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## Proposal for a Practical Implementation of Maslowian Portfolio Theory

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# Proposal for a Practical Implementation of Maslowian Portfolio Theory

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**Philippe de Brouwer\***

For many centuries, investing in financial markets was only for the very rich. However, since the Second World War it has become both possible and necessary for larger parts of the population to make investment decisions. “Possible,” because wealth became more equally distributed and “necessary,” because of the increase in life expectancy and the need to provide an (extra) income during retirement. In Europe it was MiFID I while in the United States it was FINRA Rule 2111 that gave direction to financial advisers. In their individual ways, both regulations state that they expect good care on the part of the advisor, but they do not specify what good investment advice looks like. Thus, investment advisers looked back to a sixty year old theory (Mean Variance Theory from H. Markovitz) that treated money as the only and ultimate life goal and proposed selection of a single investment portfolio based on efficiency in terms of “risk” (variance) and return for each investor. The postulated “optimal variance” was called the “risk profile.” The paper proposes that investments be used to attain real life goals. In doing so, it becomes obvious that investments should be molded around and created as a function of these goals. Therefore, it becomes natural to have multiple sub-portfolios, each with its own risk profile. With respect to the Maslowian Portfolio Theory, the author adds a framework that puts emphasis on needs and, in a natural way, applies a hierarchy to goals as well as making sure that no goals are missed. The aim of the paper is to propose a practical implementation of the Maslowian Portfolio Theory as well as to study its impact.

**Keywords:** investing, investment advice, hierarchy of the goals, portfolio theory.

## Wniosek dotyczący praktycznego wdrożenia Maslowian Portfolio Theory

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Przez wieki inwestowanie na rynkach finansowych było dostępne tylko dla bardzo bogatych. Jednak od czasów drugiej wojny światowej podejmowanie decyzji inwestycyjnych stało się możliwe i konieczne dla większych części społeczeństwa. „Możliwe”, ponieważ bogactwo było rozłożone bardziej równomiernie, i „konieczne” ze względu na wzrost średniej długości życia oraz konieczność zapewnienia dodatkowych dochodów na emeryturze. W Europie była dyrektywa MiFID I, a w Stanach Zjednoczonych standardy FINRA Rule 2111, które wyznaczały kierunek doradcom finansowemu. Na swój sposób oba te przepisy zakładają dobrą opiekę ze strony doradcy, ale nie precyzują, jak dobre doradztwo inwestycyjne ma wyglądać. Zatem doradcy inwestycyjni zwrócili się ku Mean Variance Theory H. Markovitza sprzed 60 lat, która traktowała pieniądze jako jedyny cel życia i proponowała komponowanie portfela inwestycyjnego na podstawie kryteriów „ryzyka” (zmienności)

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i zwrotu dla inwestora. Postulowaną „optymalną zmienność” nazwano „profilem ryzyka”. W prezentowanej pracy autor sugeruje, że inwestycje są wykorzystywane do osiągnięcia realnych celów życiowych. Staje się więc oczywiste, że inwestycje powinny być tworzone jako funkcja tych celów. Dlatego naturalne jest istnienie wielu subportfeli inwestycyjnych, z których każdy ma własny profil ryzyka. W nawiązaniu do Maslowian Portfolio Theory (teorii portfelowej Maslowa) autor kładzie nacisk na potrzeby i zastosowanie hierarchii celów, a także niepomijanie w analizie żadnych celów. Celem artykułu jest zaproponowanie praktycznego zastosowania Maslowian Portfolio Theory, jak również zbadanie skutków tego zastosowania.

**Słowa kluczowe:** inwestycje, doradztwo inwestycyjne, hierarchia celów, teoria portfelowa, Maslowian Portfolio Theory.

**JEL:** G11, G14, G32, M41

## 1. Introduction

In the decades building up to the “Global Meltdown” of 2008, it became common practice for financial institutions to have product-centered campaigns and pay little attention to the suitability of investment products. Typically, the focus of sales staff was periodically oriented towards new investment products (investment funds, insurance-linked products, etc.), and they would have sales targets set for a given product. This implied that if the product was very risky, the pressure was on them to sell the riskier product.

During the 1990s, many banks drew up their own rules on limiting the risk of miss-selling. Inspired by the Markowitz Modern Portfolio Theory (see Markowitz, 1952), institutions were already using something they would call a “risk profile.” In fact, it was something akin to a maximum volatility for each investor.

In November of 2007, the Markets in Financial Instruments Directive 2004/39/EC (MiFID) entered into force and suddenly, it became a very relevant to ask: “Is the investment that I want to sell to this client suitable for him or her?” However, nothing was regulated nor calibrated and each customer could receive different treatment from different institutions. The merit of the MiFID it created a change so that that financial institutions, on both sides of the Atlantic, now typically use heuristics that are loosely based on the foundations established by Markowitz (1952), who formulated a portfolio theory that is now called the Modern Portfolio Theory (MPT).

Modern Portfolio Theory<sup>1</sup> proposes:

1. Finding a diversified, optimal portfolio as opposed to a single best stock on the exchange;
2. Choosing an “efficient portfolio” of investments (i.e. not “dominated” by portfolios that have lower risk and the same or higher return, or alternatively higher return and the same or lower risk);<sup>2</sup>
3. That an investor should consider *all* his or her investments in *one* portfolio (from the money to buy a sandwich tomorrow to the house in which one lives, all holdings should be considered in *one* portfolio!).

What the theory does *not* tell us is:

1. What should be considered a “risk,” in other words, what risk measure to use,
2. How to select one of the many of possible portfolios, and
3. Which investment horizon to choose in order to optimize the portfolio.

In 1952, when this theory was developed, it was a major step forward as it provides a mechanism for selecting a portfolio that is typically well-diversified. This is without a doubt a major contribution to the theories of investment selection.

But the omissions of the theory (i.e. such as which portfolio to choose, what risk measure to use, and what investment horizon to use) as well as its limitations (all investments in one portfolio) would lead to arbitrary implementation and incoherence among financial institutions in their financial advice (see e.g., Marinelli and Mazzoli, 2010).

The next idea came in 2009 with the Maslowian Portfolio Theory (MaPT) – see De Brouwer (2009). This theory argued that financial investments are not a goal in and of themselves, but should be considered as a means of support for other life goals. These other life goals are the human needs that, despite many modifications, are still based on Maslow’s “hierarchy of human needs” (1943). While the hierarchy itself may be questioned and its content even amended (see e.g., Kenrick et al., 2010 and De Brouwer 2012), its foundations – that human needs are multiple and addressed at different moments – still stands.<sup>3</sup>

Everything fell naturally into place and a mathematical implementation did not have to wait long to appear – see De Brouwer (2011) and De Brouwer (2012). This cleared the path for an investor-centric advice model.

Having multiple investments portfolios (per investment goal) has many advantages:

1. **Safety:** The probability of not achieving a particular life goal is necessarily lower (as means are segregated by definition and will not automatically be used to fulfill other life goals);
2. **Transparency:** The investor is able to see what means are assigned to what goal and, in case of adverse market conditions, it is much easier to see what goals are endangered and reconsider them knowingly;
3. **Counteract behavioral biases:** Because of improved transparency, one is much less likely to “buy high and sell low,” or to succumb to panic sales on market drop-downs.
4. **More realistic selection methods and parameters for portfolio selection:** While MPT forces an investor to state his or her “optimal variance” (a counter-intuitive, abstract and probably not existing concept), more meaningful downside risk measures can be used relative to the investment goal;
5. **Suitability:** Portfolios resulting from MaPT – like reasoning are much more likely to suite the investor;

6. **Consistency within the industry:** Since more tangible methods can be used to estimate parameters that are both relevant and do exist (in sharp contrast to a “personal maximum volatility level” that does not exist) one can reasonably expect that if two institutions provide advice on the same life goals, the resulting portfolios will be less different;
7. **Diversification in institutions becomes possible and meaningful:** A person who holds his or her retirement pension savings in one institution and savings for a car in another would, in both cases, get the right portfolio and not the same “arbitrary average”;
8. Philosophically, we believe that it is important that **money is not treated as a unique life goal**, but rather as a means that supports “real life goals.”

## 2. The Traditional Approach of Investment Advice

### 2.1. The Idea

As early as 1738, Bernoulli (1738) underlined the concept of diversification while in 1759 Smith argued (see Smith, 1759) that the economy is driven by people who are behavioral actors. The decisions that create an economic system are governed by emotions such as greed and fear, which are not necessarily rational.

However the success of the utility theory (see von Neumann and Morgenstern, 1944) and the success of econometricians such as Samuelson gave birth to the belief that everything can be calculated and economic actors are all rational beings. It did not take long for financial markets to be declared “efficient” by Fama (see Fama, 1965) after the Friedman arbitrage argument (1953).

It is against this zeitgeist – which assumed that people were fully rational and markets were efficient – that in 1952 Markowitz formulated his suggestion that it would be a good idea to use the MCDA<sup>4</sup> method of dominance to select portfolios. Later, this approach became commonly known as Modern Portfolio Theory (MPT). This theory proposes the selection of diversified portfolios so that no other portfolio has a better return for the same risk. Another important aspect was that it suggested that all investments (from the cash to buy lunch to the house in which one lives) should be considered in *one* portfolio. This might be a reasonable approach for someone who is so rich as to not have to worry about subsistence or specific important projects and is in effect investing in order increase or maintain capital. This made sense when Markowitz wrote his theory because for the preceding hundreds of years only very wealthy people were able to invest in financial markets. The dominant practice up to today remains largely based on the MPT. We will therefore refer to this approach – where all investors have one risk profile and optimize one portfolio – as “the traditional process

for investment advice and decisions” as proposed by Markowitz (1952). It consists of the following steps:

1. All possible investments are characterized by their expected return, the level of uncertainty regarding this expected return (risk), and the expected correlation with each of the other possible investments.
2. Given these characteristics, it is possible to calculate optimal portfolios that are composed of investments such that they combine the highest achievable expected return for a given level of risk and are, at the same time, typically well-diversified.
3. Investors are risk averse, but the degree of risk aversion differs among investors. The most risk-averse investors will prefer a portfolio with low risk and accept a lower expected return. Other investors are willing to take more risks, which leads to more uncertainty combined with a higher, but less certain, expected return.
4. Last but not least, investors can only do this while considering *all* their investments in one portfolio and optimizing this global portfolio.

Despite overwhelming evidence that this approach is not in line with what comes naturally to human beings (see e.g., Shefrin, 2000; Kahneman, 2011; Thaler, 2015; Thaler, 2016). This approach to investment still dominates asset management and investment advice practice. Market specialists construct optimal portfolios with different degrees of risk while advisers help to select the portfolio that offers the optimal combination of risk and return for a specific investor profile. This thinking seems to be at the origin of important building blocks of financial regulation, such as the MiFID, which are inspired by this approach.

This approach to investment advice will be referred to as the “traditional approach.”

## **2.2. The Building Blocks of the Traditional Approach**

The traditional approach will typically try to match an investor to one “risk profile.” Typically, this investment profile is supposed to be one  $(R, \sigma)$  tuple on the efficient frontier,<sup>5</sup> in which case it would be one market portfolio that is accompanied by more or less cash (as predicted by the capital asset pricing model – CAPM). However, in most cases (and actually in all cases as far as the authors could check), the financial institution will choose not to follow CAPM, but rather rely on some rules of thumb and eventually optimize fee income. By doing so it will sell suboptimal portfolios (in a MPT sense) that basically manage the risk profile with their equity content.<sup>6</sup>

The least risky and the most risky portfolio is another arbitrary parameter in this approach and each institution will have its own choice. However, the largest problem in this approach is to determine the “risk profile of the investor,” arguably because it is something that does not exist. An investor has necessarily different risk profiles for different projects (retire-

ment would be very risk averse, education of children would be rather risk averse, but projects such as world travel or donations would be thought of as something that would be satisfying with different budgets, and if there are some assets left then one could even expect risk seeking behavior for those assets) – see De Brouwer (2012) and Shefrin and Statman (2000).

The main driver of the risk profile is probably linked to the importance, urgency, and time horizon of the different investment projects that a person might have. However, they cannot be taken into account because the intention is to present just one risk profile (and not one per investment goal). Instead, the financial institution can rely on some rules of thumb, such as age, education level, income, etc. Indeed, a young person who still has a lot of possibilities to “work his or her way out of financial misfortune” can objectively bear more risk. This is even if that is not necessarily a good idea.

Also, the financial advisor can try to minimize his risk that the customer will misunderstand the investments, by taking education into the equation. Someone with a higher education is supposed to understand the disclaimer and hence can be sold riskier assets.

The second major problem is to match the nonexistent risk profile with the range of available risk profiles. This can be thought of as a multi-criteria decision problem where one uses rules of thumb based on age, education, knowledge, attitude towards risk, ambition, etc. Of course, these criteria do not work in the same direction and one will have to select one risk profile based on many functions that have to be satisfied.<sup>7</sup> Typically, one will choose the worst of all MCDA methods to tackle this problem – the weighted sum method, also referred to as “the questionnaire.”

Typically, the well-educated, young person who is knowledgeable about financial investments will be allocated a “high risk profile”. However, our experience is that typically such people have many short-term projects such as a down payment for real estate, marriage, starting a family, etc. The person who is retired or close to retirement will typically get a very conservative portfolio, regardless any surplus or lack thereof.

### **2.3. Weaknesses of the Traditional Approach**

The traditional approach of investing remains appealing because of its simple and straightforward design and the fact that it underlines the importance of diversification. However, it is based on a number of important assumptions that do not necessarily correspond to real needs and the real behavior of investors. Using the traditional approach can lead to a dangerous gap between an investor’s expectations and what the industry is able to deliver.

The traditional approach can only consider one investment horizon. In reality, investors can have a multitude of investment horizons, depending on the projects they intend to finance with the results of their investments. Putting everything in one portfolio almost eliminates the possibility of assessing what is really happening and leads to panic when markets decline.

The traditional approach assumes risk on investments to be stable. In reality, the risk of many investments is time dependent. A simple ten-year government bond carries a high interest rate risk for a short-term investor, but is low risk for the long-term investor (but interest rate risk is replaced by sovereign risk).

In the traditional approach, the investor gets *one* risk profile (ranging from conservative or low risk to dynamic or high risk). In reality, the same investor can be very risk averse for part of his or her investments, but a risk-taker for another part of his or her assets. Behavioral finance has pointed to many of these behavioral characteristics, considered “anomalies” by traditional theories, and they are not taken into account in traditional practice.

This results in a very non-transparent investment strategy. When, for example, the markets slump, the investor knows that he or she has lost a certain amount or percentage of the whole portfolio. However, he or she cannot see which projects are endangered and which are not. This leads to panic sales when markets are low and further enhances investment mistakes known as “myopic loss aversion” (Benartzi and Thaler, 1995) and the “disposition effect” (Shefrin and Statman, 1985) that are proven to deteriorate a private investor’s profit (see e.g., Barber and Odean, 2001; Odean, 1999).

### **3. Maslowian Portfolio Theory**

#### **3.1. The Concept of Multiple Goal Investing**

The approach of multiple goal investing was inspired by the work of the famous psychologist Maslow, who described a hierarchy of needs, starting with basic needs such as food, to more advanced needs like creativity. Needs of a higher order only come to the forefront once the lower needs are more or less satisfied.

Multiple goal investing starts with the recognition that people invest in order to be able to realize projects. Some of these projects have a short-term horizon, others, like for example financing retirement, have a very long time horizon. Thus, an optimization of the whole portfolio for one investment horizon makes little sense.

It was recognized by the school of behavioral finance that investors use “mental accounts” on a per project basis (see Shefrin and Statman, 2000). This was proposed as a normative theory by De Brouwer (see De Brouwer, 2009) and called “Maslowian Portfolio Theory”.

Maslowian Portfolio Theory theorizes that if investments are meant to cover human needs, then they should be built up in line with those needs – one sub-portfolio per important need. This not only justifies the use of multi-goal investments, but by using the hierarchy of human needs one automatically gets a “hierarchy of investment goals.” It is this hierarchy of investments goals that can be used by the advisor as a rough guideline in



order to make sure that no goals are forgotten and that goals are treated in a logical manner.

Roughly, one can translate Maslow's need levels as follows:

1. The physiological need level: the cash to buy lunch, clothes, etc.,
2. The safety need level: "rainy day" savings such as personal insurance against any disaster or explicit insurance coverage (such as life insurance, unemployment insurance, fire insurance, etc.),
3. The love and belonging needs: savings for offspring (college money, savings to get children started in life, etc.), partner, etc.,
4. The esteem needs: the nice car, the expensive trip, the second home, etc., and
5. The self-actualization needs: priceless things to do, create, and experience (which might also require money).

In general, as there are more projects than available funds, the investor has to make a hierarchy of projects – maybe comparable to the Maslow hierarchy. Only when the projects with basic priorities are secured will projects with less priority be considered. Each project gets its specific funding and an adapted investment strategy that also takes the time horizon into account.

Investors also have to make a decision regarding financial risk taking. However, in this approach, the chosen risk level is linked to the likeliness that certain projects will or will not be achievable. Taking more risk increases the average expected return, and thus makes money available for the financing of more projects. It also increases the risk that some of the planned projects will have to be abandoned if the expected returns are not realized, however. The advantage of this approach is that investment decisions are no longer linked to abstract concepts such as "risk aversion" or "optimal volatility", but to real life choices and preferences, comprehensible to the average investor. Risk aversion comes back in a natural and intuitive way per investment goal or project.

### **3.2. Building Blocks of Multiple Goal Investing**

Multiple goal investment packages consist of several building blocks that should be brought together by software and/or personal advice.

1. An **inventory of all assets and liabilities** is the starting point for the multiple goal investing process. Many software packages are already available to help investors quantify their complete financial balance sheet, but it might be necessary to adapt them to the specific needs of this project. Some clear choices have to be made. For example, to what extent are reserves in social security or pension funds considered a part of the actual portfolio of the individual investor.
2. Analyzing the financial lifecycle and the economic capital of an individual investor also requires **estimating expected savings capacity in the future**. These future savings are dependent on future career prospects, the evolution of household spending, and retirement age. This

part of the analysis confronts the investor with what can be called the “natural” evolution of his or her wealth. It can point to bottlenecks such as insufficient savings or the need for protection against illness or death (given that these events can fundamentally change the financial balance).

3. Then, **investment projects have to be defined**. Depending on the preference of the investor and his or her financial abilities, it could well be that there is only one project, such as financing retirement. However, the investor could also have several goals, including financing travel plans, succession targets, important investment projects in the medium term, etc.
4. Next, one should **prioritize the projects**. The priority class should make clear the utility to the individual of the project:
  - Projects that should be realized as they are considered essential,
  - Projects that are very important, but life can be adapted if they are not realized,
  - Projects that are still important, but will not have any fundamental influence on life if not realized, and
  - Projects that are “nice to have.”

If needed, sub-categories can be made for each type of preference.

5. Then, one needs to **determine an optimization method and parameters**. Here, inspiration can be found in De Brouwer (2012).
6. Finally, the allocation of assets (actual and future) to the different goals and potential outcomes must be discussed with the investor and ultimately the whole exercise could be iterated until it is satisfying for each investment goal and coherent as a whole.

Once an initial financial plan is made up, it has to be followed up, not only because market conditions might change, but also because life goals can change. This means that it is essential to periodically check if the investment goals are in danger (was the investor able to save what he or she had planned, did he or she need to withdraw money for something that was not foreseen) and whether market evolutions are in line with expectations. Also, one should check if the investment goals as stated are still relevant, if new goals made their appearance, and if the ranking is still correct.

### **3.3. Weaknesses of Maslowian Portfolio Theory**

Multi-goal investing is a heuristic that should work for the knowledgeable investor who understands and manages his or her priorities well. However, in reality, the goal-based approach has one crucial weakness: What if the investor forgets an important goal? This could potentially prove dramatic as it would not be unusual if the other goals consume all available investment resources.

Another equally worrying question would be: While investors indeed have behavioral portfolios (sub-portfolio per investment goal), it cannot be denied that Markowitz was awarded the Nobel Prize in 1991 for his

Mean Variance Criterion. Should we not rather push investors to consider all assets in one portfolio?

Any serious institution that wants to base investment advice on a goal-based approach should worry about these two questions. It is here that the De Brouwer's 2009 theory, Maslowian Portfolio Theory, comes to the rescue. Maslowian Portfolio Theory starts with the idea that investments are supposed to support other life goals or "needs." Human needs are well understood and comprehensively studied by psychology.<sup>8</sup> Moreover, the essence of Maslow's 1943 theory (see Maslow 1943) still stands: Human beings have different needs and address them at different moments, and if one need is not fulfilled the person focuses on that need and feels bad.<sup>9</sup>

Another important aspect is that the "goal-oriented" approach is more time consuming and requires different skills of the sales staff. This means that there is not only cost involved in training staff, but also that certain income streams become less accessible. For example, it becomes more difficult to turn around assets and earn trading fees. The business model must be shifted to one in which the goals of the investors and advisor are aligned.

Finally, we believe that the challenge is to strike the right balance between detail and robustness. It is clear that a perfect forecast and a plan that is so detailed so as to take into account the price of the daily sandwich does not make any sense. This is because each parameter is stochastic – not only the price of the sandwich, but also how much of it is eaten, which shop we choose, etc. At the same time, it would also not be desirable to have a perfectly laid out plan for every minute, would it?

For this reason, assumptions and simplifications have to be made. The art of striking the right balance is crucial. The author argues that it should be possible the kill two birds with one stone:

1. Have a detailed savings plan for each goal for the next year (based on the benchmark for each goal), and
2. Have a rough plan for the next life stage or, even better, have an outline of how it could look up to the end.

### **3.4. A Few General Remarks and Implications**

#### **3.4.1. Legal Remarks: MiFID and FINRA**

As in the United States, so too in the European Union, there is legislation that instructs advisers on what is to be considered good investment advice. In the United States, the FINRA regulations are quite general, while in Europe, the MiFID regulations are quite detailed. Their impact and the potential for goal-based investment advice that fits within these regulations have already been discussed in De Brouwer (2012). This is a reiteration of the main points.<sup>10</sup>

The philosophy behind the suitability requirements in the United States and the European Union seems to be convergent. Both somehow allow the

assumption that an investor has a unique risk profile composed of multiple variables – such as financial capacity, plans, and psychological factors – and both seem to assume that these multiple variables can be magically combined to give a one-dimensional variable – “risk tolerance” – that governs the boundary conditions for all mental accounts. Even if the wording of both regulations is actually a wider<sup>11</sup> and allows for different interpretations, this is how the whole industry understands it. The result is that the regulations unintentionally steer the whole industry towards the use of risk questionnaires in order to determine risk tolerance, applying this risk tolerance to all investment projects (mental and real accounts).

However, neither the European Union Commission nor FINRA provide any way to translate this know-your-customer principle into investment advice. This would indeed have been difficult because there is no dominant line of thinking amongst scholars about how to perform such a mapping. This creates an interesting situation in which lawmakers are enforcing a map setting up characteristics on investment portfolios (or products), where there is no conclusive scientific information on how this can be done, nor is there any evidence to conclude that this is *überhaupt* possible.<sup>12</sup> At this point it is possible to argue that it might have been prudent to verify the existence of the converging scientific literature on the subject, before issuing the regulations.

Furthermore, the European Union Commission has clearly moved from a principle-based system of regulations to a rule-based one. The dominant tendency is to avoid the principle-based system and impose a significant burden of rules and requirements for compliance-checking, as opposed to requiring a responsible attitude.

	<b>FINRA</b>	<b>MiFID</b>
In <b>banking</b> applicable to:	Bank subsidiaries and affiliates registered as securities broker-dealers	All
In <b>insurance</b> applicable to:	Annuity and life products	None
In the <b>securities sector</b> applicable to:	Securities brokers	All
<b>Field</b> of application:	Investment recommendations	Advisory services (discretionary portfolio management and investment advice)
For <b>professional clients</b> :	Not applicable	Less strict rules
<b>Information required</b> from customers:	Implicitly understood: investment objectives, financial capacity, experience and knowledge, liquidity needs, and risk tolerance	Explicitly required: investment objectives, financial capacity, and experience and knowledge

*Tab. 1. The different requirements of MiFID Art. 19 and FINRA Rule 2111. Two important differences are that MiFID leaves the unit – linked insurance business untouched – an important loophole – and that on the other hand, institutional clients are also assumed to be in need of “protection.”*

Both regulations have the best of intentions, but – at least in the case of MiFID – they have had an adverse and regrettable effect. The result is that the investor is (a) in a weaker legal position because he or she has signed a disclaimer and (b) has the false impression that he or she is heard while in reality the investment advice is close to being random, way too general to serve any purpose, and in most cases plainly wrong (see e.g., Marinelli and Mazzoli, 2010; De Brouwer, 2012).

Both regulations allow for the goal-based Maslowian approach, but are unintentionally misleading a whole industry, where the victim is exactly the person that was supposed to get the most protection.

### **3.4.2. About the Psychology of the Investor**

Suppose an investor who has ample resources and long-term goals, but does not want to take any “risks.” This means that he or she is myopic loss averse<sup>13</sup> and prefers not to see any losses in the short term – even if in the long term this translates into more potential upside and similar downside risks.

Or assume an investor who does not like hedge funds and prefers not to have exposure to anything that is labeled a “hedge fund.” Of course, one can argue that this is the result of psychological bias “labeling” and that this choice only reduces diversification and deteriorates the risk/return profile of the portfolio.

But, does this mean that we should “overrule” the preferences of this investor? This question is, of course, up to the advisor and the investor, and it is difficult to take a general stance.

We see two possible positions:

1. Leave the choice up to the investor by showing the impact of his or her decisions, or
2. Allow for the investor’s psychology to influence the potential content of portfolios, which, of course, has two dimensions – one might avoid portfolios that are, as a whole, too risky or portfolios that contain certain asset (classes).

In the traditional paradigm, the investor’s psychology will have an overwhelmingly important impact in portfolio selection (although mostly in adverse and perverse ways<sup>14</sup>). We argue that this is wrong and propose that the investor’s psychology should be introduced so as to play a moderate to limited role alongside the real, tangible, and rational possibilities for selecting a goal-based investment portfolio.

We suggest using the opportunities inherent in a financial plan as an effort to educate the investor and strive for financial well-being, rather than to replicate his or her limitations and mistakes.

### 3.4.3. Product Development

If the Maslowian investment approach is implemented, new investment products might become important. For example, it might be attractive for the investor to have a “lifestyle investment fund”<sup>15</sup> available that targets a certain date in the future. For example, the fund would invest all its assets in equities twenty years prior to that date and will gradually opt for less volatile assets to end up at the end date with 100% in cash. While this seems attractive and better suited to goal-based advice, it is only a desirable solution in an environment where real investment advice cannot be given (or is not asked for).

An investment that changes its risk profile all by itself is confusing and most probably will lead to miss-alignments of the desired portfolio and the actual portfolio. Thus, if one can reasonably assume that investors get good advice every year or so, then the traditional product offer is well suited.

Indeed, the traditional product offer for investment funds – all well-diversified – offering different risk-return profiles, seems to offer everything needed for goal based investing. The open question is which investment products to mix for the investor’s portfolio.

As we are mainly interested in long-term planning, it is not necessary to choose expensive investment funds that trade a great deal. A fund with a rather passive approach, low entrance fees, and low management fees is the preferred solution.<sup>16</sup>

### 3.5. Special Investments: Hedge Funds and Capital Protected Funds

Including hedge funds (or any other exotic asset) in a portfolio is an ambitious task for the advisor. The advisor who optimizes portfolios using a mean-variance approach will be fooled because such assets have a distribution that is nonstandard.<sup>17</sup>

In this case it is very important to select a coherent risk measure. Below is an example from the book *Maslowian Investment Theory: A Coherent Approach to Strategic Asset Allocation* (see De Brouwer, 2012, Section 8.3.4, pp. 284–287, with more information in Appendix C.2., p. 411). The asset classes considered are:

- Cash: very safe, but the variance is not zero because inflation is deducted,
- Bonds: more volatile than cash, but less volatile than equities,
- Equities: the most volatile,
- Structured investments: constructed so that it delivers protection to initial capital (when the equity market declines), but with market increase it delivers 20% of that return, and
- Hedge funds: the problem here is that we only have the extremely good return versus the volatility ratio based on the past performance, where an additional downside risk is added artificially.<sup>18</sup>

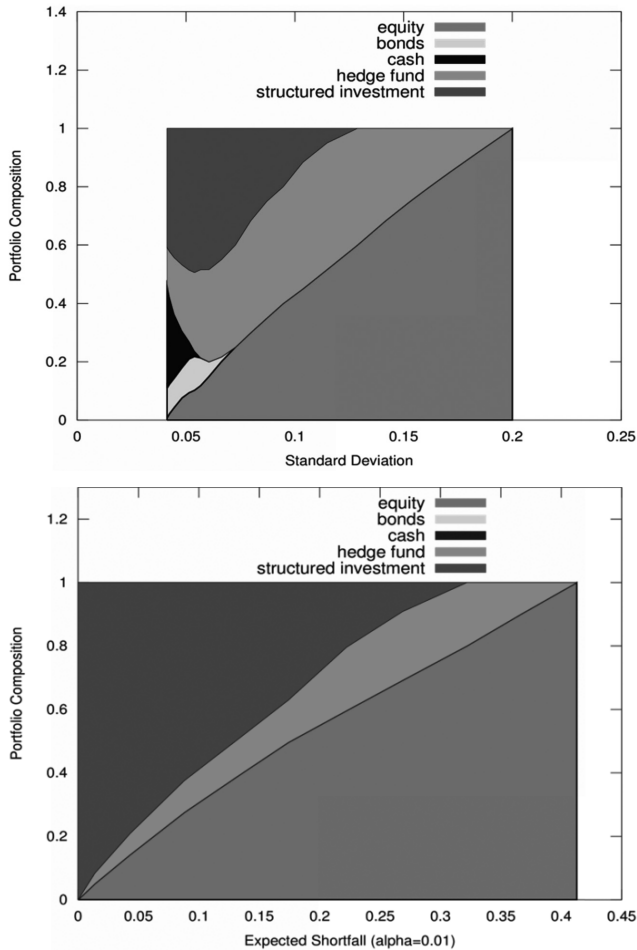


Fig. 1. Portfolio optimizations with an incoherent risk measure (left) and a coherent risk measure (right). Source: P.J.S. De Brouwer (2012). *Maslowian Portfolio Theory: A Coherent Approach to Strategic Asset Allocation*. Brussels: VUBPress.

Considering the example of two risk measures-variance and expected shortfall (ES) – results are presented in Figure No. 1. It can be noticed that the “least risky portfolio,” according to variance, is very well diversified: it contains all assets. However, when looking at what is considered as the least risky portfolio by ES (the right plot), it can be seen that it only proposes one investment: the capital protected structure. Indeed, it is less diversified, but is it not more intuitive? What should be considered as being least risky: a portfolio that has a 17% probability<sup>19</sup> of losing money (as proposed by variance) or one that has a 0% probability of losing money (as proposed by ES)?

The fact that variance does not provide a logical result is due to the fact that it is not a risk measure at all. Variance is linked to profits as much as to losses! ES is a risk measure and looks at what loses one can have.

Another interesting observation is that the hedge fund gets 40% of the weight very quickly when standard deviation is used. No reasonable person will propose 40% in hedge funds for the conservative and average portfolios. On the contrary, ES proposes putting about 10% in hedge funds. Again, it can be seen that using a coherent risk measure provides the logical answer.

## 4. Conclusions

While the Maslowian investment approach, “Goal Based Investing,” or even simply investing with multiple goals in mind seems to be in its infancy, the approach is natural and has been used successfully to run armies, countries, companies, etc.

The author believes that the traditional approach (one risk profile based on a questionnaire) is not an answer that provides suitable portfolios. It creates a serious risk for those who more and more will have to be self-reliant when retired.

Compared to actual practice, it would be easy to improve and simply allow an investment portfolio per investment goal. However, practical considerations (such as being more time intensive, more clearly measurable, etc.) require increasingly skilled staff, unless it becomes possible to tap into the digital revolution.

This goal-based Maslowian approach is:

1. Truly customer centric, as it aligns itself with the investor’s life and his or her life goals;
2. Safer in the case of adverse market situations, as it is less likely not to attain certain goals;
3. Avoids panic sales, as it provides a framework as well as insight;
4. Helpful in having a fulfilled life, as it encourages thinking about one’s life and priorities.

The author hopes that this paper and the sources it cites provides enough information to put Maslowian Investment Theory into practice.

### Endnotes

- <sup>1</sup> Also known as Mean-Variance Theory.
- <sup>2</sup> The careful reader will realize that this is actually the “dominance heuristic” used as a basic and simply MCDA method.
- <sup>3</sup> Large institutions such as pension funds use this knowledge and already apply this theory, calling it “asset-liability matching” – see e.g., Amenc et al. (2009).
- <sup>4</sup> MCDA stands for “Multi-Criteria Decision Analysis” and refers to the science (or should we call it “the art”?) of making decisions when there is not one, but many



functions to be optimized. In this paper, we encounter in this paper the following methods:

- Dominance: the idea is to eliminate all alternatives that are clearly worse for all criteria (that is the Mean-Variance criterion or the MPT), and
  - WSM (Weighted Sum Method): this is the investment questionnaire in which each criterion is stripped of its units, multiplied by a factor, and added together to find its “score”.
- 5  $R$  stands for return and  $\sigma$  is the standard deviation of volatility of that return; “efficient frontier” is the set of  $(R, \sigma)$  tuples that are not dominated by any other tuple.
  - 6 The CAPM prescribes that each optimal portfolio is a linear combination of cash (typically referred to as the “risk-free asset”) and one market portfolio. In reality, advisers generally do not rely on the safest asset to create different mixes, but on the most risky one-equities. This paradox is known as the “asset allocation paradox” – see Canner et al. (1997) and Brennan and Xia (2002).
  - 7 The science of selecting one solution when many criteria play a role is called “Multi-Criteria Decision Analysis” (MCDA).
  - 8 For an overview of relevant literature, including the latest developments in evolutionary psychology, see De Brouwer (2012), Chapter 4, page 155.
  - 9 This is the essence of Mental Accounting, the phenomenon that people indeed have separate “pockets” in their minds for separate goals. This is the foundation for Behavioral Portfolio Theory – the theory that states that people build portfolios as separate layers, where each layer finances a different goal, and do not, as Markowitz had suggested, consider all assets in one portfolio. 10 Also noteworthy in this context is that generally one refers to Thaler (1985) as providing the first description of mental accounting. However, it may be argued that the first description of mental accounting is actually by Maslow (1943). Also worth noting is the fact that mental accounting is the basis for another important mental bias “framing,” see Tversky and Kahneman (1981).
  - 10 More information can, of course, be found in the above-mentioned book in Chapter 9 on page 301 and those that follow.
  - 11 MiFID and FINRA indeed allow for mental accounting and having different sub-portfolios. However, by enumerating the information that must be requested about the investor, including his or her “knowledge and experience in the investment field relevant to the specific type of product or service” (in MiFID) or the customer’s investment profile, age, investment experience, and risk tolerance (in FINRA rule 2111), for example, there is the false impression that this is a stance in favor of the one-risk-profile-per-investor paradigm. Indeed, under a goal-based investment approach, information such as product knowledge, investment profile, age, investment experience, or risk tolerance is irrelevant (or implicitly – not explicitly – taken into account). It is also important to note that in our approach, investors are treated equally, and are not discriminated against on the basis of their knowledge or age, but are advised on the products that they need.
  - 12 This situation is similar to requiring carmakers to install a device that reads the driver’s mind and shuts the car down when the person is too aggressive. There is no scientific evidence to suggest that a person’s mind can be read, so carmakers are encouraged to read facial expressions and temperature patterns on which to base their decision. Moreover, there is no real scientific information about how to map such patterns to the elusive characteristic “aggressive” nor is there any information to suggest that being “aggressive” is a dangerous state. This is because it is ill defined (is it a state or a character?) and it is not stable (it can change very

- quickly). Furthermore, if the car would stop working, the driver would get angry and lawmakers could use this to argue that their point is proven.
- 13 Myopic loss aversion refers to the fact that people typically attach too much importance to short-term loss aversion. For example, in the case of a fifty-year investment horizon, a cash portfolio is in many ways more risky than an equity portfolio. However, many people will choose for a very “defensive” portfolio (such as cash and bonds).
  - 14 For example, the suggestion in MiFID that the advisor should inquire about the investor’s educational level is typically implemented so that people with only lower education cannot get the portfolios with the highest potential. While in general the less educated person will have relatively fewer resources to invest and hence should take fewer risks, this can and will limit such people, especially in their long-term goals. This implies that this rule will keep poor people poor, as their retirement portfolio will not use the potential that comes with a long-term goal.
  - 15 Also known as “target date investment funds.”
  - 16 While this might seem as a plea for passive asset management, this is not necessarily so. Simply stated, if everyone followed a passive strategy, than this would make markets so inefficient that much money can be made with a smart approach.
  - 17 What this means is that the distribution is not even close to a Gaussian distribution.
  - 18 This is done by adding a second normal distribution (with a weight of 5%), centered around a 50% loss with a 5% standard deviation on top of the distribution based on historic returns.
  - 19 See De Brouwer (2012) for details on the calculations.

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