Asset management for Family Business: a dedicated scoring model

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1. INTRODUCTION

The family office at the service of family business or, in any case, of all high net worth individuals (HNWI) is one of the most important developments of the financial system that, notwithstanding the boosts given to standardisation, understood the strategic and economic importance of this segment certainly characterised by small numbers but with extremely interesting margins.

Actually, from the customer viewpoint, the growing internationalisation of investments, the ease of capital "flow", the quantity and quality of available information, the proliferation of financial products give rise to the impression that asset management is a basic service. Consequently, the related business assistance becomes the real value added to be requested of the involved intermediaries or of the qualified and independent third parties.

Therefore, the organisation of a family office is extremely complicated. It consists of a series of functions that can be supplied directly by the proposing subject, or out-sourced to outside experts, who are involved in the realisation of the service only when required, or at regular intervals.

Whereas in literature family office comprises different activities[1], including in particular investment management[2], direct investing[3], accounting – reporting, insurance planning – risk management, capital asset management activities; this article shall focus exclusively on direct investing, with a special reference to the products of asset management that, more than other kinds of investments, may give rise to misunderstandings among those proposing the investment and those making it.

This problem does not depend so much on a possible "conflict of interests" in which the intermediary works as on the difficulty in analysing the obtained results and, consequently, on the difficulty in finding the best product to choose among the wide range of comparable products.

If the concept of risk "adjusted" return is common knowledge among the operators, there are serious application difficulties in the operating reality with reference to the adjustment of the return

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[1] Curtis G., Establishing a family office: a few basics, white paper n. 10, settembre 2001; Merrill Lynch – Cap Gemini Ernst & Young, World Wealth Report 2002, gennaio 2003; PWC, Wealth Management at the Crossroad – Serving today's customers, 2002.
[2] Management of "strategic" participations held for purposes other than pure financial investment.
[3] Asset management by means of financial instruments, real assets, venture capital, etc

data and to the factors to be considered when drawing up the opinion of the asset management product from a comparative view. As we shall try to point out in the following pages, there are several works in literature that propose different risk definition and calculation methods within the management activity of a financial portfolio, and there are several performance indicators proposed.

Assuming that there are different methods (based also on the joint use of different performance indicators) whose purpose is to provide summary ratings with reference to each asset management product, the purpose of the article is to propose an alternative method based on the preliminary selection of some indicators, chosen according to the information contribution offered by each. They are weighed according to the investment targets and *desiderata* formulated by the customer.

In the light of the short premises stated above, the dissertation is organised as follows. The second paragraph focuses on the most important and mostly used performance indicators, whereas the third paragraph is dedicated to the problem of costs applied to asset management products. The article ends by proposing an algorithm that can be used for creating a personalised scoring system useful for identifying and rating an asset management product within the family business and HNWI activity.

2. THE RISK-ADJUSTED RETURN INDICATORS

The main doctrinal contributions focusing on asset management have shown that the return concept in itself is not able to provide the necessary elements for giving an exhaustive opinion on the obtained performance.

From this we surmise that a correct approach to the problem must firstly consider the risk phenomenon and later, set the target to provide an opinion of the manager's capabilities, in particular on supplied the contribution for achieving the obtained results.

The data necessary to asses the work of the manager in terms of adjusted return for the assumed risk and in terms of capability shown in making the choices in terms of stock/bond picking and market timing is based on historical samples and imposes the preliminary identification of the time horizon and of the data sample frequency. By combining the two variables, you can obtain an almost infinite series of combinations that can lead to very different results. The analysis of the same product carried out over the last five years observing the monthly return may lead to conclusions that are different from the performance study over the last five years on the same product using a quarterly sample frequency. Since the choice depends on the purpose to be achieved and on real data availability, it follows that the results of the sample depend on the type and quality

of the data used: accepting the conclusions without considering their methodological course means ignoring any possible bias due to improper decisions made when setting the method of analysis.

The experience of the main market operators and the doctrinal contributions allowed to identify some characteristics on which to base the construction of the different indicators in such a way as to allow, on the one hand, more homogeneous comparisons and on the other hand the use of indicators easy to be understood. The most important characteristics[4] are set below:

- Suitability: the measures must be able to identify correctly the risks and the performance of the instruments to which they refer.
- Reasonableness: each measure must be demonstrable theoretically and scientifically and must be consequently accepted by the operating world.
- Simplicity: the measures must also be easily understood by persons who do not have a thorough knowledge in this field.
- Internationality: the measures must allow to compare products concerning different geographical regions.

The most known indicator that can be rightly considered as the landmark of the studies on investment performance is the index of Sharpe[5] whose purpose is to determine the return, per unit of total risk, achieved by a manager exceeding the return of the risk-free activity. Analytically:

$$Sharpe_i = \frac{R_i - R_{Risk-Free}}{\sigma_i}$$

where:

R_i = return of the i-th financial product;

$R_{Risk-Free}$ = return of the risk-free activity;

σ_i = mean quadratic deviation of the i-th financial product.

The advantages of the proposed indicator are set below:

- it can be applied to all the asset management products;
- it can be easily determined;
- it is known and appreciated by the operators;
- it allows to easily identify the most efficient manager.

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[4] A. Plantinga - S. de Groot, Risk-Adjusted Performance Measures and Implied Risk-Attitudes, novembre 2001; C. S. Pedersen - T. Rudholm Alfvin, Selecting a Risk-Adjusted Shareholders Performance Measure.
[5] W. E. Sharpe, The Sharpe ratio, in Journal of Portfolio Management, fall, 1994.

Even if the latest doctrinal contributions accepted the proposal of Sharpe, they pointed out its theoretical and operating limits. From the theoretical viewpoint, the Sharpe index does not consider the real distribution of returns; whereas, from the operating viewpoint, the Sharpe index presents the main limit of assigning the same weight to return and to risk, when in reality each investor presents a specific propensity to risk; this means that he may not necessarily prefer the portfolio that presents the maximum value assumed by the Sharpe index, but, after determining a certain level of tolerable risk, he may choose the portfolio with the highest return.

A current of study based on the measurement of the skewness of return distribution was developed in order to bypass some limits offered by the Sharpe index. In particular, the mostly used indicator is the DSR, acronym of *Downside Risk*.

Analytically:

$$DSR = \sqrt{\frac{1}{T-1}\sum_{t=1}^{T} (RMA - R_t)^2} \qquad\qquad se(RMA > R_t)$$

where:

RMA = minimum acceptable return, or target return;

R_t = return in period obtained by the financial product;

T = overall number of samples/periods.

$t = 1, ..., T$

DSR can be used to build the Sortino index[6] that is obtained by pegging the *excess-return* to the DSR.

$$Sortino_i = \frac{R_i - R_{Risk-Free}}{DSR_i}$$

where:

$R_{Risk-Free}$ = return of the risk-free activity;

R_i = return obtained by the i-th financial product;

DSR_i = downside risk of the i-th financial product.

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[6] F. A. Sortino, H. J. Forsey, On the use and measure of downside risk, in The Journal of Portfolio Management, Winter, 1996.

If the target set by the above-mentioned indicators is to measure the excess-return per unit of risk regardless of the factors that determined it, the target set by the following indicators is to measure the manager's capability to contribute in terms of value added.

The manager's capability consists mainly of two aspects:

- *stock/bond picking*
- *market timing*.

The indicator commonly used to measure the capability shown by a manager in the *stock/bond picking* activity is Jensen's Alpha[7] (α) that, a posteriori, provides information on the return of the instrument under consideration as to the market - the latter intended as the overall activities available for risky investments. In other words, "α" measures the value added offered by the manager thanks to the security selection activity.

Analytically, the indicator proposed by Jensen is the differential return obtained as the difference between the return of the financial product and the rightfully "expected" return, given the level of the assumed risk, and it is obtained by means of a linear regression for which the excess-return of the i-th financial product compared to the *risk free rate* represents the dependent variable, whereas the excess-return of the benchmark compared to the *risk free rate* represents the explanatory variable.

$$(R_i - R_{Risk-Free}) = \alpha + \beta_i (R_{benchmark} - R_{Risk-Free}) + \varepsilon_i$$

where:

$R_{Risk-Free}$ = return of the risk-free activity;

R_i = return obtained by the i-th financial product;

$R_{benchmark}$ = return obtained by the benchmark of the i-th financial product

The same logical course is at the basis of the quantification of the capability shown by the manager in terms of *market timing*. The indicator normally used by the operators to represent this phenomenon is γ of Treynor-Mazuy[8].

Analytically:

$$(R_i - R_{Risk-Free}) = \alpha + \beta_i (R_{benchmark} - R_{Risk-Free}) + \gamma_i (R_{benchmark} - R_{Risk-Free})^2 + \varepsilon_i$$

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[7] M. C. Jensen, The Performance of Mutual Funds in the Period 1945-1964, Journal of Finance, maggio 1968.
[8] J. L. Treynor e K. Mazuy, Can Mutual Funds Outguess the Market?, Harvard Business Review, luglio-agosto 1966.

Since the target consists of measuring the capability of the manager to anticipate correctly the movements of the underlying market, the more the value of γ is high and positive, the better is the opinion associable to the operator.

It seems that the attention was lately focused on the *consistency* of the manager's choices and, hence, some calculation methods were proposed.

The indicator commonly used for defining the consistency among the real movements obtained by the instrument and the rightfully expected movements is the Tracking Error Volatility (TEV). TEV is the standard deviation of the difference between the fund excess-returns and the benchmark excess-returns. The more this indicator approaches zero, the more the two trends are similar and hence the manager's degree of fidelity to the benchmark is greater.

$$TEV = \sqrt{\frac{1}{T-1} \sum_{t=1}^{T} (ER_i - ER_{benchmark})^2}$$

Hence, this is an indicator that shows the manager's deviation from the benchmark. In other words, TEV measures the specific risk of the manager's activity. The Information Ratio (IR) must be calculated in order to quantify whether this behaviour was useful in achieving the final result. The IR is obtained by the ratio of the excess return of the asset management product as to the return offered by its *benchmark* and the *TEV* of the same product. Analytically:

$$IR_i = \frac{(R_i - R_{benchmark})}{TEV_i}$$

3. COST MEASUREMENT IN ASSET MANAGEMENT PRODUCTS

Another useful element for choosing an asset management instrument consists of the costs met directly or indirectly by the potential user.

The theme of cost classification and measurement of the asset management products has been considered for a long time one of the most complicated problems within the studies relating to pre-saving management instruments.

Two essential causes make this subject complicated. The first one is related to the lack of any regulatory element determining unequivocally the presentation principles as well as the nature of costs and commissions; the second one, partially related to the previous cause, depends on the

possibility of each financial intermediary to create products and to adopt trade policies in a basically free or, in any case, not excessively binding way.

Actually, the responsiveness of the investors to the cost factor increased over the last few years when the losses due to the negative trend of the financial markets were followed by the need to cope with the commissions characterising the products of asset management and that very often do not depend on the result realised by the management.

The importance of the theme under consideration also induced Assogestioni to consider the cost problem with the purpose of providing the market a clearer idea of the behaviour of the intermediaries.

In the method proposed by Assogestioni, the first step to take in order to carry out a correct analysis consists in dividing the costs in two big categories[9]:

- o direct costs, i.e. to the charge of the underwriter
- o indirect costs, i.e. to the charge of the fund.

The purpose of the first group is to repay the distribution and placing costs, and for this reason, this category normally contains the following:

- o entry/exit commissions
- o handling charges
- o management costs of the certificates representing the shares
- o other minor costs.

On the contrary, the second group consists of the items that repay the management activity as such. This group contains:

- o management commissions
- o the incentive commission
- o the commission of the custodian bank

The above-mentioned approach represents only one of the possible principles that can be used for the analysis of the costs related to asset management products. In particular, the basic assumption of this method is to put oneself in the potential investor's place to check the simultaneous presence of visible costs, i.e. direct costs, and invisible costs, i.e. indirect costs.

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[9] The following method is proposed directly by Assogestioni. This cost classification, in the light of the objectives of the dissertation, is considered the only one able to show to a potential investor the real commission weight of an asset management product. Moreover, since Assogestioni is the only institutional operator representing the *producers* of the asset management world, it is advisable to refer initially to the indications supplied by the trade association.

Actually, we can imagine other cost classification methods based on other distinguishing elements. For example, if the problem is analysed from the point of view of a FMC, it would be more meaningful to divide the commissions in:

- internal
- external.

The first group should contain all the costs deriving from the company structure such as the incentive commissions, the management commissions, the entry/exit commissions pertaining to the FMC, and so on.

The second group should comprise the expenses incurred by the investor for recovering the costs relating to law obligations or to external services. By way of illustration, consider the commissions paid to the custodian bank, the share of commissions conveyed to the distribution network, the duties for the management of the certificates representing the shares, and so on.

The above-mentioned approach, considered particularly interesting from the viewpoint of the manager[10], is particularly difficult to apply because it requires very sensible information that are not normally diffused outside by the concerned companies.

Another way for classifying the costs relating to the financial instruments is based on the way in which the commissions are imposed. In this sense, they are divided in:

- recurrent costs
- one-for-all costs.

The first group contains the management commissions, the incentive commissions, the commissions paid to the custodian bank, and so on; the second group contains the entry/exit commissions, handling charges, and so on. The purpose of this classification consists in focusing on the persistence and duration of the commission phenomenon within the funds and the SICAV (also GPM and GPF).

Another method may consist in observing the commission calculation. In particular, we can divide the commissions determined on the basis of:

- flat rates
- percentage on the managed fund
- variable percentage according to the underwritten amounts.

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[10] In order to understand the importance of the effects of this method, consider the case of an FMC that decides to propose its own products using different distribution channels (banks, financial promoters, Internet) with a channel-specific commission structure. Without a proper commission analysis carried out with the proposed logic, the risk of making a mistake in the *pricing* of the financial instruments is very high.

Considering the variety of costs and especially of the quantification methods, it is not possible to establish a priori in which of the three defined categories can be entered the different types of existing commissions weighing on the financial instruments; consider, for example, the entry and/or exit commissions that can be calculated in the three proposed methods.

Precisely for this reason, even the few empirical tests existing on the cost theme in asset management are inclined not to consider the calculation procedure problem, even if they recognise its importance. From a purely managerial viewpoint, the *modus operandi* used when quantifying the commissions represents the quality expression of the *pricing* policy carried out by the FMC for its own products.

4. A PERSONALISED SCORING SYSTEM FOR THE *FAMILY BUSINESS*

The dissertation proposed until now has pointed out some essential aspects that must be taken into consideration in a hypothetical rating course of the asset management instruments. In particular, according to the considerations expressed above, it is not possible to find an indicator better than the others by far.

In the light of the premises, the overall rating of a financial instrument must be included in the partially subjective opinions and for this reason we can assert that the conclusions are always disputable; actually, if we give the same information basis to two investors (i.e. the same performance indexes), it is more than likely that, at the end of their rating course, they reach different conclusions. Each investor "weighted" the variables in a different way. This special procedure is expressed by defining a product scoring.

The scoring is an overall opinion that encompasses, in a final score, the considerations relating to the different variables associable to the same phenomenon. In particular, for what concerns asset management products, the scoring considers not only the return and the risk but also all the aspects considered essential by the person who is calculating it. Since the opinion depends on the variables considered and on their assumed weight, more than the final result it is important to know the method that defines the judgement.

Even if there are some proposals on the market referring to asset management, the following pages offer the reader a scoring system built according to the characteristics of a customer target characterised by a substantial wealth. The process is divided in a series of successive steps in order to facilitate the reading: creation of homogeneous *peer-groups*; selection of the indicators to be used for rating each product; definition of the algorithm for assigning the scoring. In any case, the final objective is to build a rating procedure easy to understand.

4.1: THE DEFINITION OF THE REAL MANAGEMENT STYLE

The system of analysis aiming to carry out a comparison among asset management instruments must firstly be based on the homogeneity of the used data. Apart from ensuring that products belonging to different categories are not compared, it is also advisable not to carry out comparisons among instruments belonging to the same category but with different characteristics[11].

The request entails the need of the issuer of the final opinion to control if the compared products are really similar. The purpose of this step is to determine, according to a deductive procedure, the real management style used by the manager[12].

The commonly used method takes its cue from one of the contributions of Sharpe[13]: the multivariate regression among the *excess-returns* of the instruments and the *excess-returns* of the different indexes[14].

On the contrary, the setting-up of the database on which the statistic technique must be implemented is more complicated. The choice of the indexes that, according to this approach, must "describe" the return obtained by an instrument in a special time lapse, represents, on the one hand, the heart of this phase and on the other hand, the real value added provided by the intermediary to the customer. In order to optimise the choice of the indexes, it is advisable:

- not to use too many indexes;
- to avoid the tendency to simplify the approach (not many strategic groups and/or not many style classes);
- to prefer a series of indexes including a great number of securities;
- to prefer a series of indexes insufficiently connected together.

Since the objective is to ascertain the strategy of an operator, it is necessary for the comparison to be carried out on the data calculated including any tax and commission component. Since the relation between product and environmental context must be found, it is pointless for this

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[11] Assuming that in our country Assogestioni represents the only institutional reference in the world of asset management, it is advisable to point out that some interpretation problems may arise if a category contains instruments that actually present different characteristics. Assogestioni divides investment funds and SICAV according to the "definition" that must be indicated on the instrument regulation, avoiding any further control on the real management style used by the manager. From the rating viewpoint, all this considerably affects the homogeneity of the elements forming the world of the study, as well as the data that, for example, is used for the calculation of the section mean, the indicators, the overall scores.

[12] Actually, there is a second useful method for determining the management style. This method consists in considering the investment policy declared by the manager. Even if this method is undeniably simple, it presents the limit of not being able to see the real coincidence between declared strategy and realised strategy.

[13] W. F. Sharpe, Asset allocation: management style and performance measurement, Journal of Portfolio Management, winter 1992.

[14] In order to be able to apply correctly the method proposed by Sharpe in 1992, a series of important elements such as the choice of market indexes and the length of the historical series used must be considered.

research to be corrupted by elements due to causes outside the management. Objectively, this is a strategic point of all the rating course and for this reason it requires a special attention: an error in the initial selection can compromise all the results of the model.

However, despite the mentioned difficulties, the proposed procedure is considered the only one able to refine the classification of Assogestioni for improving, if possible, the construction of homogeneous *peer-groups* in order to make the comparisons carried out more reliable.

STEP 1: THE DEFINITION OF THE MANAGEMENT STYLE	
Objective	Identification of the real management style used by the manager
Data to be used	Gross valorisation of the indexes Gross valorisation of the financial instruments
Method	Multivariate regression proposed by Scarpe
Strong points	Refinement of the Assogestioni classification in order to make the comparisons more homogeneous
Weak points	The choice of the indexes has an important value: a wrong selection can invalidate the final result

4.2: THE CHOICE OF THE INDICATORS FOR THE RATING OF THE ASSET MANAGEMENT PRODUCTS

The second paragraph analysed the real information power of the different indicators used for understanding the behaviour of a manager in a particular time lapse. The reached conclusion is the following: no indicator is preferable to others and the choice of a specific index is explicitly related to the aspect that the investor intends to realise each time.

The objective of this phase consists in preparing a sufficiently wide information base in order to start the rating process that shall subsequently result in the final opinion. From the operative viewpoint, this means establishing, on the one hand, the aspects to be considered in the calculation procedure and, on the other hand, the indicators that suit best the specifications of each field of study.

The most commonly used scoring systems today are characterised by two elements: emphasis given to the same variables (mainly risk and return); the common difficulty in defining the impact of factors such as taxes and costs.

In order to avoid excessive complications at least initially, the scoring system should contemplate not more than five indexes, in order to avoid also an excessive proliferation of information that is likely to complicate the rating course. Since it is advisable for the indexes to be

surveyed on several time horizons, a consistent database consisting of the gross and net tax valorisations of the market indexes taken as reference and obviously of the analysed financial instruments is required.

The calculation of the indicators, in the opinion of the writer, must always be carried out with reference to the gross values. Otherwise, it is likely for the cost and tax phenomenon to be considered twice instead of once[15].

By way of illustration, the following series of indexes is proposed:

- Sortino index;
- Jensen's α;
- Treynor-Mazuy's γ;
- Information Ratio;
- return net of only instrument costs / Gross return of the instrument[16]

In this phase, the problem that brings about the greatest consequences on the operational front is the quantification of the minimum acceptable return (RMA), essential to calculate the Sortino index. In the mostly used scoring systems, the RMA is assumed to be equal to the return guaranteed by risk-free investments. In the opinion of the writer, this is a valid solution from a theoretical viewpoint that, however, is not perfectly suitable to the assumption in which the interlocutors are high net worth individuals. In these cases, for a greater personalisation of the analysis, it is considered advisable for the investor, supported by his own consultant, to decide directly the minimum level of return to be used in order to carry out the study.

The fiscal aspect must also be analysed thoroughly: in Italy, not all the instruments placed are subject to the same fiscal treatment. This aspect must not be absolutely disregarded. Moreover, due to this difference that can sometimes be noticeable, it is not possible to define a standardised procedure capable of making the impact of this phenomenon homogeneous.

As already described previously, cost must also be analysed more thoroughly. It is too variegated to be treated in the same way for all the financial instruments. In particular, *one-for-all* costs and staggered commissions represent the most critical elements because their contribution to the overall result depends on the duration and amount of wealth of the investment. Consequently, it is essential for the one proposing an overall rating system of asset management to consider also

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[15] This statement derives from the decision to consider separately the cost and commission variables.
[16] In this way, only the costs weighing on the fund/SICAV are analysed. As for the costs borne directly by the customer, we cannot generalise. Each case must be considered separately because their impact may vary according to the paid amounts and to the customer's bargaining power.

these aspects that must necessarily be traced to the valorisation of the net return of the financial instruments.

STEP 2: THE CHOICE OF THE INDICATORS FOR THE RATING OF THE ASSET MANAGEMENT PRODUCTS	
Objective	Create information basis
Data to be used	Gross valorisation of the indexes Gross valorisation of the financial instruments Instrument valorisation net of costs but not of taxes[17]
Method	Calculation of the identified ratios and indicators: • Sortino (DSR calculated for at least 3 years with data surveyed on a monthly basis); • Jensen's α; • Treynor-Mazuy's γ; • Information Ratio; • Construction of indicators that sample the cost fraction on the managed fund.
Strong points	• Purely quantitative part and easy to implement • Short and essential information
Weak points	• Requires an external contribution for the correct interpretation of the results • Requires the construction of indicators on personal taxes and costs (in literature, no one subscribes to the method of interpretation of these aspects)

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[17] To transform the net valorisation into the valorisation including the fiscal effects, Assogestioni proposed a method that is commonly used by the operators. See: www.assogestioni.it. However, the proposed procedure must consider the novelties introduced by decree no. 269/2003, with which the Italian legislator provided some amendments to the current tax regulations in force. In particular, art. 12 of decree no. 269, published on the Ordinary Supplement No. 229 to the Official Journal of the Italian Republic - General Series - 2/10/2003, is called "Reduction of the tax-rate for organisations for collective investments in securities (OICVM) specialised in small and medium capitalisation companies", and describes the way in which the different regulations on asset management must change in order to expect a tax reduction by 12.5% to 5%. The text states that this benefit shall be enjoyed by the products that "...invest for at least 2/3 in shares admitted to listing on controlled markets of the European Union of small and medium capitalisation companies [...] Small and medium companies are those representing a capitalisation not greater than Euro 800 million determined by means of the prices surveyed the last listing day of each solar quarter...".

4.3: IDENTIFICATION OF THE ALGORITHM THAT CAN BE USED FOR THE ASSIGNMENT OF THE SCORING

The first two steps allow to build a common database for each product category. At this point, the last step of the course must be carried out: carry all the results obtained to the same base (100) and assign a weight to each single value[18].

Analytically:

$$P_i = \sum_{s=1}^{S} \frac{I_s - \min_i(I_s)}{K(I_s)}(w_s)$$

where: P_i= score of the i-th product

$i = 1,...,n = numero\ di\ prodotti\ analizzati$

$s = 1,...,S = numero\ degli\ indicatori\ calcolati\ per\ ogni\ prodotti$

$K = \max_i(I_s) - \min_i(I_s) = range\ dell'indice\ s - esimo$

$0 \le w_s \le 1$.

According to the proposed method, the score of each instrument depends on the result obtained with reference to each indicator used according to the overall range and to the weight assumed by each indicator as to the others.

Obviously, the final score depends on the reference base used: if, for example, you assume base 100, the points are expressed in hundredths.

When the interlocutors are high net worth individuals, this step must also be characterised by total flexibility.

In practical terms, this means that the different weights cannot be predetermined by the person proposing the classifications, but the investor's possibility of determining which study area and/or which indicator must mostly affect the final result must be guaranteed.

By way of illustration, it is likely that the same methodological approach, other things being equal, may present different weights according to whether an investment fund or a pension fund are submitted to rating. The different purposes that are achieved by using the different asset management instruments impose a different weighting of the used indicators.

The same thing is true for what concerns the characteristics of the objectives pursued by each investor with reference to each instrument. If the centrality of the needs and requirements of

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[18] A possible workable solution for assigning the weights to the different indicators used may consist in using the statistical method known as "Data Envelopment Analysis" (DEA). However, it is considered advisable to underline the strong subjectivity that must characterise the choice of weights to be assigned to each indicator; this is why the customer, helped by the consultant, is given full power to make decisions in defining the weights.

the customer is the mainstay on which the retail and private banking activity is based (or should be based), all the more reason should this be true for family business. The importance of the invested amounts justifies in itself the need to adopt a highly personalised fund picking system.

STEP 3: IDENTIFYING THE ALGORITHM	
Objective	Assign the final score and build the classification
Data to be used	The results obtained in step 1 and 2
Method	• Proceed along the predetermined valorisation system
Strong points	• Results easy to read and understand • High personalisation possibility
Weak points	• The results are strongly affected by the subjective choices made

The analysis carried out until now, as stated beforehand, had only one purpose: the definition of a scoring system for asset management products. However, it is advisable to specify that the proposed course has a drawback that makes it impossible to adopt the method when the objectives, apart from the rating, consist in monitoring in time the choices made in the past.

In other words, the proposed *scoring* system was conceived for "spot" quantifications, i.e. on analyses that do not allow, on the one hand, to check the trend of a financial product over time and, on the other hand, to express linked opinions that refer to different moments of analysis.

The construction of the *scoring* can only meet the request of the investor to weigh in a correct and integrated way all the variables that affect the management of a financial instrument, but it cannot be of help as it is conceived, when it is necessary to understand its behaviour over time. With the data provided only by the *scoring* it is not possible to understand if a high score may also be true for the future.

Actually, if the peer groups are the same, the result offered by the different instruments belonging to the same category may change, or the composition of the original peer groups may change; consider, for example, the emergence of new products or the disappearance of others.

We must go into the matter more thoroughly to resolve it. Intuitively, the widening can follow two courses: the first one, concerning quality, is based on the analysis of the level of "frequency" of an opinion; the second one, concerning quantity, consists in defining an overall score that, apart from the aspects pointed out in other parts of the dissertation, sums up in a single value also the time trend of such elements. As we shall see better later, the two proposals can coexist and be an integral part of the same rating process.

In order to be correctly implemented, both courses require the same initial database that, intuitively, consists of the *scoring* obtained by the products of the same category in a particular time horizon (for example, monthly *scoring* over the last year). This procedure can be undertaken if all the products achieved a score during the interval of reference. Once the starting values are obtained, the two rating procedures can be implemented.

For what concerns the first system proposed, it is possible to identify a series of successive steps that, from the initial situation formed as said by the set of products that present a constant opinion, bring to the achievement of the final considerations. The most important steps are set below:

- identification of the frequency classes
- identification of the sampling frequency of the scores
- calculation of the final opinion

The purpose of the first step is to quantify and qualify the classes in which the different products shall be inserted. For this reason, it is necessary to identify a series of score groups that, more or less directly, represent a meritocratic scale in which to insert the overall *scoring*. Usually, these groups are neither too numerous nor too scanty, since the risk of obtaining insufficiently significant data is high in both cases; the operating reality offers the utilisation of ten classes (delimited by the so-called "deciles") when the world of the study is consistent, or of four types of groups (delimited by the "quartiles") if the analysed data is scanty or if the studied sample contains deep segmentations.

The second step consists of frequency calculation. In particular, this requires the counting, for each product, of the number of times in which the final score falls under each identified class. The total of the frequencies of each class must coincide with the total of the samples made for the instrument under consideration.

At the end of the proposed course, it is possible to complete a double-entry table that sums up the obtained results:

	Product A	**Product B**	**…**	**Product W**	**Product Z**
Class 1					
Class 2					
…					
Class n-1					
Class n					

In this way, all the investors obtain a complete view of the situation and can carry out a more consistent choice since they understand better how the product is positioned over time: this is the third step of the analysis, i.e. the one dedicated to the achievement of the final results.

However, even recognising the value of this approach, the results of the situation tend to be difficult to understand, especially when the analysed world is wide. Moreover, there is another important aspect that is very important for the financial world: through the proposed procedure, all the scores taken in consideration have the same weight in the final rating, when, vice versa, it would be preferable to use a method that allows to assign a greater importance to the most recent data.

The objective of the purely quantitative approach consists in eliminating this type of problem through the calculation of an overall indicator that takes into consideration a number more or less high of opinions as well as the time in which they are formed.

A possible solution consists in constructing an overall weighted mean opinion according to a series of weights defined directly by the investor. In this way, apart from removing the problems indicated previously, it is also possible to reach the discretion objectives that, for the reasons proposed in the previous pages, must be guaranteed to high net worth individuals.

Analytically, the overall weighted mean opinion (GCMP) is calculated according to the following method:

$$GCMP = \sum_{t=1}^{T} P_t * w_t$$

where:

P_t = overall score obtained in the t-th sample

w_t = percentage weight of the t-th sample

T = number of samples during the considered time

$0 \leq w_t \leq 1$.

According to the proposed method, the score of each instrument depends, on the one hand, on the result obtained in each period taken in consideration and, on the other hand, on the weight of each indicator compared to the others.

The great flexibility of the proposed approach is at the same time a strong point and a weak point because a wrong or random allocation of the weights can cause insufficiently significant results.

A possible solution may consist in using an exponential mean instead of a weighted mean. In particular, when the objective is to assign a decreasing weight to the most distant observations in

time, or to relate an uneven weight to the data, we can assert for certain that the results that can be obtained in this way are substantially in line with the expectations and with what is attainable by using the weighted mean correctly. In this way, we reconcile, on the one hand, the need to make the opinion more sensitive to the recent verifications and, at the same time, all the past observations are taken into consideration. In the proposed model, the weights decrease exponentially on the basis of a constant time *decay factor* indicated with λ , which indicates the "degree of persistence" of the past observations. The *decay factor* always assumes a value ranging from 0 to 1.

In the analytical detail, the exponentially overall weighted opinion (GCPE) is calculated according to the following procedure:

$$GCPE = \frac{\sum_{t=1}^{T} P_t \lambda^{t-1}}{\sum_{t=1}^{T} \lambda^{t-1}}$$

where:

P_t = overall score obtained in the t-th sample

λ = *decay factor*

If λ = 1, the weights would be all equal and we would have the simple arithmetic mean. It is clear how, for values of λ very near to 1, the mean assigns high weights to the observations distant in time, and hence comes into line less quickly with the most recent conditions, i.e. with the most recent opinions. Instead, for values of λ distant from 1, we obtain a value that is more significantly different than the simple mean, assigning different weights to observations relating to different moments. All in all, it is just as much clear how the choice of the *decay factor* is extremely important and affects significantly the final result.

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