EUROPERFORMANCE

GROUPE FININFO

The Europerformance-Edhec Style Rating Methodology

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EDHEC

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THE EUROPERFORMANCE – EDHEC RATINGS

WHY FUND RATINGS?

The measurement of the performance of investment funds is an important issue for professionals, because it is through performance measurement that their know-how and their products are evaluated.

Ratings have a determining role in the sale of products, as can be seen in the American market, where more than 70% of subscriptions involve 4 and 5-star funds. In Europe, ratings have not yet reached that level of importance, but their influence on the collection of capital is growing. A corollary of this is that investors are increasingly demanding with regard to the relevance and the scientific and methodological rigor of the performance evaluation system implemented.

Ratings respond to a legitimate expectation from investors and their consultants, and their concern to compare the performance and value-added of management offerings that are increasing in number and are increasingly easy to switch between, due to the arrival of "open" distribution architectures.

However, today, the rankings of the main existing rating agencies no longer satisfy the principles of reliability demanded by both investors and the management companies.
These demands are the following:

1. *Genuine integration of risk in performance measurement*
2. *Measurement of performance persistence*
3. *Robustness and reliability of the results obtained*
4. *Transparency and legibility of the ratings*

As an agency for measuring and analysing the performance of investment funds, it was incumbent upon EuroPerformance to come up with a response to these requirements. That is why EuroPerformance entered into a partnership with EDHEC in 2002 to engage in research into performance measurement and style analysis. This research work led to ratings that take into account both the risk-adjusted performance and the persistence of the results.

1 THE THREE DIMENSIONS OF THE EUROPERFORMANCE-EDHEC RATINGS

The EUROPERFORMANCE-EDHEC ratings are constructed using three criteria:

- Risk-adjusted performance (or alpha)
- Extreme loss potential (or VaR)
- Performance persistence

Alpha measures the outperformance ("abnormal return" or alpha) compared to the risks taken by the manager. This magnitude is not directly observable; it is measured by the difference between the fund's returns and the "normal" returns that reward all of the portfolio's risks. This approach is based on a multifactor model drawn from the style analysis model developed by the Nobel Prize winner William Sharpe in 1992.

The decomposition of the performance between the alpha and the reward for risks is specific to each fund. The alpha is an arithmetic magnitude that is easy to compare and is independent from the prevailing situation for an asset class or the definition of a ranking category.

Extreme risks: most existing ratings handle average risks. Whether it involves volatility or the information ratio, the risk-adjusted measures consider that the investor is averse to the average risk of the investment but has no particular opinion in relation to extreme losses. In order to face up to this insufficiency the Style Ratings implement a Value-at-Risk calculation that provides a good estimate of the fund's maximal loss.

Persistence: the ratings are used by investors to make investment decisions, not to reward past performance. From this point of view, a fund's capacity to reproduce its performance is an important element for the person who uses the ratings. The EUROPERFORMANCE-EDHEC ratings take two indicators into account to measure a manager's (or a fund's) capacity to reproduce its past performance:

- The capacity to deliver alphas frequently over the calculation period (gain frequency)
- The regularity of the outperformance (Hurst exponent)

These indicators are absolute measures that are specific to each fund. The detailed summary represented in the final grade does not depend on a performance ranking or the fact that is belongs to a category (country in which it is marketed, awards received, etc.). The fund has a grade that evolves according to its own performance and not according to its relative positioning in a predefined universe. Since the grade is not related to a given typology, all comparisons between funds are justified.

2 MEASURING ALPHAS

To do this, we propose to use the conceptual framework of the performance and risk style analysis proposed by the Nobel Prize winner William Sharpe (1992).

2.1 Style analysis

William Sharpe (1988, 1992) introduced the following model to provide an objective breakdown of the manager's real style, as opposed to the style breakdown announced by the manager. This method is known as *return-based style analysis*.

Model:

$$R_{it} = w_{i1}F_{1t} + w_{i2}F_{2t} + \ldots + w_{iK}F_{Kt} + e_{it}$$

where:

- R_i = excess return (net of fees) of a given portfolio or fund
- F_k = excess return compared to index j for period t
- w_{ik} = weight of the style (the sum of the weights is equal to one)
- e_{it} = error term

Style analysis is differentiated however from the standard linear regression by the fact that specific constraints are imposed on the coefficients so that they can be interpreted directly as weightings:

- Portfolio constraint: the sum of the coefficients must be equal to one
- Positivity constraint: the w_{ik} coefficients must be positive

In essence, the model divides the fund's return into two components:

- The "Style": $w_{i1}F_{1t} + w_{i2}F_{2t} + \ldots w_{ik}F_{kt}$ (the part attributable to market movements)
- The "Skill": e_{it} (the part specific to the manager)

The term of "skill" can itself be attributed to:

- The manager's exposure to asset classes that are not included in the analysis
- The manager's active anticipations: active selection within the asset classes and/or timing in relation to these same classes.

It is tempting to interpret the term of "skill" or total excess return e_{it} in a style analysis as a measure of abnormal return. There are however two major opposing elements:

1. Distortion of the results: Introducing the portfolio and positivity constraints into the style analysis distorts the results of the standard regression. As a result, the standard desirable properties for linear regression models are not respected.

2. The absence of appropriate risk adjustment: As recalled above, an analysis of that type does not provide an explanation for the abnormal return, on a risk-adjusted basis.

2.2 The multi-index model

These two imperfections of style analysis are handled by using a factor model, which constitutes a satisfactory theoretical response to the problem of risk-adjusted performance measurement.

In practice, one important question remains: the choice of factors.

There are four types of factor models:

1. Implicit factor model. In this approach, one carries out a factor analysis (for example, a principal component analysis) to extract the return series factors statistically. It is without doubt the best approach, because it avoids the problems of including the wrong factors or omitting the right factors. However, the factors can be difficult to interpret.

2. Explicit macroeconomic factor model. In this approach, economic variables are used as factors. For example, Chen, Roll, Ross (1986), use the inflation rate, the growth of industrial output, the difference between long-term and short-term interest rates and the difference in ratings between bonds.

3. Explicit microeconomic factor model. In this approach, microeconomic attributes are used as factors. The BARRA model is a popular example of this type of model.

4. Factor model with explicit factors made up of indices. In this approach, market indices are used as factors. This is consistent with the idea of using portfolio returns as factors. The most popular example of this approach is the CAPM (Sharpe (1964)), where the return on the market portfolio, approximated by a broad index, is used as a factor. The idea of using "replicating portfolios" as an approximation of the true factor, which is not known, is also found in Fama and French (1992).

In this context, in order to provide the methodology with factor transparency, traceability and easy-to-interpret results, we have chosen to use a multi-index factor model, which is written as follows:

$$R_{it} - r_f = \alpha_i + \beta_{i1}\left(F_{1t} - r_f\right) + \beta_{i2}\left(F_{2t} - r_f\right) + \ldots + \beta_{iK}\left(F_{Kt} - r_f\right) + e_{it}$$

where:

- α = represents the abnormal performance of the fund
- R_i = return (net of fees) of a given portfolio or fund
- *rf* is the risk-free rate
- β_{ik} = sensitivity of the fund to factor k
- F_k = return of factor k for period *t*

This factor model is similar in its form to that used by Elton et al. (1993) to estimate the performance of the managers' fund.

This equation can be seen as a weak form of style analysis, which consists of relaxing the positivity constraint and the portfolio constraint, and including a constant term in the regression.

From a practical point of view, this approach also allows us to consider the question of benchmarking and performance measurement in a unified manner: once the appropriate indices have been selected, they can be used both for return-based style analysis (strong form of the style analysis with the positivity constraint and portfolio constraint) and for abnormal return measurement (weak form applied to the excess returns).

2.3 Implementation in the ratings

2.3.1. The analysis categories

In William Sharpe's model, all asset classes are represented. In certain market conditions this can lead to statistical adjustments that no longer describe the fund's real allocation. Experience shows that return-based style analysis and portfolio decomposition-based style analysis work best when they are associated. To be more precise, we use a decomposition-based method for the observable attributes, for example the geographical zone. We further use a return-based method for the non-observable characteristics, in particular the investment styles, as opposed to the investment styles that the managers themselves claim to use, and for which information may be missing or uncertain.

In order to limit the risks of collinearity between the indices, the fund universe has been divided into 21 distinct categories using the groupings in the EuroPerformance classification. There are 13 of these categories for equities, 5 for bonds and 2 for diversified funds. A table in appendix 1 describes the relation between the EuroPerformance categories and the analysis categories.

2.3.2. Style indices

For each category, a set of style indices averages the returns of the stocks in which the fund is liable to invest for a given management objective. For the indices, to comply with the issue of differences in valuation days between funds, EuroPerformance calculates weekly performance for each day of the week. In that way, each fund is compared to a set of indices that value at the same date as the fund. In the case of international management, the international indices, which are often expressed in USD, have been converted into euros on the basis of exchange rates provided by the AFG (the French Investment Management Association), before calculating their returns.

For the equity class, the MSCI indices are still the obligatory reference point for nearly all funds on the international level. They are thus, de facto, the best proxies for the markets that they evaluate and represent. For the indices that cover the bond class, there is no consensus. Merrill Lynch was selected from among the providers, because it offers the broadest panel of indices, and it is one of the major references in the fixed-income world.

Appendix 2 describes the indices chosen for each analysis category.

2.3.3 Sector funds

Growth-Value and Large Cap–Small Cap style indexes are unable to fully relate the changes in returns for certain sectors to specific characteristics. The style on its own is insufficient in explaining the performance of certain sectors, whereas the objective of Style Rating consists in extracting the alpha of the fund's performance, by taking out the performance accounted for by factors common to the investment universe.

For sector funds we use a group of indexes covering all sectors to analyse these funds.
This approach is consistent with the objective of Style Rating: we impose the minimum of preconditions on the content of the fund. This choice is also justified by the fact that sector funds are very often invested in several sectors. Furthermore whilst there is no ambiguity as to the notion of country; this is not the case for sector segmentation.

2.3.4 Selecting regressors

The constrained regression of the style analysis allows for the selection of the "right" regressors which are used in the second regression to determine the fund's alpha.

To limit the effects of collinearity between the indices, regressors with a low or null weight in the style analysis regression are removed from the alpha calculation model. In more precise terms, the regressors are classified according to their weight. The regression for the alpha calculation uses the first three at least. The following regressors are only integrated into the model if their weight is above the threshold of 10% in the fixed-income class and 3% for the diversified funds.

2.3.5 The calculation period

Style Analysis and alpha are calculated on a weekly basis over the last 156 returns (3 years). Alphas are annualized by multipliying the weekly alpha by 52.

2.3.6 – Management of fund valuation

It is important in the assessment of different ratios and style valuations to use indexes having the same valuation method as the fund being studied (indexes valued at opening prices for funds valued on opening and indexes valued at closing prices for funds valued on closing). As the style indexes for funds based on opening rates are not available, funds valued at the start of the day are analysed using closing prices from the previous day.

One opts for an analysis based on the previous day:

- if the coefficient of determination (R^2) for style analysis in the regression model calculated on a given day and for the previous day are higher than the threshold for the category (70% or 60%) and there is a more than 15% variance between the two coefficients in favour of the previous day.
- if the calculated R^2 on the given day is lower than the threshold and the calculated R^2 on the previous day is higher than the threshold for the category plus 5% (75% or 65%).

In the Gaussian framework the VaR may be calculated explicitly by using the following formula:

$$P(dW \leq VAR) = \alpha$$
$$VAR = W(\mu - z_c\sigma)$$

where Zc = number of the standard deviation at (1-α)
σ = annual standard deviation
W = current value of the portfolio
α = VaR threshold (typically 1%)

The analytical side of this standard VaR formula was then adjusted by using the Cornish-Fisher (1937) expansion as follows:

$$z = Z_c - \frac{1}{6}(Z_c^2 - 1)S + \frac{1}{24}(Z_c^3 - 3Z_c)K - \frac{1}{36}(2Z_c^3 - 5Z_c)S^2$$

where Zc = the critical value for the probability (1-α)

S = the skewness
K = the excess kurtosis (i.e., kurtosis minus 3)

The adjusted VaR is therefore equal to: $VAR = W(\mu - z\sigma)$

Most often the VaR is a negative number. By convention it is displayed as an opposite value representing the loss: a VaR displayed as 10% represents a maximum weekly loss of 10%.

3 MEASURING PERSISTENCE

The ratings are used by investors to make investment decisions. From this point of view, a fund's capacity to reproduce its performance is very important for the person who uses the ratings.

We are very often tempted to believe that a manager who has performed well one year has a better chance of performing well the following year than one whose result was mediocre. The fund rankings published by the financial press are based on this idea. However, the results of the studies that tend to verify this assumption are contradictory and do not allow one to affirm that past performance is a good indicator of future performance.

The EUROPERFORMANCE-EDHEC ratings do not focus on the repetition of past performance but on the manager's capacity to deliver alphas frequently over the analysis period (gain frequency), while ensuring that the outperformance is regular, without too much volatility (Hurst exponent).

3.1 The gain frequency

The gain frequency measures, as a percentage, the number of times that the fund has delivered performance that was better than that of its benchmark.

3.2 The Hurst exponent

The basic idea is relatively simple: if the funds' excess return compared to the customised benchmark follows a random walk, which means that there is no correlation between the excess returns observed at date t and date t+1, this leads one to believe that the portfolio manager has no persistence in obtaining returns. A high return is followed by a low or high return with a probability equal to ½. If, on the contrary, there is persistence in the series of returns, one can expect to find positive correlation between the returns at date t and the returns at date t+1. In that case, the process followed is no longer a random walk.

The H exponent is in fact constructed precisely as a measure of deviation compared to the random walk, which corresponds to the basic case of an exponent equal to ½. If the H exponent is greater than ½, we speak in that case of persistence and positive correlation in the return series. If the H exponent is lower than ½, we speak in that case of anti-persistence and negative correlation in the return series.

3.3 Calculating the Hurst exponent

We first calculate the normalised series of outperformances (ER_t) where we subtract the average at each observation.

We thus define:

$$ER_t = R_t - B_t$$

$$Z(t) = ER_t - m$$,

where R_t : fund's returns

B_t : benchmark's returns

$m = \frac{1}{T}\sum_{t=1}^{T} R_t$ is the average of the returns in the sample

We then define:

$$Y(t) = \sum_{s=0}^{t} Z(s)$$

Which gives Y1 = Z1, Y2 = Z1 + Z2, Y3 = Z1 + Z2 + Z3, …, YT = Z1 + Z2 + …+ ZT with:

$$Y_1 = \max_{0<t<T} Y(t)$$

$$Y_2 = \min_{0<t<T} Y(t)$$

Finally, the Hurst exponent is given by the following formula:

$$H = \frac{1}{\ln T} \ln\left(\frac{(Y_1 - Y_2)}{\sigma}\right)$$

where $\sigma = \sqrt{\frac{1}{T-1}\sum_{t=1}^{T}(R_t - m)^2}$ is the unbiased estimator of the dispersion of returns in the sample.

If the H exponent is greater than ½, we speak in that case of persistence and positive correlation in the return series. If the H exponent is lower than ½, we speak of anti-persistence and negative correlation in the return series.

3.4 Implementation within the framework of the ratings

At the date of the ratings, the gain frequency and the Hurst exponent are calculated for the previous 156 weeks.

Two types of behaviour are identified in terms of persistence:

1. The funds whose H value is > 0.5, which tend to be persistent in their performance
2. The funds whose H value is ≤ 0.5, which tend to be anti-persistent in their performance

In the same way, two types of behaviour are identified for the gain frequency:

1. The funds whose gain frequency is > 0.5, which tend to be persistent in their alphas
2. The funds whose gain frequency is ≤ 0.5, which tend to be anti-persistent in their alphas

4 MEASURING EXTREME RISKS

More often than not, the notion of risk is reduced to the variability of the returns. The most common indicator is the volatility. While this measure characterises the average risk of the portfolio (average uncertainty in the distribution of returns), a complementary approach consists of focusing on the fund's potential for extreme loss. The Value-At-Risk (VaR) responds to this need. The VaR allows all the risks of a portfolio split between several asset classes to be reduced to a single value.

4.1 Value-At-Risk

There are essentially three methods for calculating a portfolio's VaR: the parametric method, the historical method and the Monte Carlo method.

The parametric method is often based on normal return assumptions. However, the historical return distributions of market variables are often fairly far removed from a normal distribution. In particular, one observes distributions that are skewed and present fat tails. It is obviously possible to postulate a distribution law that accounts for the existence of distribution tails that are fat compared to those of the normal distribution (Student's law, Pareto's law, etc.), but the requirement to impose a prior choice leads to a strong specification risk called "model risk".

The historical methods, on the other hand, do not set a prior assumption on the shape of the return distribution and therefore only take into account the data in the sample to calculate the VaR. In this case, the quality of the historical series is important. There is a significant sample risk and it would require only a small amount of missing or aberrant data to render the result obtained irrelevant. Like for the parametric method, this method can be implemented rapidly.

The Monte Carlo method uses the same principle as the historical VaR but the data used is obtained through stochastic simulation. This method is cumbersome to implement because it requires many simulations to be carried out to obtain a good level of accuracy in the results, which leads to numerous calculations. It is used primarily in estimating VaR for complex instruments (options) which provide flows that are non-linear functions of the base assets.

4.2 Cornish-Fisher type VaR

It is possible to implement a VaR calculation method based on an "intermediary" approach that achieves a balance between the advantages of the historical VaR approach (no model risk) and the parametric approach (limitation of the sample risk). The method in question is the semi-parametric VAR, in an environment of fat distribution tails. This method for determining the maximal potential loss initially involves calculating a VaR by using a normal distribution formula and then correcting it through a development referred to as Cornish-Fisher to take into account the skewness and the kurtosis (third and fourth order moments of the return distribution).

Within the Gaussian framework, the VaR can be calculated explicitly by using the following formula:

$$P(dW \leq -VAR) = 1 - \alpha$$
$$VAR = n\sigma W dt^{0.5}$$

where n = number of standard deviations at (1-α)
σ = annual standard deviation
W = the portfolio's current value
dt = fraction of year

The analytical side of this normal VaR formula is then adjusted by using the Cornish-Fisher (1937) extension as follows:

$$z = Z_c + \frac{1}{6}(Z_c^2 - 1)S + \frac{1}{24}(Z_c^3 - 3Z_c)K - \frac{1}{36}(2Z_c^3 - 5Z_c)S^2$$

where Zc = the critical value of the probability (1-α)
S = the skewness
K = the excess kurtosis (i.e., kurtosis minus 3)

The adjusted VaR is therefore equal to: $VAR = W(\mu - z\sigma)$

4.3 Implementation within the framework of the ratings

For each fund, a VaR is calculated using a Cornish-Fisher type semi-parametric approach, with a threshold of 1%.

5 CRITERIA AND RULES FOR ATTRIBUTING GRADES

5.1 Criteria

The ratings are calculated from the following weekly data:

- The average alpha of the last 4 weeks
- The gain frequency for the last 156 weeks
- The Hurst exponent calculated from the last 156 weekly returns
- The positioning of the Value at Risk of the week in the VaR distribution within each analysis category
- The average of the last 4 determination coefficients of the unconstrained regression.

Information from outside the analysis, namely the average management fees practiced for each of the rating categories, is also necessary to calculate the grade. This information is obtained through a half-yearly survey of management companies carried out by EuroPerformance.

Grade Attribution Table

Grade	Population	Diminishing Alpha	Gain Frequency	Hurst Exponent
***** H		>=0	>= .5	>= .5
*****		>=0	>= .5	
****		>= 0	< .5	
***		>=-avge(mgt fees)		
**	50% +	< avge(mgt fees)		
*	50% -	< avge(mgt fees)		
VaR too high (V)	VaR too high : Funds whose Value at Risk is greater than the average of the VaR in the analysis category + 2 standard deviations are identified and do not receive any star.			
R^2 too low (R^2)	R^2 to low : In order to be graded, the coefficent of determination resulting from the style analysis must be higher than 70% exept for diversified funds and funds belonging to the international categories whose level is fixed to 60%.			

Funds do not receive a grade if:

- the Var is greater than the average + twice the standard deviation in its analysis category
- the determination coefficient (R^2) resulting from the style analysis is lower than 70%

2 stars and 1 star:
groups together the funds that do not achieve the performance of their reconstituted benchmark (alpha < 0). This population is ranked according to the value of the alpha. The stronger 50% have 2 stars, the others 1 star.

3 stars: *the funds are very close to their management objective (reconstituted benchmark). By taking into account the average management fees of the analysis category, they conserve a slight advantage.*

4 stars: *the funds in this class have an alpha that is strictly positive but they have not reached the requisite levels on the persistence criteria (gain frequency and Hurst coefficient).*

5 stars: *this category contains funds with a strictly positive alpha and a gain frequency that is greater than or equal to 50%.*

5 star H: *a sub-category within the 5-star category distinguishes the funds with a Hurst exponent greater than 0.5.*

5.2 The management rules

The ratings are calculated monthly on the basis of weekly data. The calculations are closed off on the 2nd Friday of each month and the results are published on the 4th Friday of the month. This time period is required for verifications and for correcting errors in the calculation of the returns in the database.

In the event of an error, the corrections are made in the database but the regressions and indicators are not recalculated. The funds concerned conserve their rating from the previous month for one month. The corrections will potentially modify the fund's grade for the following months.

The rate of change remains low from one month to the next, confirming the relative stability in management behaviour. It is not therefore necessary to implement management rules on conserving grades in order to reduce the variability of the ratings.

5.3 The ratings website

The results of the ratings are published on the 4th Friday of the month on the following website: www.stylerating.com

Which funds are moving up? Which funds are moving down? What are the new entries? Why is such and such a fund no longer rated? Those are the kinds of questions that the website will reply to.

It is easy to launch queries on the:

- New funds rated
- Upgraded funds
- Downgraded funds
- Funds with a too high VaR
- Pending rating funds

The list of funds excluded from the rating is available each month with the reason for the exclusion.

- Funds whose R^2 is too low
- Funds whose VaR is too high

The persistence criteria are monitored within the 5-star category.

All of the documentation is accessible on the website.

APPENDICES

1. COUNTRIES COVERED

The rating is calculated on a **pan-European** basis; the grade does not depend on either the country in which the fund is marketed or the classifications. Progressively, all the funds monitored in the EuroPerformance database will be integrated.

The marketing zones covered are as follows: France, Luxembourg, Switzerland, Spain, Ireland, Italy, Belgium and the Netherlands.

The goal is to cover the whole of the Euro zone.

2. REGRESSORS BY ANALYSIS CATEGORY

The style analysis and the rating use the market style indices that are the most widely followed by European managers.

Equities South Africa

MSCI SOUTH AFRICA VALUE
MSCI SOUTH AFRICA GROWTH

Equities Germany

MSCI GERMANY VALUE
MSCI GERMANY GROWTH
MSCI GERMANY SMALL CAP

Equities America

MSCI ALL COUNTRIES AMERICAS FREE VALUE
MSCI ALL COUNTRIES AMERICAS FREE GROWTH
MSCI NORTH AMERICA SMALL CAP

Equities North America

MSCI USA VALUE
MSCI USA GROWTH
MSCI USA SMALL CAP

Equities Asia

MSCI ALL COUNTRIES ASIA PACIFIC FREE VALUE
MSCI ALL COUNTRIES ASIA PACIFIC FREE GROWTH
MSCI PACIFIC SMALL CAP

Equities Asia Ex Japan

MSCI ALL COUNTRIES ASIA PACIFIC FREE EX JAPAN VALUE
MSCI ALL COUNTRIES ASIA PACIFIC FREE EX JAPAN GROWTH

MSCI PACIFIC EX JAPAN SMALL CAP

Equities Australia

MSCI AUSTRALIA VALUE
MSCI AUSTRALIA GROWTH
MSCI AUSTRALIA SMALL CAP

Equities Austria

MSCI AUSTRIA VALUE
MSCI AUSTRIA GROWTH
MSCI AUSTRIA SMALL CAP

Equities Belgium

MSCI BELGIUM VALUE
MSCI BELGIUM GROWTH
MSCI BELGIUM SMALL CAP

Equities Canada

MSCI CANADA VALUE
MSCI CANADA GROWTH
MSCI CANADA SMALL CAP

Equities China

MSCI CHINA FREE VALUE
MSCI CHINA FREE GROWTH

Equities Korea

MSCI KOREA VALUE
MSCI KOREA GROWTH

Equities Denmark

MSCI DENMARK VALUE
MSCI DENMARK GROWTH
MSCI DENMARK SMALL CAP

Equities Emerging Countries

MSCI EMERGING MARKETS FREE VALUE
MSCI EMERGING MARKETS FREE GROWTH

Equities Spain

MSCI SPAIN VALUE
MSCI SPAIN GROWTH
MSCI SPAIN SMALL CAP

Equities Europe

MSCI EUROPE VALUE
MSCI EUROPE GROWTH
MSCI EUROPE SMALL CAP

Equities Europe Ex UK

MSCI EUROPE EX UK VALUE
MSCI EUROPE EX UK GROWTH
MSCI EUROPE EX UK SMALL CAP

Equities Finland

MSCI FINLAND VALUE
MSCI FINLAND GROWTH
MSCI FINLAND SMALL CAP

Equities France

MSCI FRANCE VALUE
MSCI FRANCE GROWTH
MSCI FRANCE SMALL CAP

Equities Hong Kong

MSCI HONG KONG VALUE
MSCI HONG KONG GROWTH
MSCI HONG KONG SMALL CAP

Equities India

MSCI INDIA VALUE
MSCI INDIA GROWTH

Equities Ireland

MSCI IRELAND VALUE
MSCI IRELAND GROWTH
MSCI IRELAND SMALL CAP

Equities Israel

MSCI ISRAEL VALUE
MSCI ISRAEL GROWTH

Equities Italy

MSCI ITALY VALUE
MSCI ITALY GROWTH
MSCI ITALY SMALL CAP

Equities Japan

MSCI JAPAN VALUE
MSCI JAPAN GROWTH
MSCI JAPAN SMALL CAP

Equities Malaysia

MSCI MALAYSIA FREE VALUE
MSCI MALAYSIA FREE GROWTH

Equities Morocco

MSCI MOROCCO VALUE

MSCI MOROCCO GROWTH

Equities Norway

MSCI NORWAY VALUE
MSCI NORWAY GROWTH
MSCI NORWAY SMALL CAP

Equities Netherlands

MSCI NETHERLANDS VALUE
MSCI NETHERLANDS GROWTH
MSCI NETHERLANDS SMALL CAP

Equities Portugal

MSCI PORTUGAL VALUE
MSCI PORTUGAL GROWTH
MSCI PORTUGAL SMALL CAP

Equities United Kingdom

MSCI UNITED KINGDOM VALUE
MSCI UNITED KINGDOM GROWTH
MSCI UNITED KINGDOM SMALL CAP

Equities Russia

MSCI RUSSIA VALUE
MSCI RUSSIA GROWTH

Equities Scandinavia

MSCI NORDIC COUNTRIES VALUE
MSCI NORDIC COUNTRIES GROWTH
MSCI NORDIC COUNTRIES SMALL CAP

Equities Singapore

MSCI SINGAPORE VALUE
MSCI SINGAPORE GROWTH
MSCI SINGAPOUR SMALL CAP

Equities Switzerland

MSCI SWITZERLAND VALUE
MSCI SWITZERLAND GROWTH
MSCI SWITZERLAND SMALL CAP

Equities Sweden

MSCI SWEDEN VALUE
MSCI SWEDEN GROWTH
MSCI SWEDEN SMALL CAP

Equities Taiwan

MSCI TAIWAN VALUE
MSCI TAIWAN GROWTH

Equities Thailand

MSCI THAILAND FREE VALUE
MSCI THAILAND FR GROWTH

Equities Turkey

MSCI TURKEY VALUE
MSCI TURKEY GROWTH

Equities International

MSCI WORLD INDEX VALUE
MSCI WORLD INDEX GROWTH
MSCI WORLD INDEX SMALL CAP

Equities Euro

MSCI EMU VALUE
MSCI EMU GROWTH
MSCI EMU SMALL CAP

Equities Latin America

MSCI EMERGING MARKETS FR LATIN AMERICA VALUE
MSCI EMERGING MARKETS FR LATIN AMERICA GROWTH

Equities Emerging Europe

MSCI TURKEY
MSCI RUSSIA
MSCI CZECH REPUBLIC
MSCI POLAND
MSCI HUNGARY

Balanced Euro Zone

MSCI EMU VALUE
MSCI EMU GROWTH
MSCI EMU SMALL CAP
EUROMTS GLOBAL
MERRILL LYNCH EURO HIGH YIELD
EURIBOR 3 MOIS

Balanced Europe

MSCI EUROPE VALUE
MSCI EUROPE GROWTH
MSCI EUROPE SMALL CAP
MERRILL LYNCH PAN-EUROPEAN BROAD MARKET INDEX
MERRILL LYNCH EUROPEAN CURRENCY HIGH YIELD
REFERENCE EURIBOR 3 MOIS

Balanced international

MSCI WORLD INDEX VALUE

MSCI WORLD INDEX GROWTH
MSCI WORLD INDEX SMALL CAP
JP MORGAN GLOBAL GOVERNMENT BONDS TOTAL RETURN USD-TRADED
MERRILL LYNCH GLOBAL HIGH YIELD
MERRILL LYNCH US TREASURY BILLS 0-3M

Bonds GBP

MERRILL LYNCH UK GILTS 1-3Y
MERRILL LYNCH UK GILTS 10+Y
MERRILL LYNCH STERLING HIGH YIELD
MERRILL LYNCH GBP LIBOR 3M CONSTANT MATURITY

Bonds Swiss Franc

MERRILL LYNCH CH GOVERNMENT 1-3
MERRILL LYNCH CH GOVERNMENT 10+
MERRILL LYNCH EUROPEAN CURRENCY HIGH YIELD
MERRILL LYNCH CHF LIBOR 3M CONSTANT MATURITY

Bonds Europe

MERRILL LYNCH PANEUR GOVERNMT 1-3 Y
MERRILL LYNCH PANEUR GOVERNMT 10+Y
MERRILL LYNCH EUROPEAN CURRENCY HIGH YIELD
EURIBOR 3 MOIS

Bonds High Yield Euro

MERRILL LYNCH EMU CORPORATE
MERRILL LYNCH EURO HIGH YIELD
EURIBOR 3 MOIS

Bonds Europe High Yield

MERRILL LYNCH PANEUR LARGE CAP CORP
MERRILL LYNCH EUROPEAN CURRENCY HIGH YIELD
EURIBOR 3 MOIS

Bonds International High Yield

MERRILL LYNCH GLOB BRD MKT CORP INDEX
MERRILL LYNCH GLOB HIGH YIELD
MERRILL LYNCH US TREASURY BILLS 0-3M

Bonds International Hedged

MERRILL LYNCH GLOBAL GOVERNMENT BOND II 1-3 Y HEDGED (vs EURO)
MERRILL LYNCH GLOBAL GOVERNMENT BOND II 10+Y HEDGED (vs EURO)
MERRILL LYNCH GLOBAL HIGH YIELD HEDGED (vs EURO)
EURIBOR 3 MOIS

Bonds International

MERRILL LYNCH GLOBAL GOVERNMENT BOND II 1-3 Y
MERRILL LYNCH GLOBAL GOVERNMENT BOND II 10+Y
MERRILL LYNCH GLOBAL HIGH YIELD

MERRILL LYNCH US TREASURY BILLS 0-3M

Bonds Euro zone

EUROMTS 1-3 YEARS
EUROMTS 10-15 YEARS
MERRILL LYNCH EURO HIGH YIELD
EURIBOR 3 MOIS

Sectors Europe

MSCI EUROPE ENERGY
MSCI EUROPE MATERIALS
MSCI EUROPE INDUSTRIALS
MSCI EUROPE CONSUMER DISCRETIONARY
MSCI EUROPE CONSUMER STAPLES
MSCI EUROPE HEALTH CARE
MSCI EUROPE FINANCIALS
MSCI EUROPE INFORMATION TECHNOLOGY
MSCI EUROPE TELECOM SERVICES
MSCI EUROPE UTILITIES

Sectors World

MSCI WORLD ENERGY
MSCI WORLD MATERIALS
MSCI WORLD INDUSTRIALS
MSCI WRLD CONSUMER DISCRETIONARY
MSCI WORLD CONSUMER STAPLES
MSCI WORLD HEALTH CARE
MSCI WORLD FINANCIALS
MSCI WORLD INFORMATION TECHNOLOGY
MSCI WORLD TELECOM SERVICES
MSCI WORLD UTILITIES

Sectors Euro Zone

MSCI EMU ENERGY
MSCI EMU MATERIALS
MSCI EMU INDUSTRIALS
MSCI EMU CONSUMER DISCRETIONARY
MSCI EMU CONSUMER STAPLES
MSCI EMU HEALTH CARE
MSCI EMU FINANCIALS
MSCI EMU INFORMATION TECHNOLOGY
MSCI EMU TELECOM SERVICES
MSCI EMU UTILITIES

3. RULES FOR INCLUSION IN AND EXCLUSION FROM THE RATINGS

The fund must:

- belong to the categories analysed (§2)
- have three years of weekly historical returns
- not have more than two returns missing for the previous 156 weeks
- the adjusted R^2 of the style analysis must be greater than 70% exept for diversified funds and funds belonging to the international categories whose level is fixed to 60%.
- the VaR at the calculation date must be lower than the average of the VaR in the analysis category + 2 standard deviations

4. CATEGORIES EXCLUDED FROM THE RATINGS

Funds belonging to the following categories have been excluded:

Treasury Funds
Guaranteed Funds
Gold and Raw Material Funds
Real Estate Funds

ETFs and all funds practicing index management or alternative management.
The "Convertible Bond" category is not analysed because there is no style index for this category.

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