In This Issue

1. Learn how to run *Risk Simulator's* Markov Chains module.

"When is it appropriate to use the Markov approach?"

Theory

A Markov chain exists when the probability of a future state depends on a previous state and when linked together forms a chain that reverts to a long-run steady state level. This Markov approach is typically used to forecast the market share of two competitors. The required inputs are the starting probability of a customer in the first store (the first state) returning to the same store in the next period versus the probability of switching to a competitor's store in the next state.

Procedure

- Start Excel and select *Risk Simulator | Forecasting | Markov Chain*.
- Enter the required input assumptions (see Figure 1 for an example) and click *OK* to run the model and report.

Note

Set both probabilities to 10% and rerun the Markov chain, and you will see the effects of switching behaviors very clearly in the resulting chart as shown at the bottom of Figure 1.

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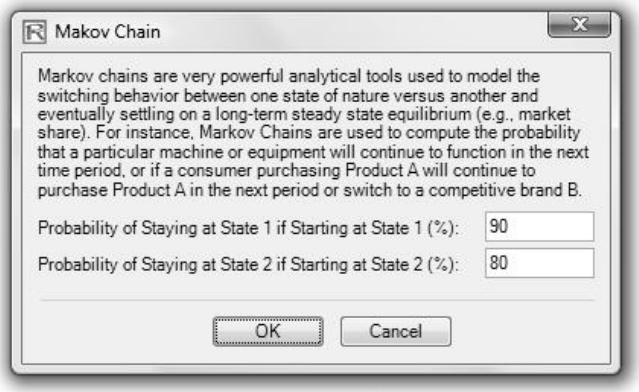
Markov Chain Forecast or Markov Process

The Markov Process is useful for studying the evolution of systems over multiple and repeated trials in successive time periods. The system's state at a particular time is unknown, and we are interested in knowing the probability that a particular state exists. For instance, Markov Chains are used to compute the probability that a particular machine or equipment will continue to function in the next time period or whether a consumer purchasing Product A will continue to purchase Product A in the next period or switch to a competitive Product B.

To generate a Markov process, follow the instructions below:

1. Click on **Risk Simulator | Forecasting | Markov Chain**
2. Enter in the relevant state probabilities (e.g., **90** and **80** percents) and click OK
3. Review the forecast report generated

Tip: For an interesting State model, try 10 percent for both probability inputs and see the generated chart.



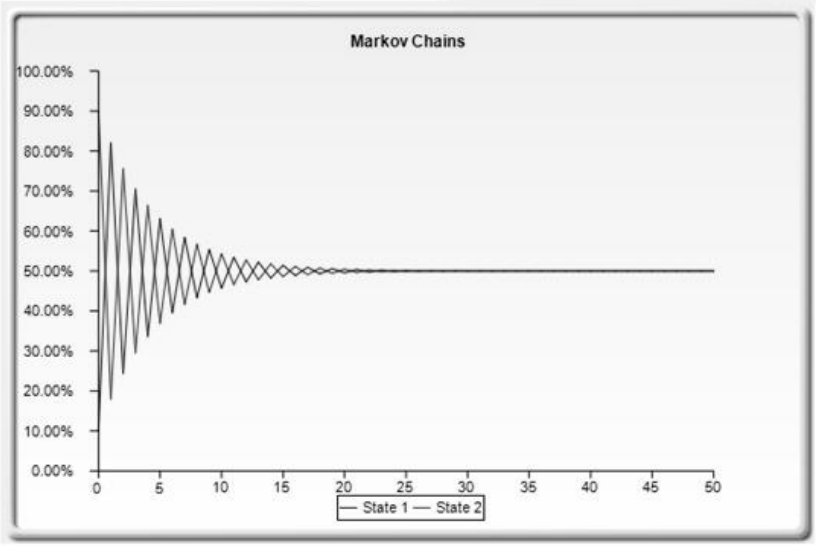


Figure 1. Markov Chains (switching regimes)