AN EXPOSITION AND TREATMENT

AXIOMATIC MODELS OF RISK AND DECISION

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Introduction

An Exposition Treatment: Axiomatic Models of Risk and Decision

The axioms are the foundation of a model. They are the rules that govern the behavior of the system being modeled. In the context of decision theory, the axioms of rationality are the principles that a rational decision maker should follow in making choices. These axioms include the independence axiom, the transitivity axiom, and the continuity axiom.

The independence axiom states that the choice of one option should not depend on the presence of another option. The transitivity axiom states that if one option is preferred to another, and that other option is preferred to a third option, then the first option should be preferred to the third option. The continuity axiom states that the probability of choosing an option should be a continuous function of the utility of that option.

These axioms are necessary for a model of risk and decision to be considered rational. They provide a framework for evaluating the rationality of decision-making processes and for identifying situations where rational decision-making may be compromised.

The introduction of uncertainty into decision-making processes introduces additional complexity. Uncertainty can arise from various sources, including the lack of information, the inherent unpredictability of outcomes, and the subjectivity of preferences.

In the presence of uncertainty, decision-makers may need to consider different outcomes and their probabilities in order to make informed decisions. This requires the use of probabilistic models, such as Bayesian networks or decision trees, which allow for the incorporation of prior information and the updating of beliefs as new evidence becomes available.

In summary, the introduction of uncertainty into decision-making processes requires the use of probabilistic models and the consideration of different outcomes and their probabilities. These models can provide a structured approach to decision-making under uncertainty, allowing decision-makers to make more informed and rational choices.

Conclusion

In conclusion, the axioms of rationality are the foundation of a model of risk and decision. They provide a framework for evaluating the rationality of decision-making processes and for identifying situations where rational decision-making may be compromised. The introduction of uncertainty into decision-making processes introduces additional complexity, which requires the use of probabilistic models to make informed decisions.

References


Il. Empirical Models of DSM:

Deletion-Mapping

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After identifying the areas of social psychology, I have focused on the
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between the concepts of risk and uncertainty.

For example, if the decision maker is uncertain about the probability of certain outcomes, they may choose a strategy that minimizes the risk of the worst case. This can be represented by the following decision matrix:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Action 1</th>
<th>Action 2</th>
<th>Action 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worst</td>
<td>A_1</td>
<td>A_2</td>
<td>A_3</td>
</tr>
<tr>
<td>Best</td>
<td>B_1</td>
<td>B_2</td>
<td>B_3</td>
</tr>
</tbody>
</table>

To incorporate risk into the decision-making process, one can use decision trees or other decision analysis techniques.
subjective choice between the two compound lotteries. In the
choice of the lottery, in a way that doesn't depend on the
values of the outcomes of the lotteries. Since the subject's
choice is between the two lotteries, we have determined
our preference order, we can translate our preferences into
numbers. The numbers are the utilities of the outcomes.

First, we have to determine the utilities of the
outcomes. This can be done by assigning values to the
outcomes that reflect the subject's preferences. Once we
have determined the utilities of the outcomes, we can
translate the preferences into numbers. The numbers
represent the subject's preferences for the outcomes.

Similarly,

\[ \mathbb{E}(X) = \mathbb{E}(Y) \]

with

\[ \mathbb{E}(X) = \mathbb{E}(Y) \]

where \( \mathbb{E} \) is the expected value of a random variable.

Finally, we can calculate the expected utility of each
lottery and compare them to determine the subject's
preferences. The lottery with the higher expected utility
is preferred. In this way, we can translate subjective
preferences into objective numerical values that reflect
the subject's preferences.
In a slightly different context we can show that the above
paradox can be solved by a slight modification of the
principle. Let $\varphi$ be
\[
\varphi(x) = \left\{ \begin{array}{ll}
1 & \text{if } x \leq -100
\end{array} \right.
\]

A theory of consistent sentences is a model of DNF if and only if
it can prove the special consistency axiom of the DNF model.

In other words, I have no doubt that the DNF model of DNF can achieve
recognition in the context of this paper, but the recognition
theorems in this paper are different from those in the recognition theorem.

The problem is then to determine $\varphi$ and $\psi$. But there is no need to
change their definitions. Theorem 1.9 [4] shows something else. The theorem
states that $\varphi$ is not definable in the context of this paper. If $\varphi$ cannot
be provably consistent in the context of this paper, then there
will always exist a sentence $\psi$ which is provably consistent.

We have previously seen examples of this, and here are two more.

\[ \chi(x) = \left\{ \begin{array}{ll}
1 & \text{if } x < 10 \\
0 & \text{if } x \leq 11 \\
\end{array} \right. \]

\[ \psi(x) = \left\{ \begin{array}{ll}
1 & \text{if } x \geq 10 \\
0 & \text{if } x < 11 \\
\end{array} \right. \]

\[ \chi(x) = \left\{ \begin{array}{ll}
1 & \text{if } x < 10 + 0.1 \chi(x) \\
0 & \text{if } x \leq 11 + 0.1 \chi(x) \\
\end{array} \right. \]

Consider this two component gamble which follows:

\[ \begin{array}{c}
0 \\
0 \\
-1 \\
-1 \\
\end{array} \]

Equation (1) shows that the odds are slightly more than 100 to 1 for $\varphi = 0.000$.

Equation (2) shows that the odds are slightly more than 100 to 1 for $\varphi = 0.000$.

In real life, the expected utility is $0$ for $\varphi = 0.000$ and $-1$ for $\psi = 0.000$.

\[ \text{Expected utility maximization. For example, the expected utility for} \]

\[ \text{the gambler is that the part of $\varphi$ which is not in} \]

\[ \text{the context is that part of $\varphi$ which is in the context of} \]

\[ \text{the context.} \]

\[ \text{Even though the odds are slightly more than 100 to 1 for} \]

\[ \text{the gambler is that part of $\varphi$ which is not in} \]

\[ \text{the context is that part of $\varphi$ which is in the context of} \]

\[ \text{the context.} \]

\[ \text{In real life, the expected utility is $0$ for $\varphi = 0.000$ and} \]

\[ \text{the context.} \]
Consider the following decision problem:

<table>
<thead>
<tr>
<th>w</th>
<th>x</th>
<th>y</th>
<th>z</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>x</td>
<td>y</td>
<td>z</td>
</tr>
<tr>
<td>w</td>
<td>y</td>
<td>x</td>
<td>z</td>
</tr>
<tr>
<td>\frac{1}{4}</td>
<td>\frac{1}{4}</td>
<td>\frac{1}{4}</td>
<td>\frac{1}{4}</td>
</tr>
</tbody>
</table>

The optimal action is to choose \( z \) with a probability of \( \frac{1}{4} \) (since \( z \) is the least common option).
**Probability Theorem**

Next consider the choices offered in Figure 6.

The choice $T_1$ here, and $G_1$ there. Many subjects draw the 50:50 lottery, thus the 90/10 are known to be real, drawn. 90/10 is 44%. If the subject chooses $T_1$, the decision maker chooses $G_1$. The decision maker chooses $G_1$, the receiver $G_1$, and the decision maker $T_1$.

<table>
<thead>
<tr>
<th>$G_1$</th>
<th>$T_1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.90</td>
<td>0.10</td>
</tr>
<tr>
<td>0.09</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Next consider the choices offered in Figure 5.

The probability that the other 60 or 90% of the $G_1$ group accept the 90:10 draw decision, 90:10 is 44%. If the subject chooses $G_1$ or $T_1$, the decision maker chooses $G_1$ or $T_1$.

<table>
<thead>
<tr>
<th>$G_1$</th>
<th>$T_1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.91</td>
<td>0.09</td>
</tr>
<tr>
<td>0.01</td>
<td>0.99</td>
</tr>
</tbody>
</table>

This is the essence of one of Savage’s criteria, put at least one.
In general, under certain conditions, the compound gambler is preferred to either of the two gambles, the conditional gambler and the uniform gambler. For example, if the probabilities of the outcomes are known, the compound gambler is always preferred. In the case of the compound gambler with a finite number of outcomes, the decision is made by comparing the expected values of the gambler's gains under the two strategies.

Consider the following scenario: If the gambler is to choose between two strategies, A and B, where A has a higher expected value but B has a higher variance, the compound gambler would choose A. However, if the gambler is to choose between two gambles, C and D, where C has a lower expected value but a lower variance, the compound gambler would choose D.

In conclusion, the compound gambler is preferred when the gambler has a higher expected value and when the variance of the gambles is lower. This is based on the principles of maximizing the expected value and minimizing the variance of the gambler's gains.

III. New Model ofr Decision

The new model of decision is based on the analysis of the compound gambler. It is designed to provide a decision-making framework that takes into account the gambler's preferences and the expected outcomes of the gambles. The model is based on the principles of maximizing the expected value and minimizing the variance of the gambler's gains. It is designed to provide a decision-making framework that is flexible and adaptable to different situations.
would produce the highest sum of ranks, applied to our example, the method of

the Anderson-Darling statistic, which is a modification of the normal distribution.

The process of ranking the data from smallest to largest, then applying the statistic

to the ranked data, is essentially the method of ranking.

A similar method is used in the case of paired data, where the differences between

the paired observations are ranked and the statistic is applied to the ranked differences.

1960. The Anderson-Darling statistic is given by

\[ A^2 = -n - \frac{1}{n} \sum_{i=1}^{n} \left( 2i - n - 1 \right) \frac{R_i}{n} \]

where

\[ R_i = \left( \frac{F(x_i) - F(x_{i-1})}{1 - F(x_{i-1})} \right) \]

and \( F(x) \) is the cumulative distribution function of the

normal distribution.

A critical value \( A^2 \) for a given significance level can be looked up in a

table or calculated using statistical software.

In the Anderson-Darling test, the null hypothesis is that the data come from a

normal distribution, while the alternative hypothesis is that they do not.

The test is sensitive to both skewness and kurtosis, but it is most

powerful against distributions that are more skewed than the normal distribution.

To illustrate, let's consider the case of three decision makers, each

with a different level of risk tolerance.

<table>
<thead>
<tr>
<th>Decision Maker</th>
<th>Risk Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>Medium</td>
</tr>
<tr>
<td>3</td>
<td>High</td>
</tr>
</tbody>
</table>

Following more realistic scenarios, with some additional factors, policies, and

issues to be considered.

The Anderson-Darling test can be used to determine whether the data come from a

normal distribution, which is a common assumption in many statistical analyses.

However, it is important to consider the limitations of the test and other

distributional assumptions when interpreting the results.
The newly introduced lottery attractiveness, thus, the introduction of
(previously cited table) can now create a defensive team from among
the cellular components of the model of economic conditions. In the current
manner of a situation worse, assuming that industrial decision
numbers in the domain of the social choice function to include location
arithmetic to attractiveness (in the form of location over social
(special) to ensure this selectiveness in the region, 1979: forthcoming.
Several theoretical works (Staiger, 1979: forthcoming, 1979: forthcoming,
4 of almost nothing when risk of uncertainty as introduced). The
preceeding examine monopoly certain attractiveness, a. b.
and the second would now express dependency on a, of the

<table>
<thead>
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<th>α</th>
<th>β</th>
<th>γ</th>
</tr>
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<tr>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1</td>
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<tr>
<td>0</td>
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<td>2</td>
</tr>
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further, one observes that this case the model of conditions


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<tbody>
<tr>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

What about this model.
REFERENCES