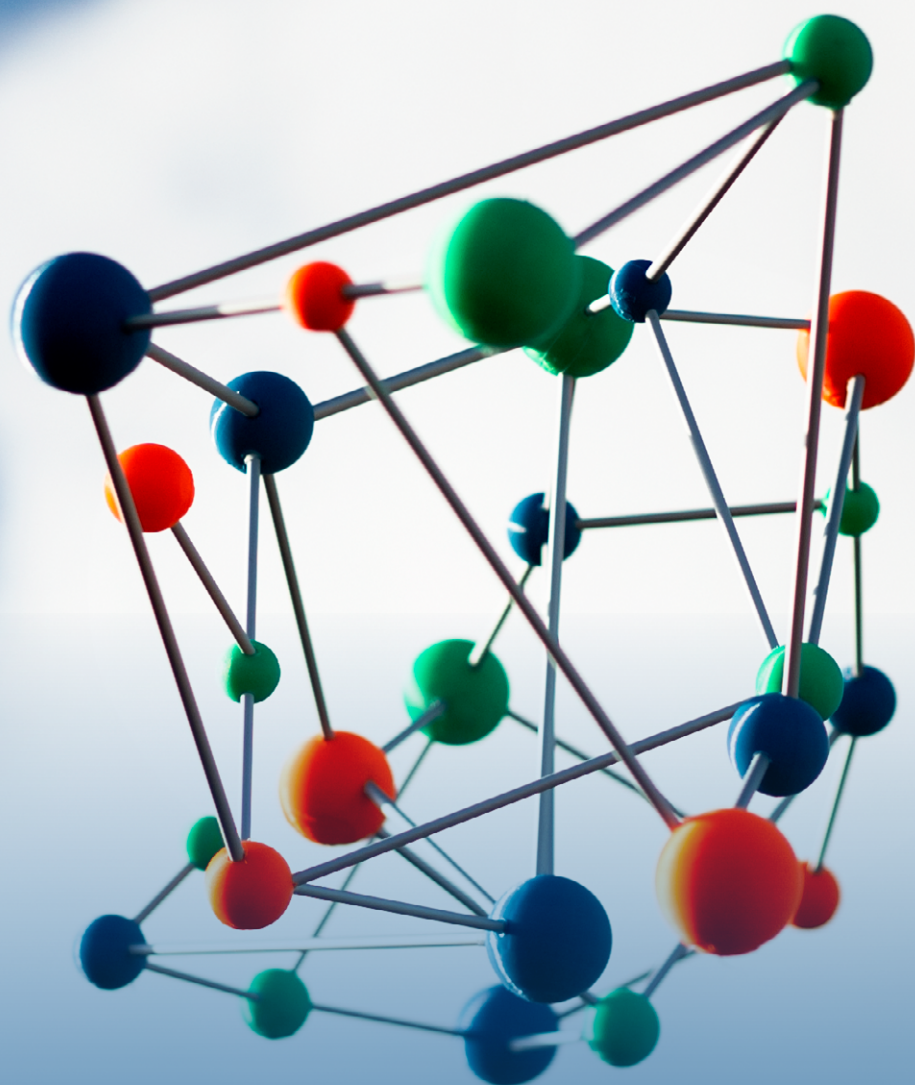




OPAL

Boost the added value of advice with goal monitoring

Research Paper
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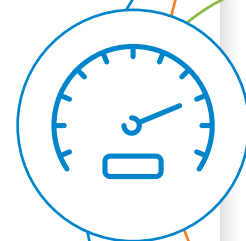
Management summary

Dynamic portfolio decisions increase goal feasibility without taking unnecessary risks

Would you advise a client to take on more risk than is actually necessary? The question may seem rhetorical, but the answer is not so straightforward in practice.

Most portfolio decisions are mainly driven by the outcome of a generic risk questionnaire. The connection between this decision, the client's financial situation, the goal and the remaining horizon is often absent.

To solve this, we propose the use of frequently updated feasibility analysis, or goal monitoring. We find that through goal monitoring, low-cost process adjustments and easy-to-implement decision rules, advisors can increase the likelihood of clients achieving their goals, whilst minimizing the risk. This approach suggests the added value of a 'dynamic lifecycle' strategy instead of a traditionally static approach. Our back test and forward-looking analysis find that this methodology leads to better results than current market practice, making use of a static strategy. With goal monitoring, advisors have the tools that proactively help to add value to their clients. This will not only increase client engagement and retention, but also run their business efficiently.





Introduction

Risk questionnaires are still driving the portfolio decision

In current market practice, during the mandatory intake process, all individual clients fill out a risk questionnaire before opening an investment account. The outcome of a risk questionnaire describes the maximum amount of risk that the client is willing to take in order to achieve his or her financial goals. Most advisors use the outcome of the risk questionnaire as a leading indicator for the preconfigured portfolio model that will be proposed to the client.

For example, the outcome of the risk questionnaire leads to a certain score that correspond to a Balanced Growth portfolio. The advisor will then typically propose this model to the client. However, this does not automatically guarantee that the Balanced Growth portfolio is the most suitable model for the specific goal(s) of the client.

Quality projections drive quality decisions

An alternative approach is to choose the portfolio model that is most likely to achieve the client's goals while considering his or her maximum risk willingness. After all, why would you advise a client to take on more risk than is necessary? The challenge is that a complex variable such as risk willingness cannot be captured by 5-10 standardized questions from a risk questionnaire. Instead, a more personal approach is required to support both client and advisor with these important investment decisions.

A useful tool to support quality portfolio model recommendations is scenario analysis, using realistic projections of risk and return of the underlying investment portfolio. Realistic projections require a dynamic modeling approach, taking into account current market conditions, business cycles, patterns in financial market behavior, and developments that are not captured by historical data, such as monetary policy. In our [previous white paper](#), we explained that to provide quality portfolio projections, a simple 'Monte Carlo' simulation is not sufficient.

What about target date funds or lifecycle strategies?

A commonly used solution to mitigate the risk of a client's portfolio, as their goal target date approaches, is a target date fund or lifecycle strategy. This strategy is often applied during the accumulation phase while saving and investing for retirement. A lifecycle strategy reduces the risk of the client's portfolio or fund based on the remaining time towards the target date, e.g. the retirement date. Even though this type of strategy tries to prevent taking unnecessary risks, the approach is very generic. A lifecycle strategy on its own does not signal whether a client is on track towards their goal or signal early de-risking opportunities based on past portfolio growth. As a result, advisors and clients are still not equipped with the tools to suggest timely adjustments or 'course directions' to the plan.



Manage client goals instead of portfolios

From a static investment strategy to a dynamic, goal-based strategy

Determining a suitable investment portfolio related to a client's goal is only a first step. After this initial investment decision, advisors can use the same type of analysis on a frequent basis to actively monitor the progress of the portfolio towards the client's goal. Increasing processing power and smart technology even allows advisors to effortlessly recalculate the probability of meeting these goals on a quarterly, monthly, or even daily basis.

Goal monitoring takes into account updated portfolio values, the updated – shorter – remaining goal horizon, the actual portfolio allocations and an up-to-date economic outlook. As an example, in another [recent white paper](#), we explain our approach in light of the current crisis following the COVID-19 outbreak. As all of these variables are subject to change and fluctuate based on market performance, goal monitoring can function as a signaling tool for advisors to look at clients' plans that need to be reviewed. Through interactive advisor dashboards, this information can be refreshed at will to provide a holistic overview of all their clients' goals. The advisor can use these dashboards in their generic, daily workflow to reevaluate the feasibility of their clients' goals and propose course corrections when necessary. Once a goal is off track, the advisor can proactively start a conversation on how to get on track again. Depending on client preferences, this may be through additional deposits, alternative portfolio models, or even by adjusting the goal amount or goal horizon.

Client engagement

Goal monitoring does not only add value when clients are off track, but also when they are still on the right path to reach their goals. In the latter case, goal monitoring can be used to evaluate whether clients may take less risk, lower their contributions, or increase the ambition of their goals. Instead of reporting to the client on how well or worse the portfolio performed relative to a benchmark, the advisor can have meaningful conversations with the client about their personal goals, especially in times like this. Goal monitoring supports investment decision making in 'why' a client needs to stay invested or not and will increase the retention rate of clients. From an advisor's point of view, goal monitoring facilitates conversations about clients' personal financial goals and preferences. Will I be able to retire at age 63 as I have planned? Can I buy that vacation home within 10 years? Goal monitoring helps advisors to answer these questions.

Prevent unnecessary risks

To illustrate how goal monitoring can prevent clients from taking an unnecessary risk, Let us look at the example below. We see the same plausible economic scenario for two clients. Both start with a risky ‘Growth’ portfolio. However, for one of the clients, the portfolio is tracked against the client’s goal, which caused the

advisor to propose a less risky portfolio to increase the probability of the client meeting its goal. For the other client, a possible future recession had much more impact on his portfolio and caused him not to reach his goal.

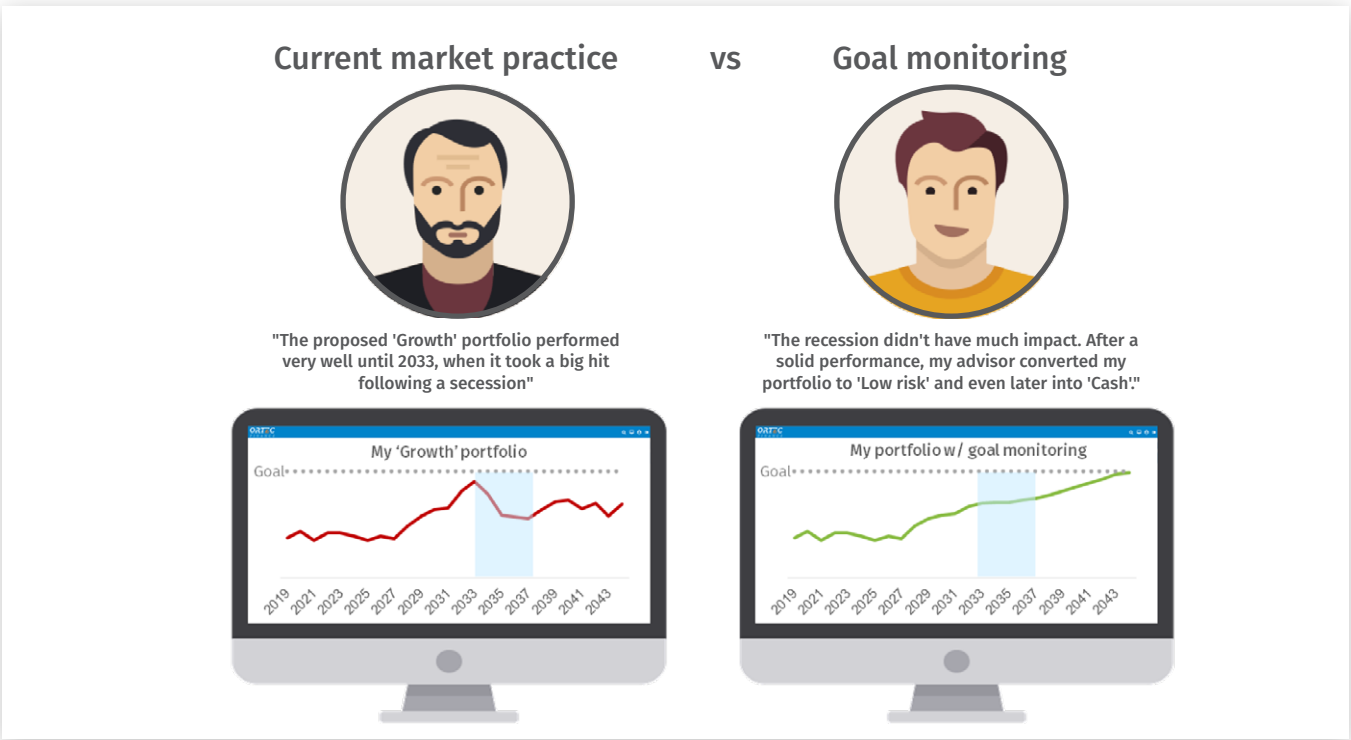


Table 1: Taken from the forward-looking analysis, a comparison of the capital growth for two clients in a realistic economic scenario. The only difference between the two strategies is that the advisor applies active goal monitoring for the client on the right-hand side.

Using goal monitoring through automated dashboards, advisors can easily check which portfolio model will lead to at least a certain probability of success, with the least amount of risk. After consecutive years of high returns, advisors may suggest the client reduce the risk in the

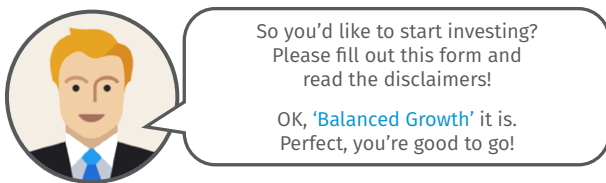
portfolio and lower the chance of a sudden dropdown. This may reduce the number of client portfolios that contain an unnecessarily amount of risk relative to its goal.

The added value of goal monitoring

To investigate how goal monitoring leads to a higher probability of success, we conducted research based on back tested data, using the realization of financial markets from 2000 until 2020. In addition, we applied goal monitoring in a forward-looking context to investigate the added value in multiple realistic realizations of financial markets.

Back testing methodology

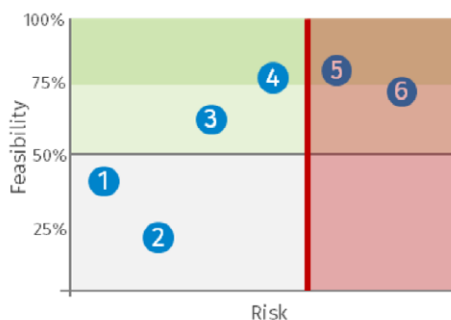
In a back testing exercise, one generally employs the same models used today, using only data up until a certain moment in time. In this particular back-test, we simulate a portfolio decision that was made in the past and, afterwards, we monitor the realization of the portfolio progressing towards the client's goal. We compare two types of decision rules:



So you'd like to start investing?
Please fill out this form and
read the disclaimers!

OK, 'Balanced Growth' it is.
Perfect, you're good to go!

Based on your goal, a 'Conservative'
portfolio is most suitable, even though
you may take on more risk.



Portfolios:

- | | |
|---------------------|-------------------|
| 1 Savings | 4 Balanced |
| 2 Very conservative | 5 Aggressive |
| 3 Conservative | 6 Very aggressive |

Current market practice: the client goes through an intake & risk questionnaire process, and the advisor picks the portfolio that follows from the outcome (e.g. a risk score). Then the client holds this – static – portfolio for the entire planning horizon, without interceptions.

Goal monitoring: the client goes through an intake & risk questionnaire process, but the advisor chooses the portfolio that leads to a realistic probability of success, with the least amount of risk, maximized at the risk attitude. Annually, the advisor evaluates whether this portfolio is still likely to achieve that target probability of success with the least amount of risk. If not, the advisor proposes a change to the portfolio.



To illustrate the difference in approach, imagine a client filling out the intake forms and risk questionnaire. The client is being classified as a 'Balanced Growth' investor and as a result, the advisor picks the corresponding portfolio, regardless of the actual goal the client is aiming for. Alternatively, the same advisor considers the ambition of the goal, timeline, and risk attitude of the client. Using a feasibility analysis, the advisor may

conclude that a 'Conservative' portfolio will achieve the target amount with a realistic probability of success. As a result, the advisor proposes this portfolio instead of the maximum allowed 'Balanced Growth'.

For the back test, we consider multiple client cases, with various planning horizons and various outcomes of the risk questionnaire. As markets have been quite volatile

at certain points in time between 2000 and 2020, the starting point of the simulation has a large impact on whether the realization of the portfolio is more or less favorable. As a result, we consider multiple dates, from 2000 to 2009. With January 1st as the simulation starting point for each year.

For each client case, we begin the simulation at the starting date and compare the probability of success for both methods, using projections that only use historical

data up and until that date. After applying the decision rules for goal monitoring based on the projections, we simulate time one year ahead. Given the realization of financial markets, the portfolio value has changed, the economic outlook has changed, and as a result we need to recalculate the probability of success based on this updated data. This analysis should be repeated every year by the advisor, who would then adjust the portfolio accordingly.

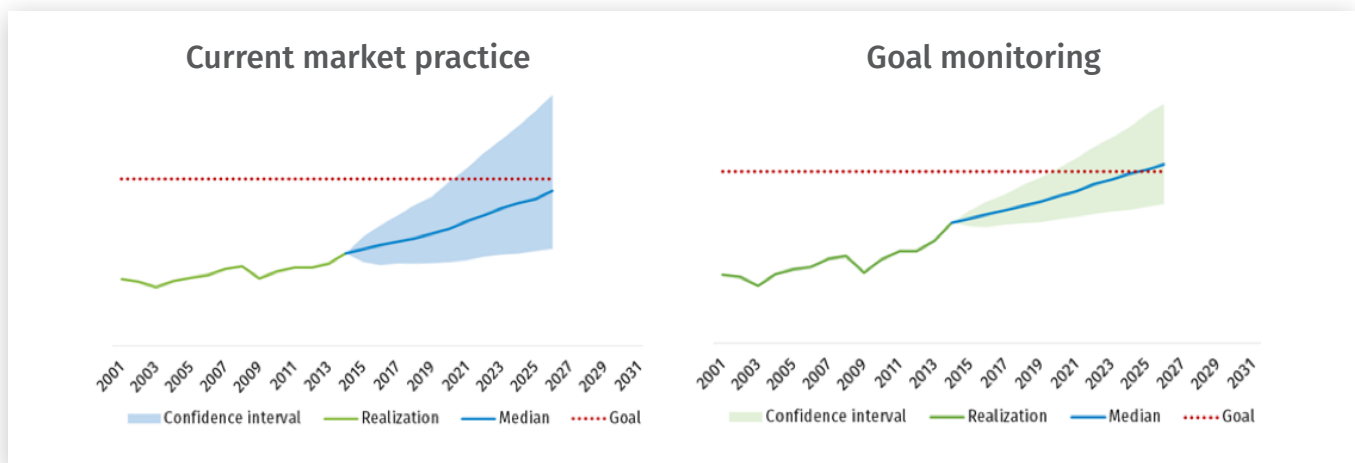
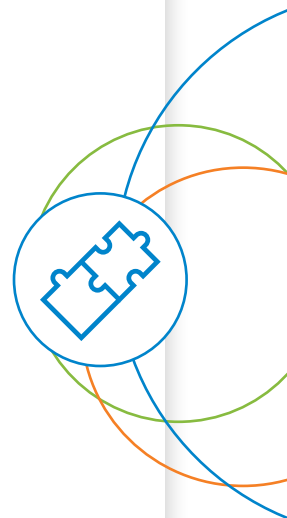


Figure 2: Taken from the back-test, an illustration of how we compare the capital growth based on the past realization of financial markets (green). In each year, for the 'Goal monitoring' strategy, that portfolio may be adjusted based on the updated projections, as illustrated by the green confidence interval.

Assumptions:

- We consider client cases with a planning horizon of 10, 15, and 19 years. Because we could calibrate back tested projections only up until the year 2000, that leaves us with a maximum horizon of 19 years of realized portfolio returns.
- For the analysis, we consider 11 portfolio models based on two asset classes, cash, and equities. The portfolios vary from 0% until 100% equity risk with increments of 10%.
- The analysis is based on historical returns and projections for US T-Bills, a proxy for cash returns, and data from the MSCI Equity US index, a proxy for equity return.
- The projections are based on the underlying methodology of the Ortec Finance Scenarioset (Steehouwer, 2006).
- We consider four types of risk attitudes, i.e., low, substantial, moderate, and high risk. The risk attitude determines the default portfolio for the static simulation or the maximum allowed amount of risk for the dynamic simulation.
- The outcome of the risk attitude is linked to a portfolio with 20%, 40%, 60%, and 80% of exposure to equity risk.



Example client case

We will take one particular case as an example to show how the analysis has been set up. A client starts investing at the beginning of the year 2000. Based on the risk questionnaire, he is classified as a 'Balanced Growth' investor. The client starts with a \$100K portfolio, and his goal is to grow the capital to \$200K within 15 years.

Based on the 'Current market practice' approach, the client's portfolio will have a 60% exposure to equity risk. After 15 years, the markets have gone through the dot-com crisis, the 2008 financial crisis, but also periods of strong performing markets between 2003 and 2007 and post 2009. Nevertheless, holding this portfolio for 15 years leads to a result of only **\$182K**, falling short of the client's goal. If in the year 2000, the advisor would have had access to scenario projections and would

have been able to monitor the client's goal, he would conclude that a 'Low' risk portfolio, i.e., 20% equity risk exposure, leads to a probability of success of 68%. Then, the advisor monitors how the feasibility of the goal changes due to an updated economic outlook and performance on the markets.

So what happens? After the dot-com crisis, the advisor suggests to dial up the risk, but the portfolio did not suffer as much as it would have for the 'Balanced Growth' portfolio. Each year, the advisor acts based on market performance and an updated outlook. This appears to be a successful strategy, as three years before the target date, the advisor can convert the portfolio to cash as the goal of \$200K can be secured, eventually leading to **\$207K** portfolio after 15 years.

Year end	Market outlook	Portfolio decision	Impact risk	Feasibility	Static
2000	Interest rates are at 6%, medium term outlook for Equities is volatile	Target goal of \$ 200K should be feasible with a 'Low risk' portfolio	Start with 'Low'	68%	70%
2001	Dot-com crisis and 9/11 sparked an interest rate cut, leading to lower yields	At least a 'Moderate risk' portfolio necessary to stay on track	▲ up	62%	58%
2002	Equity markets lost >20%, interest rates have declined to 2.5%	Change portfolio to maximum risk appetite as growth is essential for recovery	▲ up	55%	48%
2003 - 2007	After consecutive years of Equity markets, medium term outlook worsens	Due to strong growth, dial down the risk of the portfolio as max risk is unnecessary	▼ down	63%	53%
2008	The crash in October 2008 strongly impacts capital market	Portfolio got partially hit by the crash, additional risk is required to recover	▲ up	53%	27%
2009 - 2012	Equity markets have recovered strongly from the '08 crash, interest rates are low	Three years before target date, it is expected that a cash portfolio will grow to the 200K target.	▼ down	99%	0%

Figure 3: Example of how, for one specific client case, an updated market outlook and realization lead to a dynamic portfolio decision in the 'Goal monitoring' strategy. On the right-hand side, we compare how the probability of success of achieving the goal is kept on track, while the feasibility of the 'Static' strategy decreases over time.

If the advisor had access to projections without goal monitoring tools, he would have seen the probability drop over the years, as shown in the 'Static' column. As a result, he either would have communicated this to the client to manage their expectations or, even better,

would have proposed course corrections to the plan. The key message here is that without goal monitoring, advisors are missing essential tools to even start this discussion.

Results

The case we described earlier is one of the many situations we consider in the back testing exercise. In this particular case, goal monitoring leads to both a higher portfolio value and the achievement of the client's goal, whereas the static approach does not. Not in every case, is the added value as clear as it was for this client case. However, the main conclusion of the back test is that consistently applying dynamic portfolio adjustments based on goal monitoring leads to better results relative to the static method.

Generally speaking, an important aspect of the role of an advisor is to help the client achieve their goals, with the least amount of risk possible. Therefore, we conclude either that the goal amount has or has not been achieved. If this amount has been achieved for both strategies, we compare the risk of the portfolio

a few years before the target date. A strategy that achieves the target taking less risk than necessary, is the preferred strategy. In case the goal amount has not been met, we compare the actual portfolio value at target date. How much the portfolio value exceeds the ambition of the goal is not relevant in the analysis. The fact that a static portfolio has led to a higher capital than a goal monitoring strategy, indicates that the client took unnecessary risks towards the end of the goal horizon.

Keeping our classification of 'better results' in mind, goal monitoring should either lead to a higher portfolio value at target date or allow the client to achieve their goal with a lower amount of risk. We find that this conclusion is consistent for all combinations of client case, planning horizon, risk score and starting point.

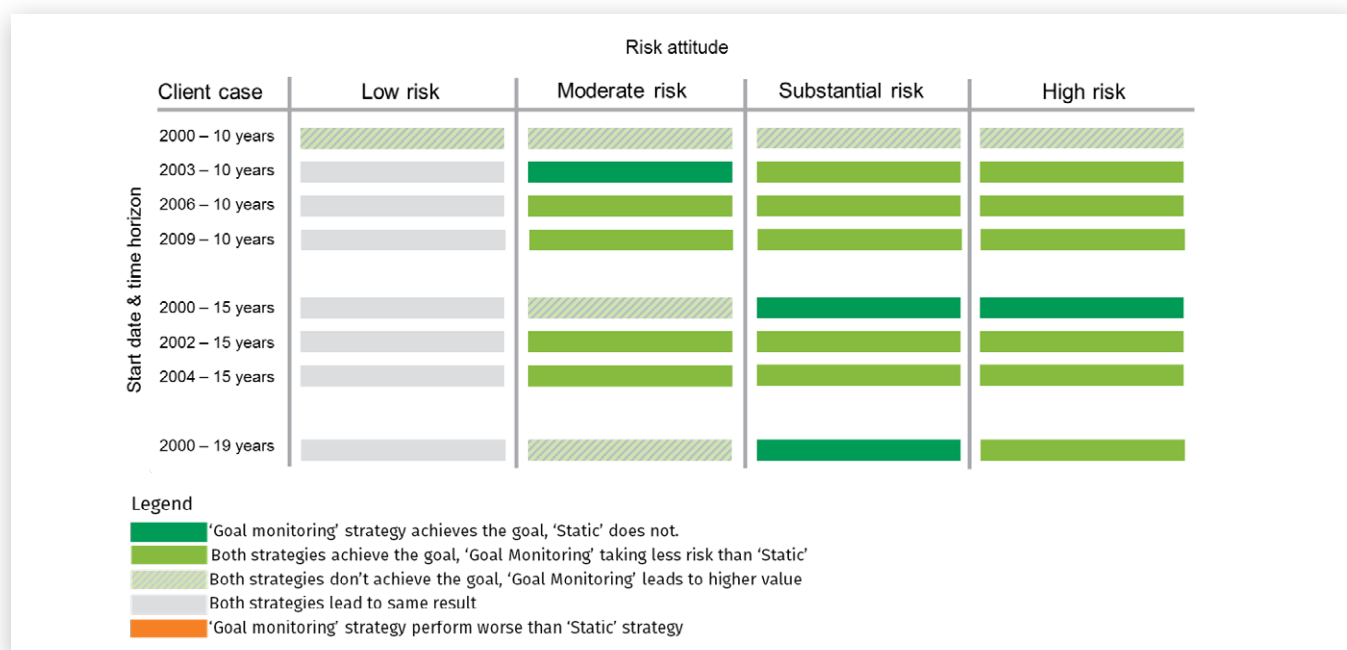


Figure 4: The figure illustrates how for multiple client cases, multiple start dates and multiple risk attitudes, we compare the results of the 'Goal monitoring' strategy vs. the 'Static' strategy. For most cases, 'Goal monitoring' leads to 'better results', indicated by the different green colors. For clients with a 'low risk' attitude, the added value is limited as both strategies lead to similar results.

Forward-looking methodology

The back test gives some compelling results on how goal monitoring adds value for both client and advisor. However, the back test is based on a single economic scenario, i.e., the realization on the financial market in the last 20 years. As a result, it makes sense to test the findings against multiple, even thousands, of realistic future economic scenarios.

Similarly, as in the back test, we compare the static, current market practice approach with the dynamic goal monitoring approach in a forward-looking context. For various client cases, we compare how the portfolio grows over time for both strategies. Because we are using 1000s of economic scenarios for this analysis, the outcome leads to a probability distribution of the final

portfolio values rather than only a single outcome. As a result we can translate this into an ex-ante probability of success by evaluating in how many economic scenarios the goal is achieved for both approaches.

Again, similarly as in the back test, we also evaluate the amount of risk in the portfolio at the end of the goal horizon, by comparing the probability of a portfolio downturn in the last year, and, the impact of such a downturn.

Example client case

Again, consider a specific client as an example to illustrate how the analysis has been set up. A client starts with a \$75K portfolio, and his goal is to grow the capital to \$150K within 20 years. Based on a risk questionnaire, he is classified as a ‘Balanced’ investor, and is assigned a portfolio with 50% of equity risk. Using the forward-looking simulation, we can derive the probability distribution of the capital after 20 years. In addition, we derive the following key indicators regarding risk and return, i.e., the probability of a downturn at the end of the investment horizon and the average size of such a downturn.

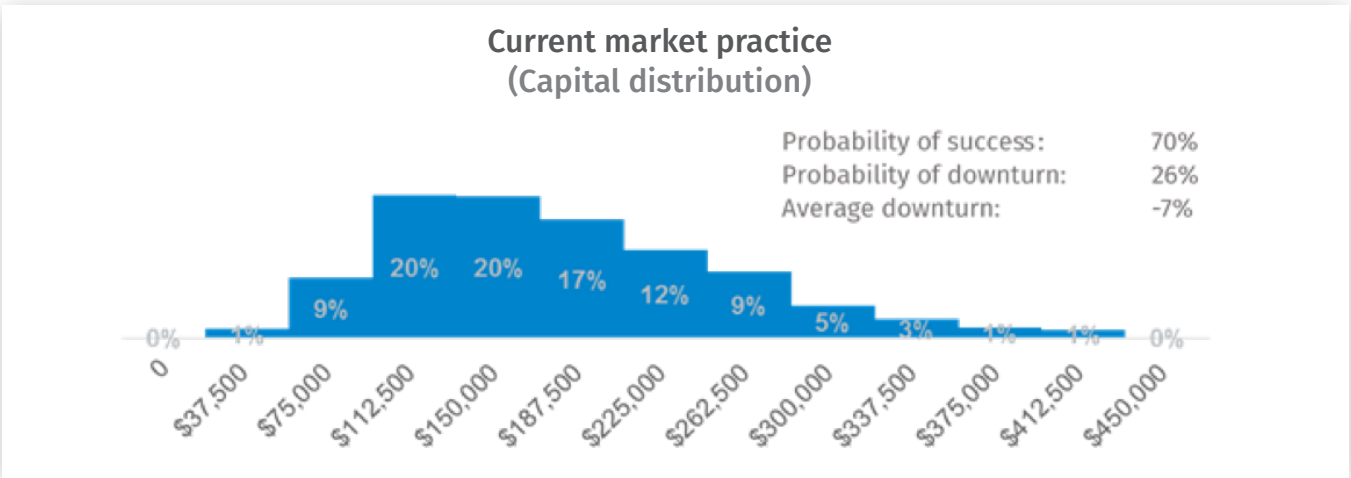


Figure 5: Probability distribution of the capital at the end of the investment horizon, using the ‘Static’ approach. The client has a 70% probability of reaching the goal, however, at the end of the horizon, a significant amount of risk is still present.

For this client case, the probability of achieving the target amount is 70%. At the same time, there is a substantial probability of a sharp portfolio downturn when approaching the target date. However, when we

evaluate a simulation where we consistently apply dynamic portfolio decisions based on monitoring, the distribution looks very different.

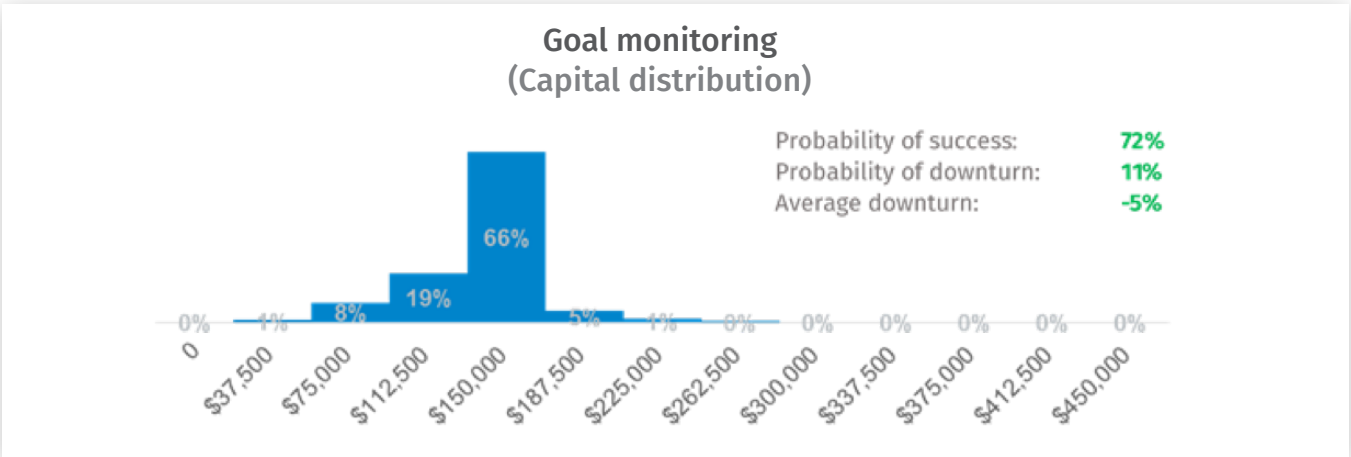


Figure 6: Probability distribution of the capital at the end of the investment horizon, using the ‘Goal monitoring’ approach. The client has a 72% probability of reaching the goal but takes a significantly lower risk near the end of the investment horizon.

When adjusting the portfolio based on goal monitoring, the client has a probability of 72% of achieving the target amount. At the same time, the risk of a substantial portfolio is almost halved. The shape of the capital distribution shows where this comes from. Steering towards a specific goal means giving up the upward potential by minimizing the risk of not reaching the target amount when approaching the target date.

Results

As with the back tests, we conclude that goal monitoring helps advisors to achieve better results for their clients. This means that this approach leads to the same or a higher probability of the client reaching their goals, while minimizing the risk of the portfolio near the target date. In many cases, the risk of the portfolio is diminished by 50%, both in terms of probability and severity of a potential downturn.

		Results							
Client case		Probability of success		Expected annualized return		Probability downturn end of horizon		Average downturn end of horizon	
Goal horizon		Goal monitoring	Static	Goal monitoring	Static	Goal monitoring	Static	Goal monitoring	Static
	75K to 150K In 10 years	53%	48%	7,2%	6,8%	16%	29%	-10%	-13%
	75K to 150K In 15 years	70%	62%	5,0%	6,4%	13%	32%	-10%	-13%
	75K to 150K In 20 years	72%	70%	3,7%	4,7%	11%	26%	-5%	-7%
	75K to 150K In 25 years	71%	71%	3,0%	3,4%	7%	14%	-2%	2%

Figure 7: Comparison of results for four cases, varying on the investment horizon of the goal. Goal monitoring strategies lead to at least the same or higher feasibility, while minimizing the risk near the end of the investment horizon. In these cases, the upward potential of a risky portfolio is given up for more certainty of securing the financial goal.



In summary

Goal monitoring is an essential tool for an advisor

Would you advise a client to take on more risk than is actually necessary? The question may seem rhetorical, but the answer is not so straightforward in the practice.

Most portfolio decisions are mainly driven by the outcome of a generic risk questionnaire. The connection between this decision, the client's financial situation, the goal, and the remaining horizon is often absent.

As a solution for this, we propose the use of frequently updated feasibility analysis or goal monitoring. We find that through goal monitoring, low-cost process adjustments, and easy-to-implement decision rules, advisors can increase the feasibility of clients achieving their goals while minimizing the risk. This approach suggests the added value of a 'dynamic lifecycle' strategy instead of a traditional, static approach. Both our back tests and forward-looking analysis find that this methodology leads to better results than current market practice, making use of a static strategy. With goal monitoring, advisors have the tools that proactively help to add value to their clients. This will not only increase client engagement and retention, but also run their business efficiently.

About OPAL

Ortec Finance has developed the OPAL platform that allows for institutional-quality, realistic portfolio projections, based on monthly updated economic scenarios for more than 700 asset classes. This enables advisors to manage client expectations on the front-end, and monitor the likelihood of achieving their goals on the back-end through dynamic updates that track the conditions and outlook on financial markets. Our institutional background and experience enables us to model a wide range of asset classes and funds and implement tailored client portfolios, matching the actual products that are offered to clients.

As a result, OPAL as a solution enables the following:

- ✓ Portfolio projections based on dynamic growth assumptions, updated on a monthly basis;
- ✓ Realistic simulations that take into account current economic and market conditions;
- ✓ Goal monitoring by signaling 'off-track' client goals and suggestions to get back 'on-track';
- ✓ Manage client portfolios based on risk required, rather than risk the client is willing to take.

About Ortec Finance

Ortec Finance is the leading provider of technology and solutions for risk and return management for institutions and private investors. It is our purpose to enable people to manage the complexity of investment decisions. We do this through delivering leading technologies and solutions for investment decision-making to financial institutions around the world. Ortec Finance delivers software and services to more than 500 financial institutions in more than 20 countries.



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