attractive. In this case, the position can be maintained or even increased.

This consistent process protects us from holding loss-making securities for too long because we carry out institutionalised checks on our own decisions. This strict sell discipline, combined with active management, thus lowers the risk of high losses against the benchmark that are linked to individual securities.

Specialisation and experience – our team for European small and mid caps

Lupus alpha has one of the biggest portfolio management teams in Europe in the small and mid cap sector. A large and focused team is crucial to success given the size of the investable universe and the active, fundamental stockpicking approach focusing on personal contact with the companies.

"Small and mid cap portfolios require committed, active managers and disciplined risk management. All procedures must be optimised to suit the particular requirements, from the idea generation to the execution of the trade."

Dr. Götz Albert,
CFA, Head of Portfolio Management
Small & Mid Caps Europe

Whereas the equity teams at many other companies see small and mid caps as a sideline, our nine-strong team specialises exclusively in small and mid caps. An average of 1,000 points of contact with companies each year make our portfolio managers true specialists in their field. With an average investment experience of 18 years, they bring almost unique experience in this segment to their work. Our team has grown over many years and works together well: for example, small and mid cap experts Marcus Ratz and Franz Führer have been with Lupus alpha since its inception. The whole team is united by its fascination with and passion for small and mid caps.

15. Considerable experience and clear specialisation
The Lupus alpha portfolio management team for Small & Mid Caps

Dr. Götz Albert, CFA
Head of Small & Mid Caps
Economics graduate
Investment experience: 19 years

Marcus Ratz
Portfolio Management
Responsible for:
Scandinavia, Ireland, France
Investment experience: 19 years

Gerald Rössel, CFA
Portfolio Management
Responsible for:
United Kingdom
Investment experience: 19 years

Franz Führer
Portfolio Management
Responsible for:
Southern Europe, Austria
Investment experience: 18 years

Björn Glück, CFA
Portfolio Management
Responsible for:
Germany, Switzerland
Investment experience: 13 years

Peter C. Conzatti
Portfolio Management
Responsible for:
Germany
Investment experience: 28 years

Matthias Rosenberger
Portfolio Implementation
Business economist
Investment experience: 18 years

Heiko Felzmann
Portfolio Implementation
Banker
Investment experience: 20 years

How to invest with Lupus alpha

"Access the performance contribution of European small and mid caps in a focused way. We offer long-only strategies with a specialised regional focus, ESG approaches, tailored equity exposure management, long-short or an innovative dividend strategy."

Gerald Rössel, CFA, Portfolio Management & Research Small & Mid Caps Europe

To meet the investment needs and individual risk-return profiles of our investors, Lupus alpha offers various investment approaches. The many advantages of investing in the small and mid cap asset class with Lupus alpha can be tailor made to fit the client portfolio depending on the investor profile and available risk budget.

Lupus alpha's long-only strategies – investing in its purest form

Our long-only approaches offer the pure form of investment in small and mid caps to harvest the corresponding risk premium plus alpha. We strive for an investment ratio of nearly 100% regardless of

16. Tailor made investment solutions
Overview of Lupus alpha's small and mid-cap strategies

Long only	Defensive	Opportunistic
Small & Mid Caps (Europe/Eurozone/Germany)	**Small & Mid Caps Equity exposure management** (Europe/Eurozone/Germany)	**Lupus alpha All Opportunities Fund**
Small & Mid Caps ESG (Europe/Eurozone/Germany)	**Lupus alpha Dividend Champions**	
Lupus alpha Pan European Smaller Companies		
Lupus alpha Smaller Euro Champions		
Lupus alpha Smaller German Champions		

Source: Lupus alpha. For illustrative purposes only

the market environment. While this means investors benefit fully from the diverse opportunities of this attractive asset class, it also means that they take on the full scope of the corresponding risk of investing in equities.

With this strategy, we target an outperformance against the benchmark of 2% to 2.5% p. a. after costs.

We offer our investors long-only strategies on a differentiated and clearly delineated basis for various investment regions: Germany, the Eurozone and Pan-Europe. The Germany and Eurozone regions (cf. Figure 16) are suited to investors who are unwilling or unable to be exposed to any foreign exchange risk.

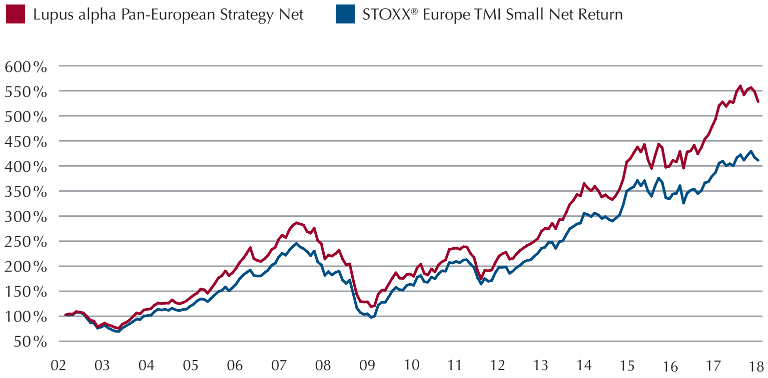
Pan-Europe (cf. Figure 17) offers comprehensive coverage of the European small and mid cap universe, with a significant proportion of foreign currency exposure as an additional diversification element for broader investments.

Long, successful track record

As a pioneer in the small and mid caps space, Lupus alpha has a sound, successful track record across Europe, in the Eurozone and Germany since 2001/2002. Here, we provide an overview of the history of our Pan-European strategy, as this is the largest universe and the approach with the highest volume.

Our long-only mandates – whether mutual funds or segregated accounts– are suited to investors who include small and mid caps as a permanent component within their strategic asset allocation to harvest the attractive risk premiums, or for those who make their own tactical allocation decisions and are looking for a strictly managed equity strategy with full exposure and alpha potential.

17. Long-standing, convincing track record
Performance of Pan-European strategy since 2002 inception



Sources: Bloomberg, own calculations (representative mandate), monthly returns; observation period: 01/01/2002–31/03/2018. All performance data stated after costs in Euro

	Lupus alpha Pan-European Strategy Net	STOXX® Europe TMI Small Net Return
Performance p.a.		
Since inception	10.78%	9.08%
5 years	14.06%	11.70%
3 years	8.49%	5.12%
1 year	7.11%	6.35%
Key risk figures		
Volatility 5 years	13.29%	12.27%
Max. drawdown 5 years	-10.89%	-13.35%

Sources: Bloomberg, own calculations (representative mandate), monthly returns; observation period: 01/01/2002–31/03/2018

The investor's risk budget should be able to tolerate the corresponding variations. For this reason, the investment horizon should, as for other equity investments, be at least medium term. This enables temporary market fluctuations to be balanced out over time and allows the advantages of an investment in small and mid caps to be exploited effectively.

Lupus alpha has implemented sustainable investment approaches in small and mid cap equity mandates for many years. If desired, individual requirements regarding ESG criteria can be factored in. To do this, we base company analysis on our own, strict standards and work together with renowned ESG research company Vigeo Eiris.

Equity exposure management strategies – for individually determinable participation

Many investors want to benefit from the attractiveness and advantages of small and mid caps, but cannot tolerate the fluctuations (volatility) and potential price setbacks (drawdowns) of pure equity investments or do not want to sacrifice previous gains. Our equity exposure management concept aims to reduce market fluctuations for investments in small and mid caps and stabilise performance over the long-term.

The combination of fundamental research for stock selection and active, risk-controlled portfolio management creates added value for investors in the long run. As the concept allows rapid reactions to political, economic or business developments, i. e. to adjust the equity allocation in order to reflect current market conditions, major losses can be avoided during periods of significant market weakness, while attractive returns can be generated in strong markets participating in the performance of small and mid caps. Investors' individual needs can also be taken into account at all times.

The equity allocation can be managed according to the following parameters:

- Floor value
- Risk budget
- Accumulated profit (e.g. if internal discount rate was achieved)
- Drawdown level

The above list gives examples of criteria which, in cooperation with the investor, can lead to adjustments to the equity allocation. The selection of single stocks for the equity component is based on the long-standing and renowned expertise of our portfolio managers and follows the same approach as our long-only mandates.

Our equity exposure management concept is particularly suited to investors who want to benefit from the attractive features of the small and mid cap asset class and the existing alpha opportunities, yet do not have a risk budget for investment in a pure long-only mandate. Of course, equity exposure management is also available for the three investment regions of Germany, the Eurozone and Pan-Europe, as well as in combination with an ESG approach.

Dividend strategies – for steady returns and lower risk

Concentrating specifically on those equities from the attractive investment universe of European small and mid caps, which can produce long-term, continuous as well as prospective dividend streams, gives the investor a stable, lower-risk yet strongly performing equity portfolio. Regular dividend cash flows can also represent an alternative to interest income from bonds.

From a historical perspective, dividends contribute between 40% and 70% to the overall performance of an equity investment depending on the market environment. Over the long term, solid dividend payments also reflect a stable and consistently profitable business model with high stress resistance and independence from the economic cycle. In this respect, it helps to identify future-oriented companies that have already proved themselves in the crises of previous years and have a high probability of doing so again by examining their dividend policy.

The Lupus alpha Dividend Champions fund combines the outperformance opportunities of small and mid caps with the advantages of attractive and stable dividend yields. Our portfolio managers have developed an analysis filter that ultimately helps reduce the entire European small and mid-cap investment universe to a smaller selection of potential investments (c. 80 to 100 securities). The catalogue of strict criteria means that every company in the fund is a top-quality firm with a strong balance sheet, low debt, a crisis-proof business model and long-term stable dividend payments.

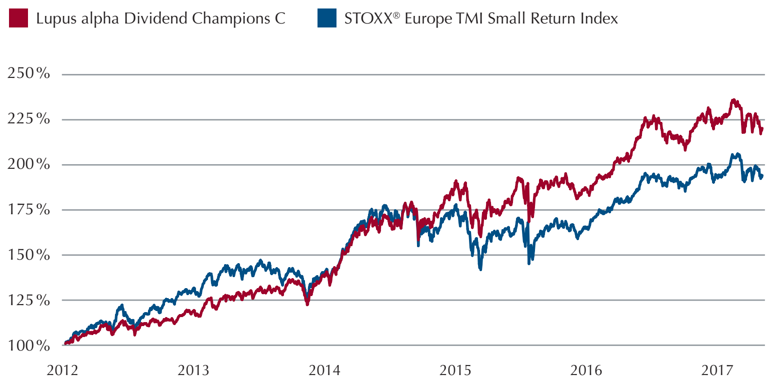
The following criteria must be met:

- Reduction in dividend payments over the past ten years: max. 15%
- Continuous dividend payments: for at least five years
- Reduction in revenue over the past ten years: max. 30%
- Positive net income: in each of the last ten years
- Equity, adjusted for goodwill: at least 33%

Our filter therefore categorically excludes investments in companies that make dividend payments at the cost of their capital; in other words, without maintaining a crisis-proof and future-oriented business model. As the filter is applied consistently and not just for the initial stock selection, it also serves as a permanent risk control system. If a company in which we have already invested fails to meet our criteria at any given point in time, this triggers a sale. At last, our portfolio managers carry out a fundamental, qualitative assessment to select the most suitable companies.

The result is a concentrated, volatility-resistant portfolio of around 30 to 35 stocks, which in the past has regularly outperformed in months of negative performance of the small and mid cap segment. This is because the earnings of stocks that meet the strict investment criteria were less strongly affected than the wider market during periods of economic weakness. Steady long-term cash flows lead to lower portfolio volatility and a fund beta of

18. Risk reduction through dividend approach
Dividend strategy performance since inception



Sources: Bloomberg, own calculations; as at: 29/03/2018

	Lupus alpha Dividend Champions C	STOXX® Europe TMI Small Return Index
Performance p. a.		
1 year	7.20 %	7.47 %
3 years	10.92 %	5.46 %
5 years	14.80 %	11.70 %
Since inception	16.00 %	13.25 %
Volatility 5 years	13.77 %	14.99 %
Max. drawdown 5 years	-16.35 %	-20.76 %
Beta	0.82	

Sources: Bloomberg, own calculations; observation period: 05/12/2012–29/03/2018

less than 1. This also means that the portfolio will usually underperform the broader market during economically and above all liquidity-driven bull markets. Over several economic and market cycles, however, the performance opportunities of small and mid caps, with their reduced volatility and lower expected drawdowns, can be exploited. **Lupus alpha Dividend Champions therefore is particularly suited for investors who want to benefit from the potential returns of small and mid caps yet strive for lower volatility (beta) and would like to generate a higher, steady profit. Moreover, a stable, fundamentally strong and long-term equity portfolio saves them having to make short-term timing decisions when market and economic conditions change.**

Investing opportunistically with lower beta

In our investment universe of around 1,000 investable European small and mid cap equities, our in-depth knowledge of the companies, their market position and the current market environment, means we find attractive and interesting investment opportunities time and again – through particular events and also on the short side – regardless of current stock market conditions. In a market segment monitored by far fewer investors and analysts, inefficiencies emerge that can be exploited to our clients' advantage.

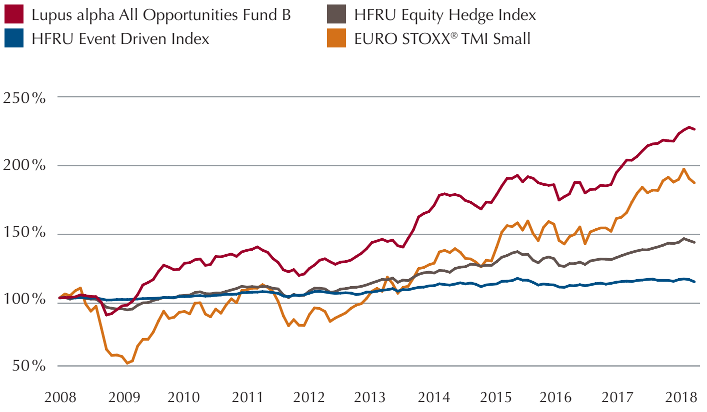
In the Lupus alpha All Opportunities Fund, we pursue an opportunistic strategy that can profit flexibly from all the opportunities that arise, regardless of overall market trends or a benchmark. Using a combination of various individual strategies and building blocks also means that the portfolio manager can implement ideas that would not be feasible within a traditional long-only strategy.

As a result, equity over- and undervaluations can be profitably exploited using pair trades or opportunistic long and short positions. In addition, investments can be made targeting particular events or situations ('special situations') such as spin-offs,

"Participate in the alpha potential of this attractive asset class with lower variation: With its long-standing experience, Lupus alpha uses the combination of long and short investments for small and mid cap investors seeking lower beta."

Franz Führer,
Portfolio Management
Small & Mid Caps Europe

19. Long-standing, convincing track record
Performance since inception



Sources: Bloomberg, own calculations, monthly returns; observation period: 31/01/2008–31/03/2018

	Lupus alpha All Oppor-tunities Fund B	HFRU Event Driven Index	HFRU Eq-uity Hedge Index	EURO STOXX® TMI Small
1 year	11.35%	-0.14%	5.47%	8.38%
3 years	6.07%	-0.13%	2.43%	6.48%
5 years	9.43%	1.16%	4.43%	12.07%
Since 31/01/2008	8.32%	1.12%	3.46%	6.27%
Volatility 5 years	7.58%	2.81%	4.52%	12.74%
Max. drawdown	-9.62%	-5.84%	-8.20%	-10.91%
Beta	0.31			

Sources: Bloomberg, own calculations, monthly returns; observation period: 31/01/2008–31/03/2018

dividend strategies or IPOs. If necessary, the portfolio can be hedged against falling prices or the equity exposure reduced if market turbulence arises. Thus the strategy can benefit from the performance drivers of small and mid caps without being exposed to the full risk of the equity investment. Each investment idea is considered separately using its risk-reward ratio and is only implemented with careful assessment and conviction.

Here too, our research is based on personal contact with the companies and detailed knowledge of the entire market segment. The most important requirements for the success of the Lupus alpha All Opportunities Fund are following strict guidelines concerning the weighting of single positions in the portfolio, carrying out active risk management, and the long-standing expertise of our Small & Mid Cap team.

Only in this way is it ultimately possible to achieve attractive returns from all the different investment ideas with much lower volatility and a significantly lower beta compared to the overall small and mid cap segment.

The strategy of the Lupus alpha All Opportunities Fund is particularly suited to investors who want to benefit flexibly from the opportunities of small and mid caps and thereby seek a more defensive and adaptable strategy (low beta approach).

Would you like further information about allocation of small and mid-cap strategies?

Get in touch with your dedicated contacts:

Ralf Lochmüller
Partner Spokesman

ralf.lochmueller@lupusalpha.de

Oliver Böttger
Partner, Senior Relationship Manager

oliver.boettger@lupusalpha.de

Pascale-Céline Cadix
Senior Relationship Manager

pascale.cadix@lupusalpha.de

Anke Floeth
Client Services

anke.floeth@lupusalpha.de

Laurin Regel
Client Services

laurin.regel@lupusalpha.de

Dejan Saravanja
Senior Relationship Manager

dejan.saravanja@lupusalpha.de

Benjamin Wendel
Relationship Manager

benjamin.wendel@lupusalpha.de

Dr. Markus Zuber
Partner, Senior Relationship Manager

markus.zuber@lupusalpha.de

You can reach the Clients & Markets Team
at Lupus alpha by calling
+49 69 365058-7000.

www.lupusalpha.com

Disclaimer: