

Structured Weather Solutions

To assure businesses are not left standing in the rain

The profitability of many enterprises is weather-dependent. Rainy summers can spoil our thirst for refreshing drinks – to the detriment of the beverage industry. Winters with little or no snow have repercussions beyond the winter sports industry. They can also mean considerable loss in revenues to hydroelectric power plants due to empty reservoirs.

Seasons shift and change and the outcome is felt both globally and regionally. More and more, the weather has a direct effect on the success of many companies across various industries. But bad weather not only results in a competitive disadvantage for a company's own sites and its home market. Even in faraway places where raw materials are mined and harvested or where suppliers have their production sites weather can have a vital impact. Weather-related rises in commodity prices lead to lower sales volumes due to scarcity and pressure on margins which in turn negatively impacts a company's success.

Approach

Such weather risks are known as non-insurable or difficult-to-insure business risks. This is because there is no standard insurance market for these risks. As a specialist team we therefore develop individual risk financing in shape of insurance, capital market or structured weather solutions. With these solutions companies protect their operating results against the adverse impact of seasonal or ongoing weather dependency.

This is how structured weather solutions work

When designing a structured weather solution we consider two areas. Firstly, we analyze the dependence on weather conditions in the company's business model. Secondly, on this basis, we develop a structured weather solution that covers the following issues:

- All weather events to be covered by the structured weather solution
- Definition of the company's target figure(s) to which the weather coverage relates
- Definition of the meteorological triggers that result in insurance payouts. This requires precise, objective measurement results to define the circumstances under which a trigger is reached.

If specific weather conditions indirectly impact a company's success due to internal or external factors, so-called multi-trigger approaches will ensure efficiency from the perspective of total risk costs. Two examples:

- a. A mountain railway's dependence on weather conditions and quantity of snow in combination with general economic trends and consumer spending of potential winter tourists.
- b. Dependence of energy producers on temperatures if price volatility of crude oil exceeds certain thresholds, either because of weather conditions (e. g. cold winters / hot summers in the Northeastern U.S.) or other factors (e. g. political tensions in oil-producing countries).

Example of a structured weather solution: a mountain railway in winter

Stage 1: Understanding the problem

Together with the management of the mountain railway we assess all problems while taking into account the company's sales targets for one or several subsequent periods. Historical fluctuations can be utilized by the management to determine critical threshold values, below which it would be difficult to satisfy the company's stakeholders.

Stage 2: Recognizing the risks

From the comparison of historical weather data and a company's sales figures we calculate the weather dependency of the customer's business model.

Stage 3: Risk analysis

All issues compiled in stages 1 and 2 are now transferred into a quantitative model. In this context it is particularly important to review the explanatory power of the adapted model. We calculate the model's percentage of total variation in business performance.

Stage 4: Structuring and implementing the weather solution

As insurance broker, Kessler obtains quotations from different insurance companies. From these quotes, Kessler determines and submits the best option for the client after optimizing the total cost of risk. As usual, deductibles, limits, etc., are recorded in one policy or in a term sheet in case of capital market solutions.

Summary of structured weather solutions

Customer benefits

- Fewer cluster risks in case weather risks increase other corporate risks
- Buffering of annual fluctuations in yield and / or interception of peak risks possible
- High resolution, quantity and quality of statistical meteorological data ensure accurate and fair pricing
- Bespoke customer solutions

Points to be considered

- Regular risk reviews required within the company to elucidate dependence on weather
- Initial costs for solution development and structuring since structured weather solutions are tailor-made
- Rethinking required within the company, or even a whole industry, since weather risks in the wider sense were previously uninsured
- Tax and accounting requirements

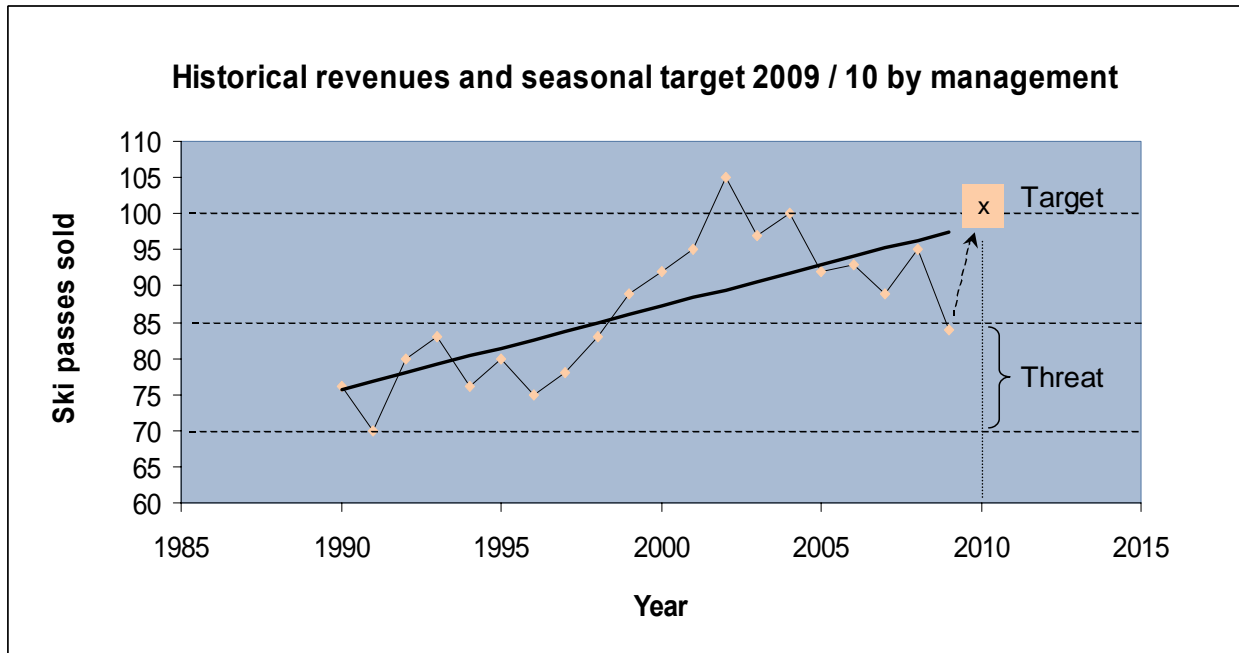
Your contacts for structured weather solutions are happy to answer any questions you may have.

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Appendix to Stage 1: Understanding the problem

This chart shows the critical areas where the mountain railway may suffer considerable losses.



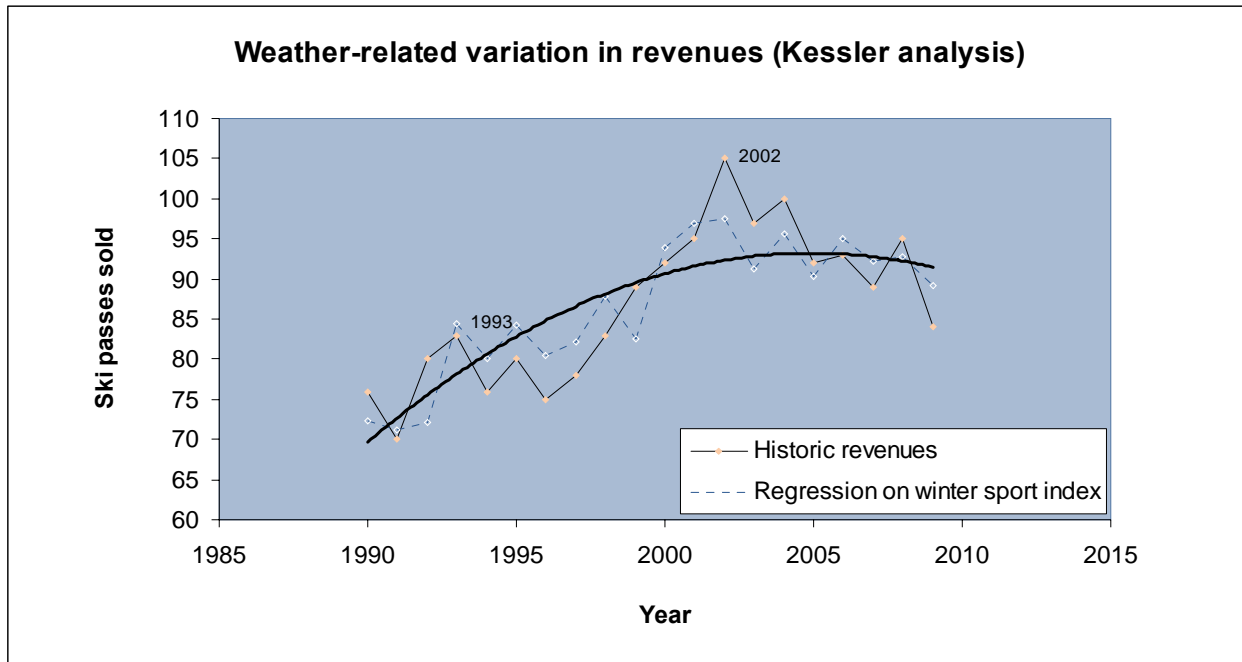
Appendix to Stage 2: Recognizing the risks

This chart compares historical meteorological and company-specific data sets with an index summary of relevant weather data.

Year	Number of ski passes	Precipitation (mm)	Sunny weekends	Winter sport index (scaled to 100)
1990	76	124	22	108
1991	70	97	23	97
1992	80	144	14	93
1993	83	130	26	120
1994	76	89	27	101
1995	80	166	16	106
1996	75	140	14	91
1997	78	130	15	91
1998	83	93	26	101
1999	89	100	17	85
2000	92	136	21	110
2001	95	126	25	116
2002	105	118	26	114
2003	97	126	17	95
2004	100	129	20	105
2005	92	120	16	90
2006	93	89	27	101
2007	89	94	22	94
2008	95	106	20	95
2009	84	162	11	87
Averages	N/A	121	20	100

Appendix to Stage 3: Risk analysis

In this example, the explanatory power in the adapted model amounts to approximately 30 percent. This means that 30 percent of total fluctuations are down to examined weather conditions such as sun or amount of snow.



Appendix to Stage 4: Structuring and implementing the weather solution

In this chart, deductibles and limits are defined relative to a reference value as we use deviations from that reference value to establish insured losses.

Number of ski passes

