

MIMS – Long-Short Equity Fund

Portfolio Management Team

Report – May 2022

Fund description

MIMS – Long Short Equity Fund is an actively-managed fund by Minerva Investment Management Society, based on a zero-net investment ‘multi-factor’ strategy. The Fund has the investment objective of achieving a positive absolute return, through long-term capital appreciation.

Market update

- The last few weeks have shown a weak earnings season, particularly in the technology sector, with all FAANG companies experiencing a significant decrease, due to disappointing results. The main drivers of poor earnings have been both inflationary pressures and central banks’ interest rate hikes, which have negatively impacted the NASDAQ Composite by over 13% in the last month. The S&P 500 has also dropped by over 8% over the same period.

- On the 4th of May, the Federal Reserve increased its benchmark interest rate by half a percentage point, which marked the highest single hike since 2000. However, the move had been anticipated by the market and more hikes are expected over the next few months, in its fight against a 40-year high in inflation. On the other side of the Atlantic, the European Central Bank has been slower to react, due to fears that increasing borrowing costs might pose a serious challenge to governments in more indebted countries.

- Global supply chains, which never fully recovered from the pandemic, have been severely affected by the Russia-Ukraine war and also by successive lockdowns in China. As a consequence of these geopolitical turmoils and supply chain bottlenecks, commodity prices have also been on the rise. In particular, energy prices have surged, with Brent crude futures fluctuating around \$110. Natural gas prices have also increased dramatically in Europe, due to the overreliance on Russian supply. As the European Union announced plans to reduce its energy dependence on Russia, Gazprom suspended gas supplies to Bulgaria and Poland.

- Many consumers and businesses fear a recession, with the University of Michigan Consumer Sentiment Index recording a decrease since the start of the war. Such fear is backed by the underperformance of the US GDP in the first quarter, which shrank at an annualized rate of 1.4% QoQ.



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Factor Investing Strategy

VALUE	MOMENTUM
QUALITY	VOLATILITY
SIZE	ESG

3 steps Investment Approach

Multi Factor Analysis

Fundamental metrics are identified that best proxy each of the 6 factors on which the investment style is grounded.

The process involves theoretical-based frameworks as well as empirical evaluations. Cross-team expertise and Minerva IMS insights are deployed.

Screening and Normalization

Stocks are evaluated on the basis of their exposure to each single factor. Through a 3-step Winsorization test, outliers are discarded with reference to each factor.

The output of the process is a synthetic score, on the basis of which stocks are ranked.

Strategic Asset Allocation

Portfolio allocation comes to live. Based on the ranking produced, long and short positions are taken accordingly.

Macro environment is always monitored. Significant changes may lead to reconsider the chosen set of factors, or their weights, thus affecting the first step of the process.

Investment Approach

The Fund uses a «multi-factor» based investment style adopting a quantitative proprietary model in order to achieve a systematic, rules-based approach to stock selection. Stocks are selected from the broad US Equity market (S&P 500 Index) and the European Equity market (Euro STOXX 600 Index).

A score is produced with reference to each considered style factor: (1) 'value' (stocks with lower price-to-book ratio and lower EV/EBITDA than peers); (2) 'momentum' (investments with relatively strong recent performance); (3) 'quality' (as reflected by indicators such as ROE and the difference between consensus forward and trailing EPS); (4) low idiosyncratic volatility; (5) size (in terms of market float); (6) ESG factor (as conveyed by Thomson Reuters ESG Score). A systematic procedure is implemented to isolate and discard the most extreme stocks with reference to each single factor. Each factor is given equal weight in the process of building a final score for each stock. Sector-neutrality is partially considered: the model can in fact take larger long or short positions in certain sectors, but only within defined limits.

Factor Analysis

In rebalancing the previous portfolio and building the new one, we decided to maintain the foregoing set of factors, as the motivations that led us to select them in our view are still valid.

Specifically, we stand behind our decision of including the Value factor. Indeed, eventual future interest rates hikes would hurt growth stocks more than value ones, since their expected cash flows are further away in the future. Moreover, the disruption in supply chains and geopolitical tensions usually take more of a toll on growth stocks than value stocks.

The interest rate hikes and high inflation also tend to benefit value stocks, as consumers cannot significantly reduce their spending in basic goods and utilities such as food and electricity, even in the occurrence of large price increases.

We believe this updated model to be able to choose stocks coherently with the macroeconomic scenario we expect, while not seeking excessive risk

Fund Factors

Value Factors (Buy cheap, Sell expensive)

- Price-to-Book Value (P/BV): following the broad evidence provided by existing literature (e.g., Fama-French (1993)), we regard a high P/BV as a signal of relative overvaluation. We thus consider it as a selling indicator, since it shows that the company's equity is very expensive if compared with its underlying book value.

- EV/EBITDA: we regard a high EV/EBITDA as a selling signal, because it shows that the company is not able to generate a satisfactory level of profits if compared to the value of the assets used to generate such profits.

Momentum Factor (Buy recently best-performing stocks, Sell worst-performing stocks)

- MOM: following the evidence provided by Jegadeesh and Titman (1993) and Asness (1994), we consider momentum, defined as the sum of the 12 monthly returns preceding the last one divided by 11, as a buy signal. In practice, we assume that the stocks that had a recent high average return will keep doing well in the future. In other words, we assume that the market will not invert its trend soon.

Quality Factors (Buy high-quality stocks, sell low-quality stocks)

- FW 12m EPS-Trailing EPS: a higher value of this metric represents a buy signal. Although not widespread, we introduced this factor in order to capture analysts' views (analysts' revisions) on the future of the company. It is indeed computed as the difference between the future twelve-months EPS forecasted by analysts and the trailing twelve-months recorded. We thus assume that a high positive value of this indicator will be associated with a stock price increase, as the stock price will mirror the future earnings' behavior.
- ROE: we consider a high ROE, normalized for industry influence, as a signal of high profitability, and, thus, a buy signal. Specifically, we are assuming that investors' profitability will maintain its trend in the future and will be a reliable driver of future increases in stock prices.

Volatility Factor (Buy low volatility, Sell high volatility)

- Standard deviation: we deem a higher standard deviation to be a selling signal, since it reveals a riskier situation where returns are less stable, and, consequently, less predictable.

Size Factor (Buy small-cap, Sell large-cap)

- Free-Float Market Capitalization: a lower market cap is assumed to be a buy signal, since small-cap stocks have historically shown relatively better performances than large-cap stocks (see Banz (1981), Reinganum (1981) for empirical evidence in the academic literature).

ESG Factor

- Thomson Reuters ESG Combined Score: we assume a higher ESG score to be a positive signal, since it reveals more attention to the sustainability of a firm. Although this factor has still few data recorded, market evidence suggests that, in the long run, a higher ESG score allows sustainable investments to perform equally or even better than traditional ones, showing an improvement in the long-term risk-adjusted returns.

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Portfolio Composition

The rebalancing of the long-short portfolio consists in buying stocks with the highest total score and short-selling stocks with the lowest while liquidating all our previous positions.

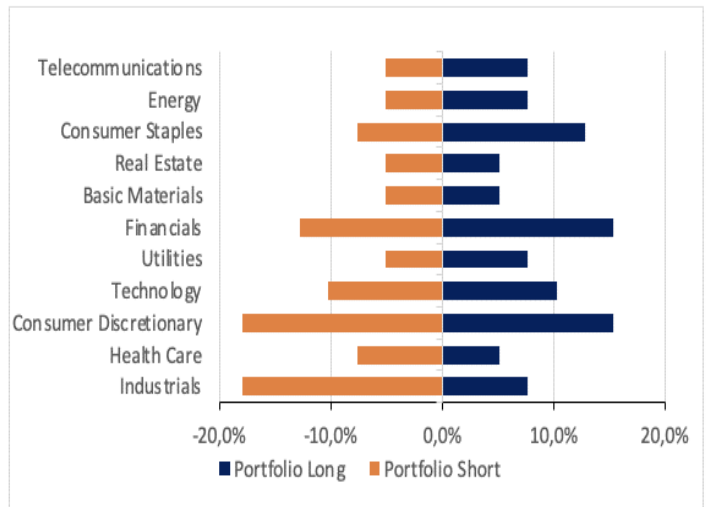
The total score for each security is an equally-weighted average of the final factors' scores that each stock has registered, after having applied the Winsorization technique and the data normalization procedure.

The equally-weighted scheme has been adopted in order to preserve the identity of the factor. In this way, we avoided the possible drawbacks that optimization techniques, such as the ones based on the mean-variance approach, could have caused to our portfolio.

Finally, consistently with the previous rebalancing of the portfolio, a «semi» sector neutrality has been implemented. Indeed, a cap of 18% has been applied to all sectors in order to avoid excessive over-/under-exposure either in the short or in the long leg of our strategy without altering significantly the inherent philosophy of the model. We consider this to be an optimal compromise in the balancing of two opposite necessities. Furthermore, to benefit from additional diversification this solution has been applied in such a way to obtain exposure in all sectors of at least 5%.

It is important to stress that the above-mentioned procedure did not involve stock-picking of any kind. In fact, it was based on simple substitutions based on highest/lowest scores.

Portfolio breakdown by Industry

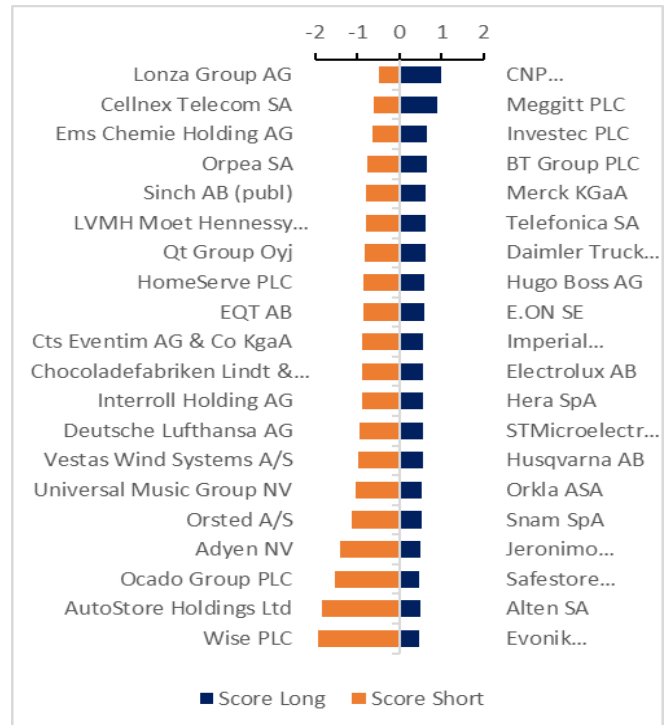


Fund Positioning

S&P 500



EUROSTOXX600

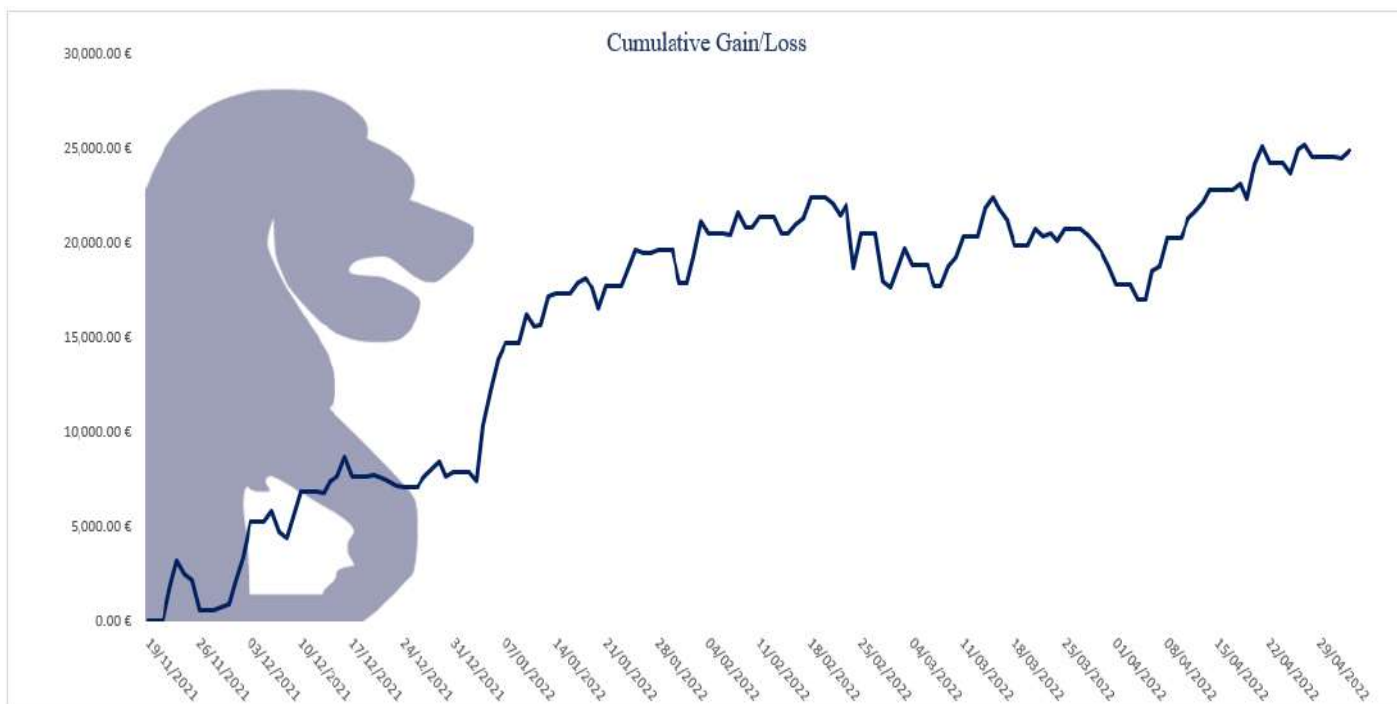


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Source: Minerva Investment Management Society and Thomson Reuters Datastream. Past performance is not an indicator of future success

Performance

The inception of the new portfolio took place on November 19, 2021. Therefore, the time frame considered goes from November 19, 2021, to April 29, 2022. Over the period, the portfolio obtained a strong absolute return of \$ **24 580.47** starting from \$ 100 000.00 invested both in the long and short leg.

Of our three best performers, one of them was on the S&P 500, while the other two were on the EUROSTOXX600. Our individual best positions were short ones. In particular, over the holding period, Netflix plummeted by 71.96%, Auto1 Group SE plunged by 69.98% and Zur Rose Group nosedived by 66.57%. The combination of these short positions has propelled our performance.

On the other hand, our worst performers were all long positions on Tapestry Inc, which decreased by 28.42%, while Renault and Stellantis NV decreased by 28.41% and 25.88%, respectively.

It is worth considering that over the same period, the S&P 500 entered correction territory by losing over 12%, while the EUROSTOXX600 fell by over 7%. At the same time, the best returns of our portfolio were achieved mainly through entering short positions. As mentioned before, the best performance was obtained with Netflix, which followed the same path as several other companies in the technology sector.

Although not included in our portfolio, over the same time frame, Meta also saw a decrease of 40%, while Alphabet decreased by over 23%.

However, two of the portfolio's worst positions were taken in the consumer discretionary sector, namely in the automotive industry. The sector has been particularly impacted by supply chain disruptions, such as the semiconductor shortage, which have significantly delayed the production and delivery of cars.

It is also interesting to note that out of the 39 short positions entered in the portfolio, only four of such stocks ended up going up, which demonstrates that the short positions were the main driver of the strong performance of the portfolio.

The great performance achieved by our long-short portfolio over a time frame characterized by such an abnormal level of uncertainty and low sentiment clearly shows the benefits provided by an appropriate combination of factors and highlights the benefits of not building a long-only portfolio.

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Breakdown in Factors

In order to evaluate the performance of the fund, we decided to perform a deeper analysis, whose aim was to construct six factor mimicking portfolios: each of those has been built in order to maximize the exposure to a single factor and to be neutral to the remaining ones. The six selected factors have been Size, Momentum, Value, Quality, Volatility and ESG. The procedure to create the factor mimicking portfolios has been inspired by Fama and French's (1993) seminal paper and it consists of the following steps:

1. Each stock of the S&P 500 and the EuroStoxx 600 was ranked in top tercile, medium tercile or bottom tercile for each of the factors considered;
2. After excluding the stocks that were in the middle terciles, we divided the remaining stocks into sixty-four portfolios, because for each of the six factors they could have been either in the top or bottom tercile ($2^6 = 64$);
3. We constructed the time series of returns of each of these portfolios, giving equal weight to the stocks in the portfolios;
4. We combined those portfolios into six equally-weighted ones. For instance, to build the Portfolio SMB (Small minus Big), that is, the portfolio exposed to the Size factor, we took the average of the thirty-two portfolios with Small inside and subtracting the average of the thirty-two portfolios with Big inside;
5. Finally, the risk premium for each factor has been estimated and a regression of our portfolio against these excess returns has been performed.

Empirical Evidence

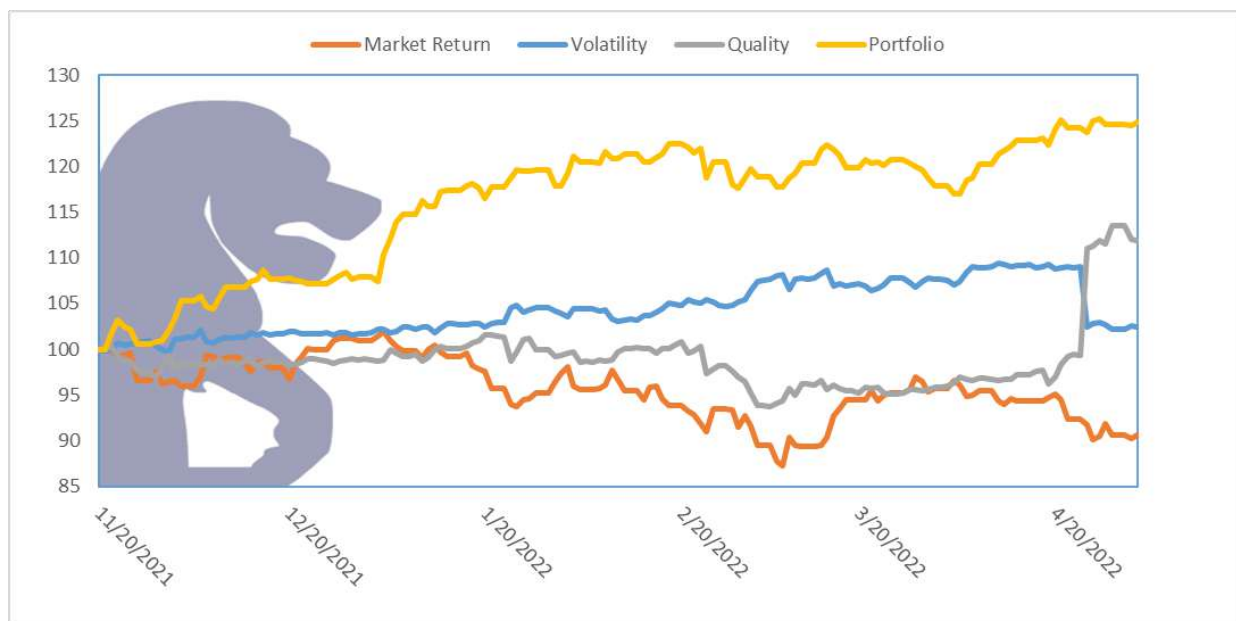
The main drivers of our portfolio's performance have been the Market Return, the Volatility and the Quality factors. As a matter of fact, all these factors were statistically significant at the 2.5% level. All of our exposures had positive signs, meaning that all betas were greater than zero.

From inception to mid-April, Volatility has provided the maximum contribution to our performance, while Quality and Market Return slowed us down. However, in the last week of April, Quality sky-rocketed and offset the sudden drop in Volatility.

This evidence highlighted once again the benefits of diversification towards different factors. Indeed, the great degree of resilience generated by such an approach has led the portfolio to weather that final setback, which could have otherwise eroded our gains.

Regarding the Market factor, it comes as a surprise to us the statistical significance of that slightly positive exposure, which has dragged down the whole performance. A fine-tuning of the model will therefore be necessary to avoid a repetition of such a phenomenon.

Overall, the factors and therefore their rationale proved to be the right ones in the current economic and financial environment and they are able to explain our returns, given the absence of a statistically significant alpha.



Source: Minerva Investment Management Society and Thomson Reuters Datastream. Past performance is not an indicator of future success

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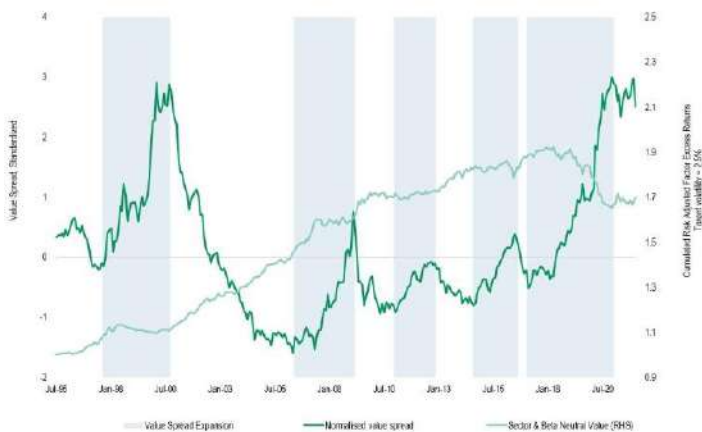
Value and Low Volatility: a Tried and True recipe

It is the third semester in a row that our analysts at the Long-Short Equity Fund have chosen value over growth. So far, the choice has proven to be right one.

As we navigate through times of high inflation, we found an interesting paper that supports our choice once again. **Dechow et al. (2021)** show that value stocks have low cash flow durations, causing them to underperform when discount rates decline. As interest rates are being hiked to fight high inflation, we believe that value stocks will outperform the market.

In addition, according to **Benoit Bellone** (Senior Quantitative Analyst in the Research Lab of the Quantitative Research Group at BNP Paribas Asset Management), in a recent article "Value Stocks Still Cheap Relative To Growth Sector Peers", the author writes that "Multi-factor equity strategies should prove more attractive for investors. The prospect of rising interest rates as central banks react to higher inflation further complicates the outlook for 'glamour' growth stocks.", which follows our belief that typical growth stocks such as FAANG are in for a potentially hard time, even though several of them have already suffered significant damage.

Several analysts have also been comparing the current market to the 2000 dot-com bubble, as depicted in the graph below:



Sources: BNP Paribas Asset Management

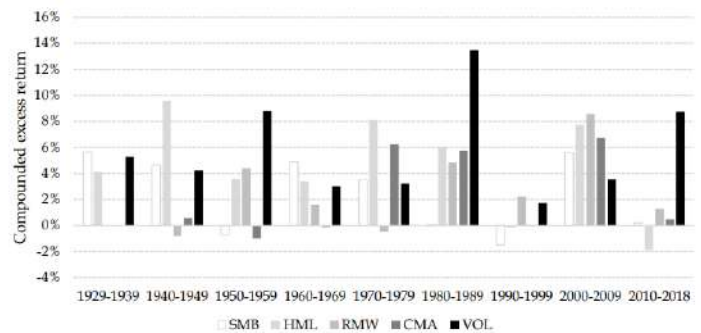
On another note, we also consider Low Volatility to be a strong indicator of positive future performance and that is why the analysts at the Long-Short Equity Fund are going with low volatility once again.

As demonstrated in a recent paper "The Volatility Effect Revisited" by **Blitz et al. (2019)**, the authors determine that "A low-risk approach has been effective for as far as the data goes back, across all major stock markets, from developed to emerging, within and across industries, across various market regimes and using different measures of risk."

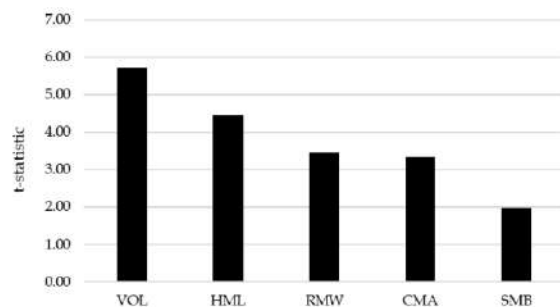
This recent study reviews a large number of markets and past performances and it supports our conviction that low volatility drives strong performance.

The first graph below shows that volatility is one of the factors that most correlates with excess returns and it shows which factors were the most correlated with such over the past few decades, while the second graph shows the strength of each factor premium, from 1948 until 2018.

We are confident that this combination of factors is a solid foundation to tackle the challenging times that will unfold over the next semester.



Sources: Kenneth French data library, paradoxinvesting.com, Journal of Financial Economics website



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Quantitative Research Team

Risk Report – May 2022

Introduction

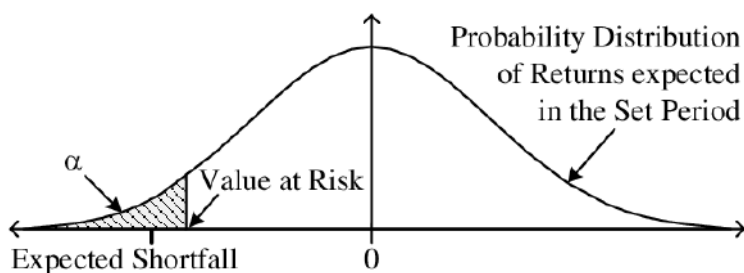
The main objective of this section is to assess and quantify the risk embedded in the Minerva IMS long-short equity fund built by the portfolio team. We use a daily perspective on the potential extreme behavior of a basket of assets selected by the portfolio analysts. The analysis will include three VaR and ES models (two parametric and one non-parametric) and an overview of how sentiment analysis can be considered a factor for short term investments.

As the Investment Risk division, our focus is the estimation of the two main risk indicators:

- The daily Value at Risk (VaR): the maximum portfolio loss that occurs with $\alpha\%$ of probability over a time horizon of 1 day. For instance, if the VaR ($\alpha=5\%$) = -3.00%, it means that tomorrow there is a 5% probability of encountering a loss in the interval [-100%, -3.00%] potentially;

- The daily Expected Shortfall (ES): the expected return on the portfolio in the worst $\alpha\%$ of cases. So, it is just a mean of the returns lower than the VaR.

A simple technique to estimate these two measure is based on a historical approach: given a time series of returns of a financial security, we can easily compute the desired quantile of the historical distribution to estimate the VaR, and, after that, estimate the ES just by averaging the values below this threshold.



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However, this naive approach is not well suited for our purpose: in fact, by considering our portfolio as a single financial asset, we are losing all the information that comes from all the components; moreover, with this approach we are simply focusing on the past behavior of the fund, while our main goal is to retrieve a risk metric for the future possible trends.

In order to overcome these issues, we propose two alternative techniques that provides better risk estimates:

- Parametric approach (simple approach and time-series modelling approach)
- Bootstrapping

The first method is very well suited for understanding the main vulnerabilities in the portfolio composition, while with the second one it is possible to observe how the metrics varied in the past quarters.

For both pieces of analysis we used daily market prices of portfolio constituents for the past 6 months,. All the analysis has been conducted with Python.

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Parametric approach

In this section we propose to analyze VaR and ES separately for each asset included in the portfolio and then, to estimate the VaR and ES for the whole fund by taking into account the correlation between portfolio constituents.

Parametric approach is based on the assumption that returns of a financial security follow some theoretical distribution. Thus, VaR and ES can be expressed as an α -percentile of the distribution. The crucial step to accurately estimate VaR and ES is to select the appropriate distribution of returns and estimate its parameters.

It is possible to state that stock returns do not follow Gaussian distribution due to the presence of "fat tails": unexpected events might have a huge impact on the stock prices, so it is possible to observe extreme values more frequently than a Normal distribution would predict. For this reason, we assume that stock returns follow a Student-t distribution, thus, the parameters to be estimated are the mean μ , volatility σ and number of degrees of freedom ν .

To obtain more valid and robust results, we proceed with two alternative parameter estimation approaches – (a) simple approach, and (b) time-series modelling approach. For all parts of analysis, we use the last 252 return observations, which correspond to 1-year window.

Simple approach

Under the simple approach, we estimate the above-mentioned parameters in the following way:

1. We assume that the mean historical daily return of each security are a good estimate for the expected future return. Thus, μ is estimated as a simple average of daily returns.
2. Volatility of returns σ is calculated as a simple standard deviation of returns.
3. Number of degrees of freedom ν is selected in a way that it best approximates the empirical distribution of returns. In order to do that, we used the Kolmogorov-Smirnov statistic that, for a given empirical cumulative distribution function F and a proposal F_n , is:

$$D_n = \sup x |(Fn - F)|$$

Ideally it should be equal to 0 for a perfect fit, so our goal is to minimize it by proposing different ν for Student-t distribution.

Time-series modelling approach

Because the volatility of returns is not constant over time, it is often modelled by conditional heteroscedasticity processes. The most common way to model volatility is through a Generalized Autoregressive Conditional Heteroscedasticity model GARCH(p,q), where the forecast of the next-period volatility depends on the previous p shocks to stock returns (derived from some mean model) and previous q forecasts of volatility:

$$\sigma_{t+1|t}^2 = \omega + \sum_{i=1}^p \alpha_i \epsilon_{t-i}^2 + \sum_{j=1}^q \beta_j \sigma_{t-j+1|t-j}^2$$

The advantage of GARCH model is that it allows to better estimate the current forecast of return volatility by putting more weight on more recent information. Thus, in the periods of market turbulence GARCH model will produce higher volatility forecasts than the simple average of squared deviations from the mean (see the graph at the bottom).

Because the portfolio is composed exclusively of equity instruments traded on liquid markets, we can assume that prices are efficient, and thus returns can be described by a constant mean model for GARCH(p,q) process, which implies that current mean estimates do not depend on previous returns or shocks. GARCH(p,q) then is estimated by Maximum Likelihood (MLE), which optimizes the distribution parameters. We subsequently use MLE estimates of distribution to derive VaR and ES.

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Parametric approach (continued)

Value-at-risk

Once the parameters of stock returns are known, it is possible to calculate VaR. We estimate the VaR for 95% and 99% confidence level by applying the following formula:

$$VaR_{\alpha} = \sigma * T_{\nu}^{-1}(\alpha) + \mu$$

where σ is the estimated volatility of a security, $T_{\nu}^{-1}(\alpha)$ is the α -percentile of a Student-t distribution with ν degrees of freedom, and μ is the expected return of a stock.

Expected shortfall

Expected shortfall is defined as a conditional expectation of loss, given that the loss occurred. If we introduce the assumption of a continuous distribution of returns of a security, then parametric expected shortfall is simply defined as a tail conditional expectation, and thus can in general be defined by the following formula for any security X :

$$ES_{\alpha}(X) = -\frac{1}{\alpha} \int_0^{\alpha} VaR_{\gamma}(X) d\gamma$$

Under the assumption of Student-t distribution with ν degrees of freedom it can be proven that the expected shortfall would be given as:

$$ES_{\alpha}(X) = \sigma * \frac{\nu + (T_{\nu}^{-1}(\alpha))^2}{\nu - 1} \frac{\tau_{\nu}(T_{\nu}^{-1}(\alpha))}{\alpha} + \mu$$

where σ is the estimated volatility of a security, $T_{\nu}^{-1}(\alpha)$ is the α -percentile of a Student-t distribution with ν degrees of freedom, $\tau_{\nu}(\cdot)$ is the probability density function of Student-t distribution with ν degrees of freedom and μ is the expected return of a stock.

We estimate the ES for 95% and 99% confidence level.

TOP & BOTTOM 5 stocks (simple approach)

	VaR 95	VaR 99	ES 95	ES 99
Snam SpA	-1.75%	-2.52%	-2.22%	-2.92%
Mckesson Corp	-1.91%	-2.81%	-2.46%	-3.27%
Assurant Inc	-1.95%	-2.80%	-2.47%	-3.24%
Altria Group Inc	-2.01%	-2.89%	-2.55%	-3.34%
Orkia ASA	-1.98%	-2.95%	-2.58%	-3.52%

	VaR 95	VaR 99	ES 95	ES 99
AutoStore Holdings Ltd	-6.38%	-9.05%	-8.02%	-10.41%
Meggitt PLC	-6.32%	-9.15%	-8.06%	-10.62%
Enphase Energy Inc	-6.61%	-9.60%	-8.45%	-11.15%
Sinch AB (publ)	-7.74%	-10.93%	-9.70%	-12.58%
Daimler Truck Holding AG	-5.88%	-13.96%	-12.36%	-28.17%

Portfolio VaR and ES

Considering the correlation between the stocks, we estimate the VaR and ES of the whole portfolio for 95% and 99% confidence level by applying the following formulas:

$$VaR_{\alpha,ptf} \approx \sqrt{VaR_{\alpha} * \rho * VaR_{\alpha}'}$$

$$ES_{\alpha,ptf} \approx \sqrt{ES_{\alpha} * \rho * ES_{\alpha}'}$$

where VaR_{α} and ES_{α} are column vectors of individual stock VaR and ES, respectively and ρ is the correlation matrix between securities

The approximation arises because of the assumption of Student-t distribution of returns – the formulas above become an equality the closer the distribution of returns is to the Gaussian.

Results

GARCH results appear to be slightly higher than the simple approach ones, potentially due to the recent volatility in the markets. Indeed, GARCH puts more weight on the most recent observations, thus, it better estimates the future volatility and allows to produce more reliable risk metrics.

	Simple approach	GARCH
VaR_{95%}	-3.04%	-4.27%
VaR_{99%}	-4.42%	-7.43%
ES_{95%}	-3.90%	-6.38%
ES_{99%}	-5.25%	-10.42%

TOP & BOTTOM 5 stocks (GARCH)

	VaR 95 (GARCH)	VaR 99 (GARCH)	ES 95 (GARCH)	ES 99 (GARCH)
Meggitt PLC	-0.90%	-1.74%	-1.48%	-2.69%
Hartford Financial Services Group Inc	-1.99%	-2.87%	-2.53%	-3.31%
Assurant Inc	-2.16%	-3.43%	-2.96%	-4.30%
CNP Assurances SA	-1.84%	-3.53%	-3.01%	-5.43%
Mckesson Corp	-2.25%	-3.70%	-3.17%	-4.74%

	VaR 95 (GARCH)	VaR 99 (GARCH)	ES 95 (GARCH)	ES 99 (GARCH)
Constellation Energy Corp	-7.51%	-17.62%	-15.51%	-34.78%
Enphase Energy Inc	-11.08%	-19.94%	-17.02%	-28.46%
AutoStore Holdings Ltd	-9.03%	-19.99%	-17.34%	-36.46%
HomeServe PLC	-9.92%	-21.52%	-18.63%	-38.47%
Sinch AB (publ)	-12.35%	-22.37%	-19.09%	-32.22%

DISCLAIMER

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Bootstrapping

When estimating a certain metric, one of the main problems in Statistics is the lack of the whole population data and the consequent use of only a sample. In our case the population data is the complete historical price data of the securities that are part of our portfolio, in which we only have the data of recent years.

Bootstrapping is a statistical technique that by having only a sample of the population data, provides estimates of statistical metrics that are closer to the ones obtained from the population data.

Given a sample of size n , implementing bootstrap is very simple:

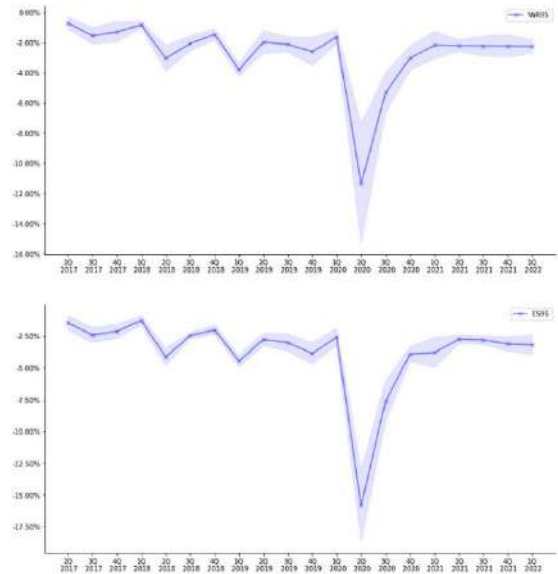
- Sample with replacement n times from the original sample (note that one observation could be selected more than once);
- Compute the metric of interest (in our case the VaR or ES) on this newly created sample and save it;
- Repeat the previous steps M times with $M \rightarrow +\infty$ (we have selected $M=100.000$ for instance);
- Average and compute the standard error of the metrics estimated in each step.

With this method, by estimating the expected shortfall and the standard errors, we can retrieve a more insightful view of our portfolio, but in this case, we are losing the risk contribution of each stock that we had in the previous case.

	Estimate	Standard error
VaR_{95%}	-3.15%	0.34%
VaR_{99%}	-4.45%	0.35%
ES_{95%}	-3.86%	0.27%
ES_{99%}	-4.63%	0.24%

Quarter analysis

With this method we have enough metrics to inspect the behavior of this fund composition in the last 5 years.



Between 1Q 2016 and 4Q 2019 the metrics were pretty much stable, while deteriorating in the Q2 and Q3 2020 due to the COVID-19 pandemic. Nevertheless, both VaR and ES recovered significantly among the subsequent market rally and both returned to pre-COVID levels. We expect both indicators not to significantly deteriorate in the future. However, many headwinds for the global economy remain, ranging from the war in Ukraine to inflation, raising interest rates and ongoing supply chain disruptions.

Moreover, it can be noticed that in 2020 standard errors bands (light-blue area) were wider than the previous quarters ones. This remarks a volatility increase due to COVID outbreak that markets suffered in those months.

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