# 3 Scenario Approach in Asset Allocation

## 3.1 Idea of scenario analysis

Strategic decisions in private, public and non-profit sectors are based on expectations regarding future developments. Therefore, the creation of strategic concepts depends on certain assumptions. Scenario planning is a powerful tool that can improve the quality of such strategic long-term decision making.[50]

Scenario methods have been used in military and strategic management for decades. [51] Following World War II, the US Air Force introduced scenario methodologies as a tool for military planning. In the 1960s, the military strategist Herman Kahn transferred and adapted scenario techniques for business strategy and planning. Yet scenario methodologies only entered a new dimension in the early 1970s. Pierre Wack worked in the Group Planning department of Royal Dutch/Shell in London.[52] Among others, his unit analysed a scenario of rapidly rising oil prices against market expectation of stable prices. In a snapshot, Wack and his team believed that the Islamic countries could dictate the oil price and would do so, if Western countries offended them. In a scenario, the whole impact on the oil business and Royal Dutch/Shell specifically was outlined. Even though executives did not give that scenario a high likelihood, they were emotionally prepared for dramatic changes. A few months later after the "Yom Kippur" war in October 1973, prices rose dramatically and Royal Dutch/Shell was the only oil company with strategies at hand as well as executives who were prepared for such a scenario. The scenario strategist Pierre Wack and the executives partnered in making Royal Dutch/Shell become one of the largest and most profitable oil companies.[53]

Scenario thinking is an interdisciplinary method to develop a set of various possible futures in a complex environment. Michael Porter defines scenarios as "an internally consistent view of what the future might turn out to be – not a forecast,

[50] MINX & ROEHL (2006), p. 78.
[51] MINX & ROEHL (2006), p. 78.
[52] WACK later published two papers on this Royal Dutch/Shell scenario case in HARVARD BUSINESS REVIEW.
[53] SCHWARTZ (1996), pp. 7.

P. M. Becker, *Investing in Microfinance*, DOI 10.1007/978-3-8349-8926-0_3

but one possible future outcome".[54] The extraordinary social, governmental and economic changes in modern times require planning tools that can deal with complexity and hence improve the quality of decision making.[55] However, coherent scenarios are a first step in a strategy development process. The critical phase is the following extrapolation of strategic options as a result of various scenarios.[56]

The practical link of scenarios to strategic planning is a key element. Scenarios are a tool for strategy and analysis. Ringland suggests several different uses for scenarios in a strategic context.[57] Firstly, scenario thinking is a powerful tool for strategy development. Secondly, scenarios are a helpful tool in strategy evaluations for testing existing strategies. Additionally, scenarios can also be used to develop hedging or contingency plans. Finally, the accomplishment of a risk assessment of a project or across a portfolio of businesses is possible. In general, scenarios can be used in a broad context in strategy and strategic planning.

In addition, scenario techniques allow extensive insights. The comprehensive approach explores uncertainties and allows prioritizing issues of potential concerns. Moreover, emerging risks and opportunities are discovered even if signals are weak. Scenarios also overcome the hierarchy and bureaucracy of an organization. The team approach creates a common language and results in a shared view and will to implement. Furthermore, scenario thinking focuses the attention in the process more on external challenges than internal issues. Hence, surprises are revealed and one is prepared to act accordingly. Apart from this, scenario processes provide a forum for learning and exchanging thoughts – for individuals, teams and corporations. In fact, this often has a significant impact in the long-term.[58]

A scenario funnel illustrates the methodology of a scenario technique (see Figure 3-1). Starting from present, paths defined by several underlying factors create various possible futures. In a long time horizon, the extreme scenarios diverge more from the present state than in the short term. Additionally, the number of underlying factors and periods increases the quantity of potential futures. As a result, a selec-

[54] PORTER (1985, p. 63).
[55] MINX & BÖHLKE (2006), p. 14.
[56] WEF (2009a), p. 77.
[57] RINGLAND (1998), p. 111.
[58] RINGLAND (2002), pp. 75.

tion process keeps the number of analyzed potential futures neat.[59] However, the selection follows some rules to provide a diversified mix of scenarios. Finally, at least two and up to five scenarios are developed for a specific question.

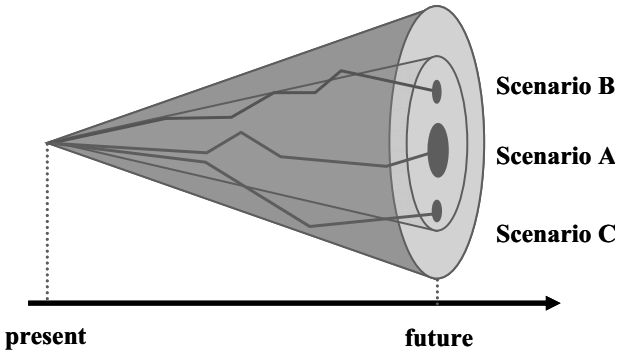


Figure 3-1: Scenario funnel

Scenario methodologies are applied for corporate strategic purposes mainly in four different fields. Firstly, these techniques are used to detect and describe political and economic changes. Another focus area is industry restructuring. Scenario thinking is also adapted to issues regarding new products or markets. Finally in the corporate sector scenario work has been used to refine business portfolios. Furthermore, environmental studies have been conducted with a scenario approach by NGOs and the public sector as well as public policy studies.[60] In fact, scenario techniques have been applied to various fields and issues in the corporate, public and non-profit sectors.

[59] MISSLER-BEHR (in WILMS (2006)) provides a detailed approach for a quantitatively based selection of scenarios in the scenario funnel. However, this approach does not fit for qualitatively driven processes. In these cases other methodologies apply, one will be described in the following chapter.
[60] RINGLAND (2002), pp. 79.

## 3.2 The scenario process

A scenario process is clearly structured in several steps. In literature and practice, different process descriptions exist. However, the objective, approach and structure of the described methodologies are quite similar. In some steps several executable tools exist. A main differentiation criterion is often a more qualitative or more quantitative driven approach. In general, most scenario processes are structured in eight steps. In the following, a standardized process according to Minx/Roehl is outlined (see Figure 3-2).[61]

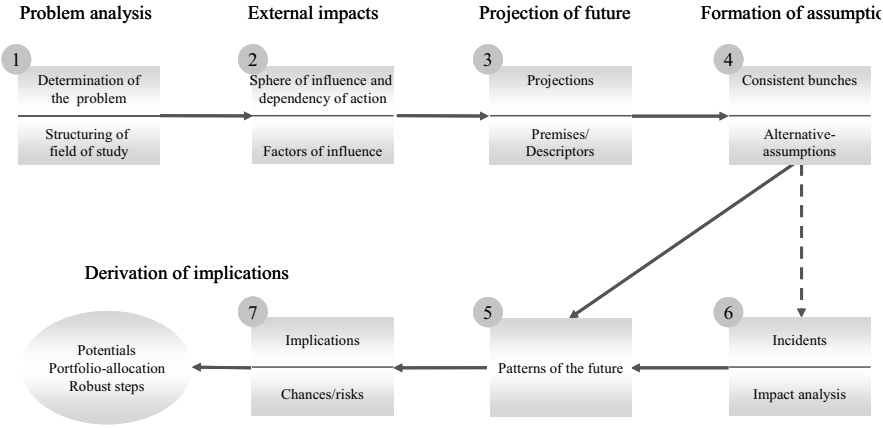


Figure 3-2: Steps of a standard scenario approach[62]

The first step is a clear determination of the topic including a specification of the research area. The starting point of every scenario process is the definition of the problem set. Next, the field of study has to be specified factual, temporal and areal. The process of defining and specifying a problem set for a scenario question is a key element. All following steps refer to this question. As a result, the definition of

[61] MINX & ROEHL (2006) provide an overview of a methodology often used by scenario experts of Daimler AG. Other valuable insights into the steps of scenario processes are provided by GOTTSCHALK & STEINBRECHER (2005) and SCHWARTZ (1996, pp. 241).

[62] According to MINX & ROEHL (2006).

the right question from the beginning is a very important element in a scenario process.

In a second step, external impact factors influencing the problem set are gathered. This listing of key factors and driving forces includes various topics such as economic, social and political indicators, environmental or technical factors, industry-related issues and specific factors of a business area or company. This determination of key forces is completed by a qualitative as well as a quantitative definition of these factors. Usually a coherent set of 20 up to more than 100 key forces can be brainstormed and defined by the participants of a scenario process.

Thereafter trend projections are estimated for all factors gathered. On the one hand this enables the group to get a deep and equal understanding of the factors. On the other hand the participants develop two to three states of all these factors according to the time frame of the problem set. At the end of step three the key drivers and forces are gathered, defined and potential future states are described.

In a fourth step, these factors get ranked by uncertainty and impact. All participants give points on a scale from 0-2 for uncertainty and for impact to every factor. The aggregated sum of all participants is the score for each factor. As a result, all factors and driving forces can be placed in an uncertainty-impact matrix (see Figure 3-3). The idea is to identify two or three factors that are most uncertain and have a high impact. Uncertain factors define flexible states in the future, whereas predetermined factors such as the demography (in the short and medium term) have an equal state in all scenarios. Consequently, factors with high uncertainty create in a matrix four possible scenario fields. In addition, high impact factors ensure that key forces for the problem set are chosen. As a result, the uncertainty-impact matrix identifies factors that span a scenario cross with different scenario fields (see Figure 3-3). However, the determination of these axes is complicated, but it represents an essential part in the scenario process. In conclusion the uncertainty-impact analysis supports the selection of two descriptors for the scenario matrix axes. Hence, this step defines the main framework of the scenarios.

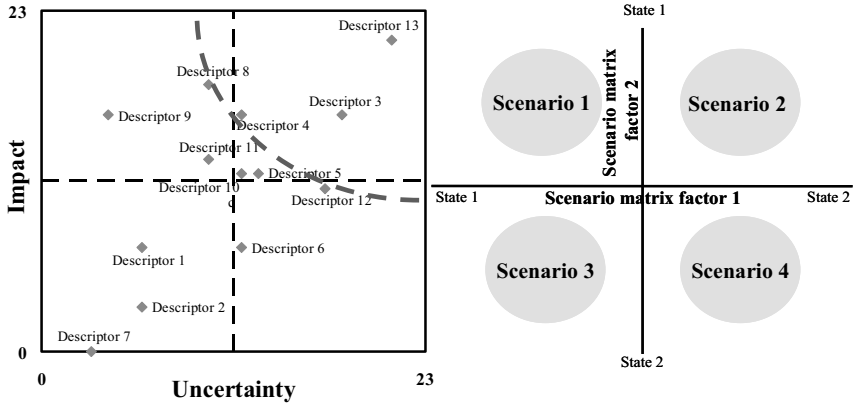


Figure 3-3: Uncertainty-impact matrix and scenario matrix

In the next step, scenarios are developed in detail. Therefore a scenario cross is spanned with two axes and four scenario fields. The axes are defined by two factors selected in the uncertainty-impact analysis (see Figure 3-3). These key parameters are described by two or three potential future outcomes. In general, a 2x2 matrix applies, but in some circumstances it is necessary to generate more scenarios with a 2x3 or even a 3x3 scenario matrix. Subsequently all gathered impact factors and key forces are described in every field of the scenario matrix. This process needs specific attention as it influences the specific character of the scenarios. For example, a definition of the macroeconomic conditions is not predetermined in any scenario. However, a balanced scenario process often generates outcomes for different economic situations. Therefore, while creating a specific scenario, interdependencies with the other scenarios have to be taken into account. As a result, well-defined scenarios are formed and edited with all key parameters identified by the scenario process.

The sixth step integrates extreme scenarios to the process. The participants develop so-called “wild card scenarios” or “black swans”, which have radical consequences for the problem set and are often triggered only by one or two parameters. This creates awareness for rapid as well as unexpected changes and is a key component of a scenario process.

Thereafter the consequences and implications of the determined scenarios for the problem set are analysed. Furthermore, opportunities, risks and courses of action in respect of the scenarios are identified. A definition of best practices as well as a check for a specific strategy in each scenario reveals strengths and weaknesses. Moreover, a robustness check for strategies across all scenarios gives an intention of the underlying risks.

Finally, a transfer of the results into business needs takes place. For example, a strategy is developed or an existing strategy adapted according to the generated scenarios. In addition, leading indicators and signposts are defined. Periodically these factors are monitored and support the identification of the scenario the real world develops closest to.

In general, some additional considerations are important for a scenario process. Firstly an elaborated selection of the scenario team of about 10-15 participants is crucial. The decision criteria are the inclusion of executive people that support the results of the process, a broad diversification regarding know-how and background and the participation of imaginative, open minded and team-oriented persons. Secondly, the development of more than just two scenarios as well as at least one wild card scenario enables more plausible results with regards to the scenario funnel. The generation of four scenarios and one wild card scenario is a balanced option to keep a meaningful decision making tool on the one hand, but provide a broad range of scenarios on the other hand. Finally, the relevance and persuasive power of a scenario process is heavily dependent on the groups' ability to create plausible, but also surprising scenarios. Moreover, the scenario team has to take the ownership to integrate the results into the strategic decision making process. In fact, a scenario process is a complex tool, whose achievement is often on a knife's edge due to structural, conceptual or personal issues.

## 3.3 Critical assessment of the scenario approach

A scenario process contains advantages and limitations. However, the tool can be implemented in areas where the advantages outweigh the disadvantages. Therefore the characteristics of scenario methodologies have to be considered.

The scenario process offers advantages for strategic decisions in various fields. A main advantage is the improvement of structural assumptions and data for planning.

Both, assumptions and data, are needed for any strategy decision that deals with decision making under uncertainty. In fact, the scenario process clearly gathers parameters and their circumstances and allows for different future conditions. Thus, this holistic approach allows enhancing the robustness and quality of strategic decisions by discovering and framing uncertainties.

Another key advantage is the possibility to include key decision makers. On the one hand, it generally improves the awareness of change in the company. On the other hand, the key decision makers are emotionally prepared for a change, have been involved in the scenario developing process and hence are ready to embark on a future-oriented strategy.[63]

Well-defined scenarios can also be introduced for communication and marketing purposes. The process generates a multifarious future. As a result, all scenarios or only components such as key factors for a specific problem set are perfect techniques and tools for communication with clients, competitors, consultants, academics or other internal employees.

The most prominent but not obvious advantage is the learning process for involved persons. This learning has two aspects. Firstly, the process creates new informal structures within the team. In companies, this is an undervalued success factor for the implementation of new strategies or projects. The best strategy or project is worthless if the work force acts contrary to the idea. However, a scenario process creates envoys, who will drive the strategy or project. Furthermore, these people have often built up a lasting relation abbreviating the decision making in the future and generating a certain entrepreneurial spirit. Secondly, the scenario process is a forum for learning and exchanging thoughts – it creates a better understanding of today's and tomorrow's world. This enables to think out of the box also beyond the scenario process.

The scenario process has, however, also some drawbacks and limitations. In the previous paragraphs the advantages of such a group process are outlined. In fact, group processes also have major limitations. Firstly, a scenario process is time-consuming and involves a lot of management and expert capacity. Depending on

[63] See for example WEF (2009a), p. 77.

the structure, the problem set and the integration of external expert input, the core scenario process team needs to meet at least three times with several working days and up to over 100 group days. Secondly, the process is influenced by the group dynamics and individual engagement of the participants. Group processes can easily be driven by a specific sentiment and if not intervened adequately, destruct the whole process or at least drive it in a certain direction. Finally, the process is dependent on the knowledge of the participants – either direct scenario process members or external specialists, who can contribute an additional share. Consequently, the selection of the scenario process members is a crucial element and should include parameters such as know-how, mentality, hierarchies and especially diversity.

The openness of scenario analyses may also raise problems. A clear direction is not crucial in all stages of such a process. Sometimes the participants have to give free rein to their thoughts. This is an essential element as the process provides the structure, whereas innovation and futurology have to be integrated by the participants.

In academia, replicability is an important criterion for the acceptance of a methodology. Undeniably, the replication of a scenario process is complicated and nearly impossible. Since the reality is not a laboratory, not only the subject may change, but also the catalysts in form of scenario process participants have gathered more information and learnt from the past. For example this drift is imminent in the scenarios of Royal Dutch/Shell over the decades.[64] However, in theory, if the participants – the catalysts – would have exactly the same information and the world would not have changed, a replication of a scenario analysis might deliver the same results.

Finally, the integration of the scenarios into a strategic concept is a difficult point of interception.[65] The development of conclusive scenarios is a requirement, but the objective is a strategic implementation of the results. Yet the transfer of the potential futures directly into a strategic decision needs a structured process from the very

[64] An overview of some of Royal Dutch/Shell's scenarios of the past decades can be retrieved from www.shell.com.
[65] MINX & ROEHL (1998), p. 170.

beginning. The problem set has to be defined, while already having the derivation of implications in mind. Hence the guidance of scenario experts increases the chance of a successful implementation of a scenario analysis into a strategic framework. As a result, Figure 3-4 highlights the main advantages and limitation of a scenario analysis.

| Main advantages of a scenario analysis | Main limitations of a scenario analysis |
|---|---|
| ▪ Learning process for participants<br>▪ Integration & commitment of decision makers<br>▪ Integration of broad know-how base (market & company specific)<br>▪ Useful for communication and marketing<br>▪ Creates several potential outcomes (dealing with uncertainty) | ▪ Time consuming<br>▪ Cost intensive (primarily indirect costs)<br>▪ Dependent on group process (e.g. sentiment) |

Figure 3-4: Main advantages and limitations of a scenario analysis

## 3.4 Examples of scenario analyses

Scenario analyses are a widely known though rarely used tool for strategic decision making. However, some companies, e.g. Shell and Daimler, have already taken advantage of this methodology for decades.[66] Moreover, in recent years scenario thinking is implemented by many global companies, government agencies and community agencies as a popular strategy and long-term thinking tool. In the following chapters, two current examples of scenario processes will be outlined.

[66] Shell and Daimler-Benz both launched their scenario process departments in the 1970s.

### 3.4.1 Scenario analysis "The future of the global financial system"

The World Economic Forum (WEF) launched a scenario planning initiative in 2003. Up to now, several studies applying scenario concepts were published.[67] In 2008, the WEF initiated a project to explore the near- and long-term forces in global financial markets. A first report was published in January 2009 and a further study focusing on selected near-term challenges came out a year later.[68] The long-term view mainly presented in the first publication "The future of the global financial system" is based on scenario thinking.

The WEF conducted a scenario analysis about the future of the global financial system. In this process, more than 250 financial executives, regulators, policy-makers and senior academics attended eight different workshops. The objective was the inclusion of external forces and critical uncertainties with scenario thinking and thus overcome simple extension of current trends. As a result, the outcome should be a support for strategic decision-making.

The study is structured in three chapters. Firstly, the macroeconomic landscape is analysed. Thereafter a near-term industry outlook is given. Finally, the scenario process for the future of the global financial system is outlined. In this section, the authors make extensive use of the opportunity to illustrate the approach and the results.

The scenario process was set up in eight workshops with overall more than 250 experts included. An eight-step scenario approach was chosen (see Figure 3-5), which is in fact quite similar to the one described previously. The main difference is the exclusion of step six (forming wild card scenarios). Instead, the transfer into strategic options and the definition of indicators and signposts is separated in two steps. Both approaches make sense, as the value of extreme scenarios is mainly opening eyes for very uncertain outcomes, which is the aim of this study. However, the definition of signpost and indicators generates a high value-added for readers of the financial market scenarios.

[67] WEF (2009b).
[68] WEF (2009a and 2010).

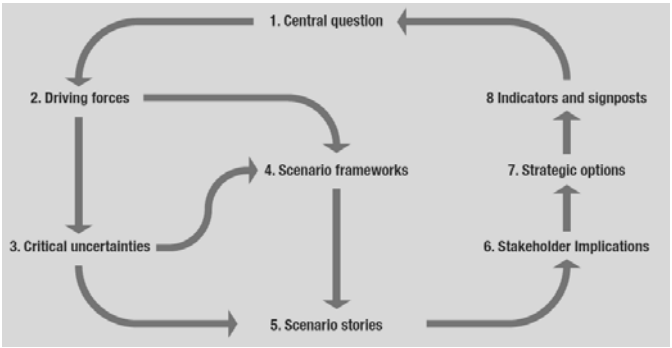


Figure 3-5: Eight-step scenario process applied by WEF[69]

The scenario process is driven by the inputs of the first four steps. The central question in that process is "*How might the governance and structure of the global financial system evolve over both the near-term and long-term*?" Thereafter the key forces regarding this question such as energy prices, global economic growth and energy innovation are defined and categorized in an uncertainty-impact analysis (see Figure 3-6). Finally, the deductive approach of the scenario process requires the selection of the two most critical uncertainties for the global financial system. In the definition of the WEF, these two important critical uncertainties may include several factors shown in the uncertainty-impact matrix and are defined as "pace of geo-economic power shifts" and the "degree of international coordination on financial policy".

[69] According to WEF (2009a).

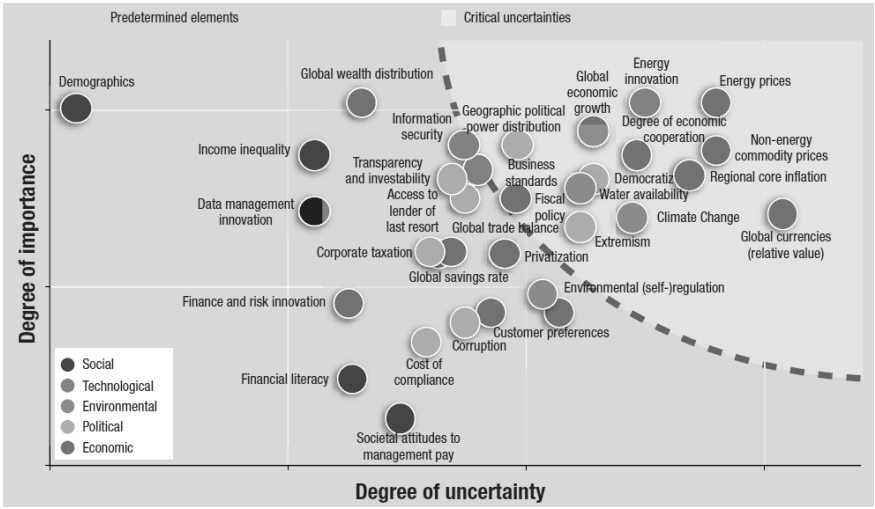


Figure 3-6: Uncertainty-impact analysis of WEF scenario process[70]

The scenario matrix with the axes "pace of geo-economic power shifts" and the "degree of international coordination on financial policy" determines four scenarios. These four scenarios are named "re-engineered western centrism", "rebalanced multilateralism", "fragmented protectionism" and "financial regionalism" (see Figure 3-7). Firstly, in the scenario "re-engineered western centrism" the geo-economic power shift is slow and western countries stay in the focus. Moreover the international financial policy is well coordinated. Secondly, a scenario with a rapid geo-economic power shift until 2020 and a harmonized international financial policy is named "rebalanced multilateralism". Thirdly, the scenario "fragmented protectionism" reveals a discordant coordination of international financial policy combined with a slow power shift in the geo-economy. The final scenario is built in a world of a rapid geo-economic power shift as well as an uncoordinated approach in international financial policy and is named "financial regionalism".

[70] According to WEF (2009a).

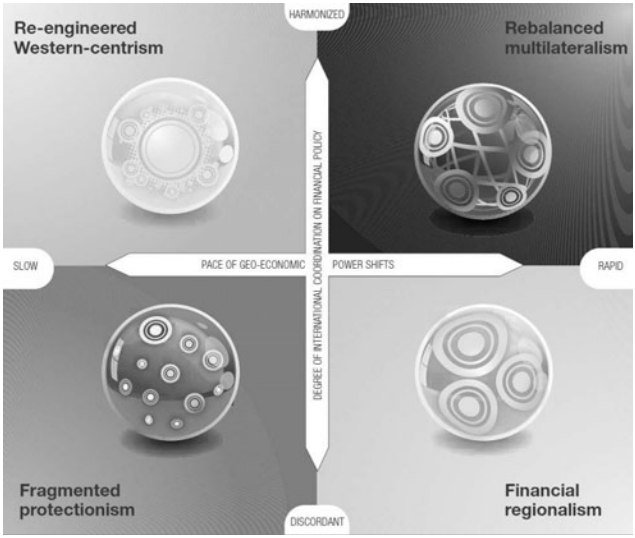


Figure 3-7: Scenario matrix of WEF scenario process[71]

The second half of the scenario process is only briefly commented in the WEF report. This part would be of interest for practitioners as it leads from scenarios to implications. Moreover neither a strategy nor indicators for a monitoring cockpit are outlined in this report; however it is said to be discussed in a further study. Unfortunately the latest WEF study (2010) on the new financial architecture focuses on the near-term and does not pick up the results of the scenario process.

### 3.4.2 Scenario analysis "European energy security 2020"

Another current example is a study on energy supply in Europe in 2020 authored by the "Stiftung Wissenschaft und Politik" (SWP).[72] The scenario process applied in that case uses a quantitative cross-impact matrix instead of the uncertainty-impact

[71] According to WEF (2009a).

[72] SWP (2008). The German Institute for International and Security Affairs of the *Stiftung Wissenschaft und Politik* (SWP) is an independent scientific establishment that conducts practically oriented research on the basis of which it then advises the *Bundestag* (the German parliament) and the federal government on foreign and security policy issues.

matrix to generate scenarios. However, the overall process is similar even though the tools differ.

The scenario process of the SWP deals with the problem set of "*European energy security in 2020 – a development in Europe and the energy-politically relevant neighbouring areas*". The term neighbouring areas is defined extensively and includes also Russia, Kazakhstan, the Near East and Middle East as well as Northern Africa. Furthermore, two facts are given for the process. Firstly, fossil energy sources will be sufficiently available until 2020. Secondly, other regions become increasingly demanding competitors in the energy market for Europe and the USA.

In a process lasting eleven months, the energy, economic and political experts of SWP formed a group with four scenario experts of Daimler AG. After defining problem set, premises and the team, the brainstorming of 18 key forces (descriptors), a detailed definition and a projection of these factors for 2020 were examined (see Figure 3-8).

| Descriptors | Projections | Probability |
|---|---|---|
| Joint European energy policy | EU takes the lead | 30% |
| | EU does not take the lead | 70% |
| Stable statehood (producer countries) | pronounced | 60% |
| | restricted | 40% |
| Actors in inner-European market (oil/gas) | undisputed position of traditional actors | 60% |
| | significant influence of new actors | 40% |
| Geopolitical orientation (producer countries) | realignment | 30% |
| | traditional orientation | 70% |
| Wars in the region | conflagration | 30% |
| | isolated conflicts | 50% |
| | no wars | 20% |
| Attractivity of EU as trading partner | decreased | 60% |
| | increased | 40% |
| Demand for imports of fossil energy sources in EU | increased | 70% |
| | stable | 20% |
| | decreased | 10% |
| Multilateral juridification of energy relationships | predominantly yes | 30% |
| | predominantly no | 70% |
| Perception of transnational terrorism | increasing | 30% |
| | level of 2007 | 50% |
| | decreasing | 20% |
| Energy as instrument of foreign policy (producer countries) | often applied | 40% |
| | rarely applied | 60% |
| Energy prices | very high oil price ~USD 150 | 10% |
| | medium range oil price ~USD 70-90 | 60% |
| | low oil price ~USD 25 | 30% |
| Development strategies (producer countries) | successful | 30% |
| | unsuccessful | 70% |
| Market power of energy cartel | high/increasing | 40% |
| | low/decreasing | 60% |
| Structure of energy sector (producer countries) | predominantly state-controlled | 60% |
| | hybrid: state and private | 30% |
| | predominantly private sector | 10% |
| US-policy | interventionism | 40% |
| | cooperations | 50% |
| | isolationism | 10% |
| Institutionalized relationship of EU production countries (without energy) | high degree | 60% |
| | low degree | 40% |
| Investments in gas sector | sufficient | 60% |
| | insufficient | 40% |
| Investment in oil sector | high | 40% |
| | low | 30% |

Figure 3-8: Descriptors and projection in the SWP scenario process[73]

[73] According to SWP (2008).

In the fourth step of the scenario approach, this process differs from the outlined standard methodology. In this case, the scenario experts decided to apply a cross-impact matrix instead of an uncertainty-impact matrix. A cross-impact matrix is generated by quantitative evaluations of the interaction of the eighteen descriptors in each projection (see Figure 3-9). For example, if growth and inflation are two descriptors and have the projections high and low, then the correlation of high inflation and high growth and the other three possible states is analysed. One easily perceives the complexity of this methodology, which is exponentially growing with the number of descriptors and projections. However, a cross-impact matrix allows a quantitative simulation of steady state scenarios. From this process, 42 steady state scenarios resulted.

| | | | Joint European energy policy | | Stable statehood (producer countries) | | Actors in inner-European market (oil/gas) | | Geopolitical orientation (producer countries) | | Wars in the region | | | Attractivity of EU as trading partner | | Demand for imports of fossil energy sources in EU | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Descriptors** | **Projections** | **Probability** | a | b | a | b | a | b | a | b | a | b | c | a | b | a | b | c |
| Joint European energy policy | EU takes the lead | 30% | | | 0 | | -2 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | -1 | 1 | 0 | -1 |
| | EU does not take the lead | 70% | | | | | 2 | -1 | -1 | 0 | -1 | 0 | 0 | -1 | 1 | -1 | 0 | 1 |
| Stable statehood (producer countries) | pronounced | 60% | 0 | | | | 0 | | 0 | | -3 | -1 | 1 | 0 | | 0 | | |
| | restricted | 40% | | | | | | | | | 3 | 1 | -1 | | | | | |
| Actors in inner-European market (oil/gas) | undisputed position of traditional actors | 60% | 0 | | 0 | | | | 0 | | 1 | 0 | 0 | 0 | | 0 | | |
| | significant influence of new actors | 40% | | | | | | | | | -1 | 0 | 0 | | | | | |
| Geopolitical orientation (producer countries) | realignment | 30% | -2 | 1 | 0 | | 0 | | | | 1 | 0 | 0 | 1 | -1 | 0 | | |
| | traditional orientation | 70% | 2 | -1 | | | | | | | -1 | 0 | 0 | -1 | 1 | | | |
| Wars in the region | conflagration | 30% | 0 | | -3 | 2 | 0 | | 0 | | | | | 0 | | 0 | | |
| | isolated conflicts | 50% | | | -1 | 3 | | | | | | | | | | | | |
| | no wars | 20% | | | 0 | -3 | | | | | | | | | | | | |
| Attractivity of EU as trading partner | decreased | 60% | 0 | | 0 | | 0 | | 0 | | 0 | | | | | -1 | 0 | 1 |
| | increased | 40% | | | | | | | | | | | | | | 1 | 0 | -1 |
| Demand for imports of fossil energy sources in EU | increased | 70% | 0 | | 0 | | 0 | | 0 | | 0 | | | 0 | 1 | | | |
| | stable | 20% | | | | | | | | | | | | 0 | 0 | | | |
| | decreased | 10% | | | | | | | | | | | | 0 | -1 | | | |
| Multilateral juridification of energy relationships | predominantly yes | 30% | 3 | -1 | 0 | -2 | 0 | | -2 | 0 | -3 | -1 | 0 | -1 | 1 | 0 | | |
| | predominantly no | 70% | -2 | 1 | 0 | 2 | | | 2 | 0 | 3 | 1 | 0 | 1 | -1 | | | |
| Perception of transnational terrorism | increasing | 30% | 0 | | 0 | 2 | 0 | | 0 | | 2 | 1 | 0 | 0 | | 0 | | |
| | level of 2007 | 50% | | | 0 | 1 | | | | | -1 | 0 | 1 | | | | | |
| | decreasing | 20% | | | 0 | -1 | | | | | -2 | -1 | 0 | | | | | |
| Energy as instrument of foreign policy (producers) | often applied | 40% | -1 | 1 | 0 | | 0 | 1 | 2 | 0 | 2 | 3 | 0 | 0 | | 0 | | |
| | rarely applied | 60% | 1 | -1 | | | 0 | -1 | -2 | 0 | -2 | -3 | 0 | | | | | |

Figure 3-9: Extract of the cross-impact matrix in the SWP scenario process[74]

Out of these 42 steady state scenarios, the process team selected three scenarios, which are described in an extensive scenario story. The three scenarios are named "elusive security", "expensive oil for a united Europe" and "Europe in an energy-

[74] According to SWP (2008).

political offside position". Interested persons are advised to read those very interesting and illustrative scenarios in SWP (2008).

The scenario process group is the main advantage of this scenario methodology in comparison to the WEF process. A platform like the WEF needs to integrate various persons for political reasons, whereas a scenario process is a tool that is especially designed for small groups.[75] These allow intensified discussions with the integration of external experts if needed. Beyond this, a certain group spirit that drives the process and generates excellent and sometimes surprising results is created. The implementation of the quantitative cross-impact matrix approach is a great rarity in scenario thinking as numerous interactions have to be identified and a consensus needs to be reached among the participants. Hence, it is a complex, time-consuming and intensive process that delivers very elaborate scenarios.

## 3.5 Combining scenario approach and asset allocation

The asset class specific assumptions in an asset allocation process are generally based on different regimes. These regimes are often defined by macroeconomic scenarios. Thus, in several regimes expected return, expected risk and correlation parameters have to be defined (see Figure 3-10). Usually, one overall regime is calculated according to a weighting of the different regimes. Finally, this overall regime is optimized with portfolio theory tools.[76]

[75] Besides, the scenario expert GED DAVIS (2004) designed a methodology that allows scenario groups of more than 60 persons. However, some main advantages of scenario processes such as discussions and the group spirit disappear.

[76] Another approach is an optimization of each regime and a final maximization of the portfolio considering the efficient frontiers of the different regimes and the estimated regime weights.

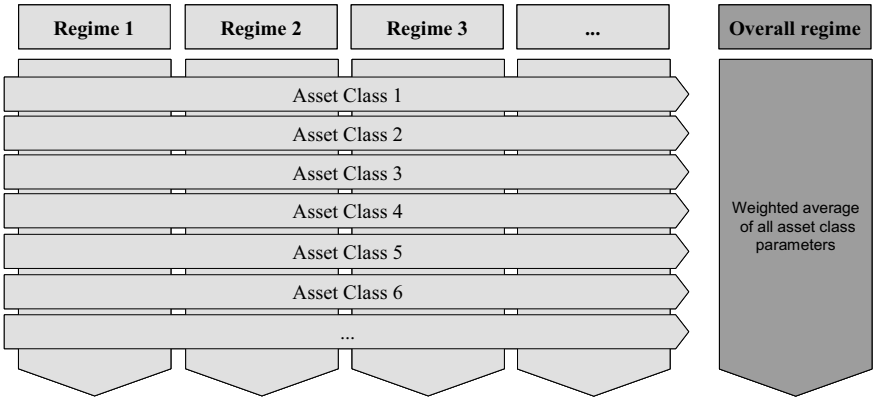


Figure 3-10: Standard asset allocation input parameter framework

The scenario approach and asset allocation processes have several characteristics in common. Both scenario and asset allocation process operate either with scenarios or regimes. In an asset allocation framework the regimes are often defined by macroeconomic conditions and the input parameters for every asset class in these regimes are needed. However, the scenario approach is a strategic tool that defines scenarios in a certain context for example "*how does the global macroeconomic environment develop until 2020*" or more specific "*how will global equity markets develop until 2020*". Transferred into an asset allocation context, question one defines several regimes whereas question two specifically analyses one single asset class. This describes two different approaches integrating scenario methodologies into asset allocation.

A scenario process can help to define the regimes used in an asset allocation framework. As mentioned above, the future global macroeconomic environment can be analysed with a scenario process. Thus, several macroeconomic regimes are defined. Later on, parameters such as expected return, risk and correlation are derived for all considered asset classes.

A second approach to benefit from scenario thinking in asset allocation is analyzing the return, risk and correlation parameters for a specific asset class. In that case, a scenario process for one or even more asset classes is conducted. As a result, several asset class specific scenarios are defined and the required asset allocation

parameters are derived. However, the scenarios may not fit to the regimes defined for other asset classes. This leads to a restriction in the asset allocation framework, because it is then required to optimize the weighted averages of all regimes. Due to the fact that this approach generates several different regimes for every single asset class, it is not possible to perform an optimization within each regime and maximize the portfolio with the efficient frontiers of all regimes in a second step. In general, this restriction does not affect portfolio optimization processes in practice as most asset managers focus on optimizing a weighted average of regimes (the overall regime).

Both approaches of integrating scenario methodologies into asset allocation generate advantages. On the one hand, the whole framework of the regimes is defined and specified by comprehensive multidimensional scenarios and not only macroeconomic figures, which are often reduced to a growth and inflation matrix (see Figure 3-11). On the other hand, asset class specific scenarios are defined and asset allocation input parameters derived. This second approach has one major advantage: asset allocation is based on the assumption of diversification effects. If this is true and diversification is not a linear phenomenon, asset classes have and require a different set of scenarios and regimes. For example, catastrophe bonds are said to be almost uncorrelated to financial markets and macroeconomic conditions.[77] However, also for cat bonds several scenarios exist, but these cannot be integrated into a macroeconomic based framework. Therefore, an independent regime structure for some or even every considered asset class creates a competitive advantage in asset allocation. As a consequence, the way of integrating scenario methodologies in asset allocation depends on the objective of the asset allocation. The analysis of every single asset class or at least some asset class categories[78] is the more adequate way. However, up to now asset managers often focus on general macroeconomic regimes.

[77] KIELHOLZ & DURRER (1997), p. 11.
[78] The scenarios of some asset classes might overlap, for example equity, investment grade, high yield and convertible bonds.

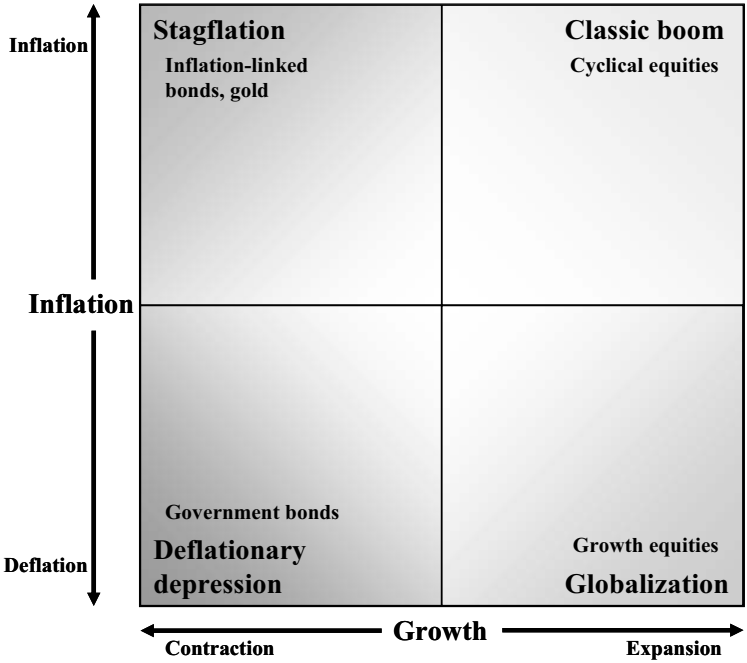


Figure 3-11: Macroeconomic framework for asset allocation

The analysis of asset classes with scenario methodologies provides an innovative tool for asset allocation. This allows generating asset allocation input parameters with asset class specific scenarios. Up to now, asset managers generally rely on macroeconomic regimes that are assumed to be relevant for all asset classes. Moreover, the expectations for return, risk and correlation are derived by a quantitative analysis of the past. For this reason, an economic cycle analysis is performed to determine the parameters by past experiences in similar regimes. More and more experts and investors doubt this forward projection of quantitatively derived past parameters. Furthermore, a clear restriction applies. A considered asset class has to pass through at least one full economic cycle before it can be included in the process. At this point, backward-looking quantitative methods have their limits and forward-looking scenario methodologies may convince not only innovative asset managers.

Scenario methodologies allow an integration of new asset classes. If not sufficient backward-looking data or market values are available, the traditional analysis for asset allocation parameters is limited. The forward-looking qualitative modelling of expected asset class parameters is necessary. Furthermore, asset classes with long-data history can also benefit from a more forward-looking qualitative rather than a backward-looking quantitative process to generate asset allocation input parameters.

The integration of a qualitative process in the quantitatively driven environment of finance may encounter difficulties. On the one hand, process driven problems such as the derivation of quantitative parameters out of qualitative scenarios have to be considered. This is a critical point that has to be addressed, but it can be dealt with.[79] On the other hand, qualitative thinking is not broadly common anymore in various areas of asset allocation. Instead, in recent years practitioners and researchers apply increasingly quantitative methods and tools. Therefore, implementing a qualitative approach of future-oriented research in a quantitative driven environment requires a well-structured and -positioned process to increase acceptance.

## 3.6 Summary

The scenario approach is a tool to improve long-term strategic decision making. In a scenario process several possible scenarios of the future are generated in a structured assessment. The integration of all relevant factors for a given problem set is a key characteristic. Hence, the methodology is a forward-looking tool that deals with and also structures complexity. As a result, the scenario approach enables qualitative thinking. Furthermore, it provides an innovative tool for dealing with uncertainty and complexity in asset allocation.

[79] GOTTSCHALK & STEINBRECHER (2005) explicitly describe the process of transferring qualitative scenario inputs into a quantitative framework.