
Invited Editorial

Maslowian Portfolio Theory: An alternative formulation of the Behavioural Portfolio Theory

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ABSTRACT This paper aims to offer an alternative formulation of the Behavioural Portfolio Theory as formulated by Hersh Shefrin and Meir Statman (2000) via the Theory of Needs from Abraham Maslow (1943). This alternative formulation, called Maslowian Portfolio Theory (MaPT), yields the same results but adds some interesting insight and practical applications for the financial advisor. MaPT starts from the needs of the investor and therefore can have the ambition to be a predictive theory rather than a descriptive theory. This paper also tries to fit portfolio selection theories with the needs of the investor, and to give very applicable advice.

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INTRODUCTION

It is striking how well the findings of Hersh Shefrin and Meir Statman (2000) summarized in their Behavioural Portfolio Theory are in agreement with the more general psychological theory about the hierarchy of needs as formulated by Abraham H. Maslow (1943). This was already noticed by Philippe De Brouwer (2006), but this paper looks deeper into this idea and shows that the theory about hierarchy of needs is a sufficient framework for deriving a portfolio theory that can be used by practitioners and that is in agreement with the above-mentioned Behavioural Portfolio Theory (BPT).

Further, the paper shows what implications can be derived from this Maslowian Portfolio Theory (MaPT), and tries to conclude with practical advice for financial advisors.

MASLOWIAN PORTFOLIO THEORY

Maslow's Hierarchy of Needs is the theory in psychology that Abraham Maslow proposed in his 1943 paper 'A Theory of Human Motivation'. The concept for Maslow's hierarchy of needs was based on Kurt Goldstein's 'Organismic Theory of

Personality' (1939). The basic idea is that human needs are not all addressed simultaneously, but layer by layer. One only feels the need to fulfil the needs of a certain layer if the layer below is already fulfilled, if not then the lower level will get all of one's concern.

Maslow recognises five levels. The first four lowest levels are grouped together as 'deficiency needs' and are associated with physiological needs. When these levels are met, the individual will not feel anything special, but when they are not fulfilled, one will become anxious. The top level is called 'growth needs', and is associated with psychological needs. Deficiency needs must be satisfied first, and once these needs are met, one seeks to satisfy growth needs and hence seeks 'self actualisation'.

The clearest analogy would be the simple recognition that an individual also has layered needs when it comes to investing. First, one should seek financial safety in order to survive, and when that need is gratified one could think about speculating on the stock exchange. However, the parallel with Maslow's Hierarchy of Needs can be much more intimate. Below we briefly describe each level of Maslow's pyramid of needs and try to match suitable investments in each need level.

Physiological level

These are the needs of the organism such as eating, drinking, sleeping, breathing, sex, temperature that allows keeping a constant body temperature, and so on. If one of those needs is not fulfilled, this need will immediately get the highest priority, as the fulfilment of these needs is absolutely necessary for survival.

All those needs have to be fulfilled constantly; some of them come without cost in money terms, but others can be bought. Those last items constitute a challenge for

the investor: to make sure that at all moments there is sufficient cash to buy these basic supplies.

The typical investments that provide high liquidity and high security are cash and money market funds; however, should we exclude putting 10 times more in an equity portfolio? When considering that resources are limited and that one can gain additional satisfaction by fulfilling higher Need Levels, we would rather be conservative here. Excess cash can be used for higher needs. The total satisfaction will be higher if a minimum is spent on the lower needs, as the highest fulfilled Need Level determines the satisfaction level of the individual.

Safety needs

The physiological needs are so essential that any risk that they will not be fulfilled at any time in the future gets much of one's attention and is more important than all other (higher) needs. The safety needs include, of course, the possible lack of physiological needs or any threat to one's health or security in general.

Clearly, here we need an investment portfolio constructed in such a way that at no moment in the near or distant future is there any risk of lacking the ability to buy sufficient supplies in order to guarantee the minimal conditions to survive. An approach that puts safety first on a certain part of the portfolio seems to be the logical choice here. One of the aspects is certainly retirement savings. However, also the whole period before retirement should be covered, for example in the form of income insurance or a financial reserve to start from scratch.

Love needs

When physiological and safety needs are fulfilled, one develops the need to love and to be loved. This need is the basic motivator for taking care of family and offspring.

Typical examples are savings for children's scholarship, marriage, or any savings that would make their life easier or more successful. Such savings plans are generally set for 10–20 years, and for such investment horizons it is probably a good idea to invest more dynamically. Indeed, as Philippe De Brouwer and Van den Spiegel (2001) showed, Samuelson's thesis 'that a person whose utility schedule prevents him from ever taking a specific favourable bet when offered only once can never rationally take a large sequence of such fair bets, if expected utility is maximised' (Samuelson, 1963) is incorrect by construction of a counterexample. Their counterexample is in agreement with the Prospect Theory (Kahneman and Tversky, 1979). All fits together well and we believe that this is sufficient evidence to state that on portfolios to cover 'Love Needs', one generally should match the composition of the portfolio to the investment horizon and the importance of the specific goal.

The most appropriate savings are here investment funds, as they allow easily keeping a benchmark and allow for regular savings. Also, insurance linked investments¹ fit in the Love Needs level.

Esteem needs

These needs are the desire for achievement, confidence to face the world, independence, freedom, the desire for reputation and prestige, recognition, attention, and importance.

Money has a twofold role in this Need Level. First, money can buy some of the goods that will fulfil the Esteem Needs, but, second, money itself can be a source of esteem and recognition.

When we focus on the factors of esteem that can be bought (but are not money in itself), we find here projects for early retirement, a dream trip, a beautiful car, and so on. Different projects with different investment horizons call for separate accounts, just as in the BPT (Hersh Shefrin and Meir Statman, 2000).

These are higher needs, and therefore there is less urging. So objectively some risk is acceptable, but subjectively the maximal risk will be determined by the psychological determinants of the investor in combination with the exact project. This is what practitioners tend to call 'the investor's risk profile'. But putting this in the larger frame,² we notice that the risk profile is only valid for a fraction of any individual's portfolio.

This leads to the important insight that one investor has multiple risk profiles. One investor can have totally different risk profiles for different need levels, but also for investment goals within one need level. For example (limited to the Esteem Level only), an investor might have a flexible budget for a dream trip, but when he returns, he really wants to buy a certain car. His investment plan should consist of a rather sure (please do not confuse with 'low volatility portfolio') plan for the car and a plan that is more flexible/dynamic for the dream trip.

The observation that each individual has not one but many risk profiles can also be seen as a direct consequence of BPT (Hersh Shefrin and Meir Statman, 2000). Actually Meir Statman makes this very explicit in his 2004 paper, however without referring to the term 'risk profile' used by practitioners.

If investments are the means to obtain one or more goals in the Esteem Need Level (so if investments are not the goal in itself), the typical choice here would be a selection of mutual investment funds, or a systematic savings plan into a mutual fund. However, if money itself is used to fulfil (an aspect of) the Esteem Need Level, then other investment solutions might be suitable. Typical solutions would then be an exclusive investment product that allows for large degrees of personalisation.

Need for self-actualisation

'What a man *can* be he *must* be' (Maslow, 1943). Emanations of needs in this need level are the search for truth, religious interest and

artistic expressions. The exact form that these needs will take differs significantly from person to person. The emergence of these needs rests upon prior satisfaction of all the previous need levels.

One could think that here, no investments are needed; however, self-actualisation depends strongly on the person. It might be that a certain person likes to understand the dynamics of the stock exchange and that his personal challenge is to outperform these markets. Such an individual will find his self-actualisation in trading on the stock exchange or building his bond portfolio himself. This need is typically satisfied by having a broker account and not an investment fund, unless one wants to construct his portfolio of funds and in that way create his own 'fund of funds' and manage that portfolio of funds actively.

APPLICATIONS

Risk profiles

A popular method for advising investors is to define a 'risk profile' of an investor and present him with a portfolio that matches 'his risk profile'. This risk profile is generally derived from a questionnaire and is the result of the addition of marks that can be earned on different questions. Unfortunately the additive method is the worst of all aggregate methods in multi-criteria problems. On top of this problem of accurateness, this paper shows something much more dramatic: the unique risk profile of the given person does not exist! So, this popular approach uses the worst method to determine something that does not exist.

There is no such thing as the unique risk profile of a given investor in the sense that this profile should match his entire investment portfolio.

The effect of creating mental accounts is further enhanced by the fact that even within one level of needs, each individual need can have more or less importance and other

financial requirements. We should also not forget that Maslow (1943) rightfully noted that his theory is a general framework and that each healthy individual will display these basic levels of needs, but within each level (especially the higher ones), much is up to the individual person.

This leaves us with a fragmented goal for setting up the investment portfolio, which is probably best fulfilled with different mental accounts that each cater to one need, unless money is so abundantly available that no needs are in danger. Thus, the rich should worry less that basic needs will not be covered, and might therefore put all their investments in one portfolio.³

This last remark is not entirely new (it is actually a variant of Daniel Bernouilli's remark that 'an insurer must be rich' (1738, reprint in 1954)); however, it is an indication (when it comes to fulfilment of needs) that the smaller portfolio needs much more care than the bigger ones. Paradoxically, the rich person is of course able to buy much better advice. Therefore we believe that obligatory programmes (like obligatory retirement savings) are a good approach when one wants to make sure that the basic needs of all citizens are fulfilled. For the rich person, this is an unnecessary subdivision (not only a mental account, but a real separate account), possibly leading to sub-optimal investment portfolios. For the poor person, however, it might be the bulk of his portfolio that assures the gratification of his basic needs; it is his only guarantee not to fall into poverty.

A financial advisor might argue that his advice is in many cases focussed on the investor's Love Needs (or Esteem Needs), as the lower needs are taken care of by obligatory savings programmes and/or social security, and that it is not the ambition to fulfil the highest needs via investments. But, even if this simplifying assumption is true, it remains problematic to assume one risk profile for all investments of a given person.

This paper shows that dividing an investor's portfolio into different mental accounts matches his needs. The existence of this segregation was observed (Hersh Shefrin and Meir Statman, 2000) and explained as a result of non-rational heuristics in the working of the human mind. Indeed one will have a different risk tolerance depending on what exact goal one is saving for. One has multiple goals in life, and therefore when constructing an investment portfolio, one will feel the most comfortable by putting one's savings in multiple (mental) accounts, so that the level of risk can be selected in each portfolio.

Besides, the combination of investment goal and investor is not fully described by one variable, the volatility. The most suited solution depends on the type of investment problem (lump sum and/or systematic savings, fixed horizon or as soon as possible, one cash out or regular income from the portfolio, and so on), the importance of the investment goal and the ratio of cash-in versus cash-out.

This is an important warning for practitioners! If you, as an investment advisor, advised a certain portfolio based on your client's 'risk profile', then he is probably not getting the best advice. Depending on the exact goal that the client wants to cover with the savings with which he trusts you, you will have over- or underestimated the risk that he should take. In one case you will have disappointed your client, and in the other you will have forced him to take much more risk than he should.

From a descriptive portfolio theory to a predictive one

BPT is a descriptive theory that gives an explanation as to why people have the portfolios they do. BPT is a natural result of the deficiencies of the human mind: it is a result of non-rational heuristics on which the brain relies. So, BPT explains that we have multiple portfolios rather than one

portfolio because of the shortcomings of our mind; it does not answer the question whether this is good or bad. Maslowian Portfolio Theory (as presented in this paper, and further referred to as MaPT) explains how our basic hierarchy of needs can be translated to financial needs. One can say that here we find the portfolio that is needed by the investor. That does not exclude the possibility of better solutions for strategic asset allocation, but at least this gives us a strong indication that we have an answer to the question, 'what portfolio should be recommended?'

FURTHER RESEARCH

Behavioural Finance is becoming the commonly accepted paradigm; besides its applications in investment strategies, it is also used to explain why people invest the way they do. The BPT is a logical answer to the Friedman-Savage (1948) puzzle, and we believe that it is a very good theory that describes how humans construct an investment portfolio.

On the other hand, Markowitz' (1952) Modern Portfolio Theory is regarded as the rational investor's choice. This leaves us with the open question about how to advise individuals.

The Maslowian approach as presented in this paper helps to answer this question. As this theory starts from the needs of the investor, we can say that the portfolios that result from this theory are those that one needs in order to fulfil needs and become a happier person as one reaches self-actualisation in the highest Need Level.

The portfolios resulting from this approach are divided into mental accounts, but now we also understand why. This segmentation is in place not only because humans overlook correlations, but also because the portfolio selection methods are different for each layer of the portfolio.

Optimal portfolios per need level

Thus, the most important question to answer now is, what are the exact investment problems for each need level?

More generally, we should try to search for the link between the classical 'Life Time Optimisation' approach and the BPT approach. Does 'Life Time Optimisation' make sense? Does global optimisation allow (include) local optimisation?

We suggest looking for a place of the more basic (but more practical) portfolio theories in this larger framework. Our first approach would be covering MaPT as follows:

1. *Physiological level*: go for lowest risk and highest liquidity (cash only).
2. *Safety Needs*: Safety First (Roy, 1955) and Higher-Moment Portfolio Theory (Malevergne and Sornette, 2005).
3. *Love Needs*: SP/A (Lopez, 1987) and Higher-Moment Portfolio Theory (Malevergne and Sornette, 2005).
4. *Esteem Needs*: SP/A (Lopez, 1987) and maybe MPT (Markowitz, 1952) and maybe Higher-Moment Portfolio Theory (Malevergne and Sornette, 2005).
5. *Self-Actualisation*: MPT (Markowitz, 1952) or just gamble (as described by Meir Statman, 2004).

Practitioners' issues

What happens if a given state foresees one's basic needs? This means that we should maybe not seek solutions for the first two need layers, but the impact might be much more dramatic. Does social security change the investment problem as such? If one will get money from that state to survive, maybe it makes sense to gamble as much as possible: the state (other tax payers' money) covers the downside and, if it works out, the upside is the investor's!

CONCLUSION

Starting from Maslow's hierarchy of needs, we found that a layered portfolio (different

mental (or even real) accounts, as described in BPT by Shefrin and Statman, 2000) is the natural portfolio composition for a human being that invests to cover future needs. One covers basic (and most urgent) needs first with very safe investments, and then one caters for higher needs. As there is less urgency and importance for these higher needs, the risk tolerance increases for these mental accounts.

Even each different need within one Need Level has a different investment goal, investment horizon, importance and formulation. Therefore, each need has its own portfolio selection method and risk tolerance. Even the definition of risk can be different for each need!

These findings are to no extent revolutionary or shocking. They seem to be in line with everyday practice in financial advisory and law making. Only the idea that one person has one risk profile has to be abandoned, as it is a dangerous oversimplification.

Nor do the findings of this paper contradict with the BPT. They rather offer an additional view of the same problem, another 'frame' to look at the same problem, a confirmation of Hersh Shefrin's and Meir Statman's (2000) findings. However, where BPT is a descriptive theory, MaPT is a predictive theory: it can be used as a basis for advice and it is the beginning of the answer to the question, 'what should my investment portfolio look like?'

MaPT is probably of interest for financial advisors and other practitioners as it offers a framework that builds up logically towards a portfolio theory in which more basic portfolio selection theories can be fitted (probably Safety First, SP/A and Maslow's Modern Portfolio Theory, with eventually different or multiple risk measures as proposed by Malevergne and Sornette (2005), for example). In other words, it offers a theoretical framework to which sound financial advice can be structured.

NOTES

1. These investments are also referred to as 'unit linked'. They are basically a package of an investment (as a mutual fund) and a life insurance.
2. 'Frame' has to be understood here as it was used by Russo and Schoemaker in their book 'Decision Traps', and later used in the Behavioural Finance paradigm. It refers to a view on reality described like the view of a same room but via a different window, yielding a different impression. An investment problem can be considered through different frames: that of the investor, that of the advisor, that of the regulator, that of the tax authorities, and the frame that is interested in risks, liquidity, security, potential, and so on. No frame is better than another; they are all valid but incomplete views on reality.
3. For such a 'rich' investor it is not necessary to make a segregation of his or her portfolio in order to cover basic needs. Needs (or projects) can then be treated as cash flows that act upon one global portfolio. However, if the size of the projects together matches the size of the total portfolio, it might make sense to have a separate portfolio for the most important goals.

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