

bet tennis

A gambling strategy where the amount is raised until a person wins or becomes insolvent

A martingale is a class of betting strategies that originated from and were popular in 18th-century France. The simplest of these strategies was designed for a game in which the gambler wins the stake if a coin comes up heads and loses if it comes up tails. The strategy had the gambler double the bet after every loss, so that the first win would recover all previous losses plus win a profit equal to the original stake. Thus the strategy is an instantiation of the St. Petersburg paradox.

Since a gambler will almost surely eventually flip heads, the martingale betting strategy is certain to make money for the gambler provided they have infinite wealth and there is no limit on money earned in a single bet.

However, no gambler has infinite wealth, and the exponential growth of the bets can bankrupt unlucky gamblers who choose to use the martingale, causing a catastrophic loss. Despite the fact that the gambler usually wins a small net reward, thus appearing to have a sound strategy, the gambler's expected value remains zero because the small probability that the gambler will suffer a catastrophic loss exactly balances with the expected gain. In a casino, the expected value is negative, due to the house's edge. Additionally, as the likelihood of a string of consecutive losses is higher than common intuition suggests, martingale strategies can bankrupt a gambler quickly.

The martingale strategy has also been applied to roulette, as the probability of hitting either red or black is close to 50%.

Intuitive analysis [edit]

The fundamental reason why all martingale-type betting systems fail is that no amount of information about the results of past bets can be used to predict the results of a future bet with accuracy better than chance. In mathematical terminology, this corresponds to the assumption that the win-loss outcomes of each bet are independent and identically distributed random variables, an assumption which is valid in many realistic situations. It follows from this assumption that the expected value of a series of bets is equal to the sum, over all bets that could potentially occur in the series, of the expected value of a potential bet times the probability that the player will make that bet. In most casino games, the expected value of any individual bet is negative, so the sum of many negative numbers will also always be negative.