

Dr. Chun's Numb3rs & Løgic

Risk Aversion



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March Madness

From "Net gains: How watching basketball can improve your approach to investing," *Wall Street Journal*, March 15, 2006, Page D1.

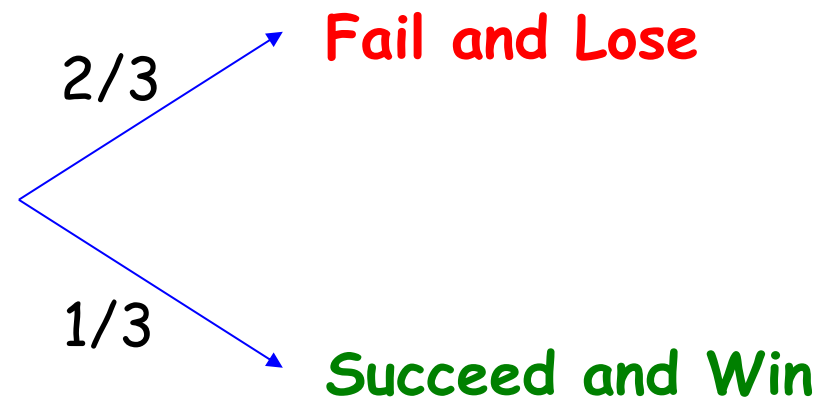
"Suppose a team is down by **two points** and it has time for **one last shot**. Let's say there's a 50% chance of scoring on a **two-point shot** and pushing the game into overtime, but only a 33% chance of making a **three-point shot** and getting the immediate win.

What play should **the coach** call?"

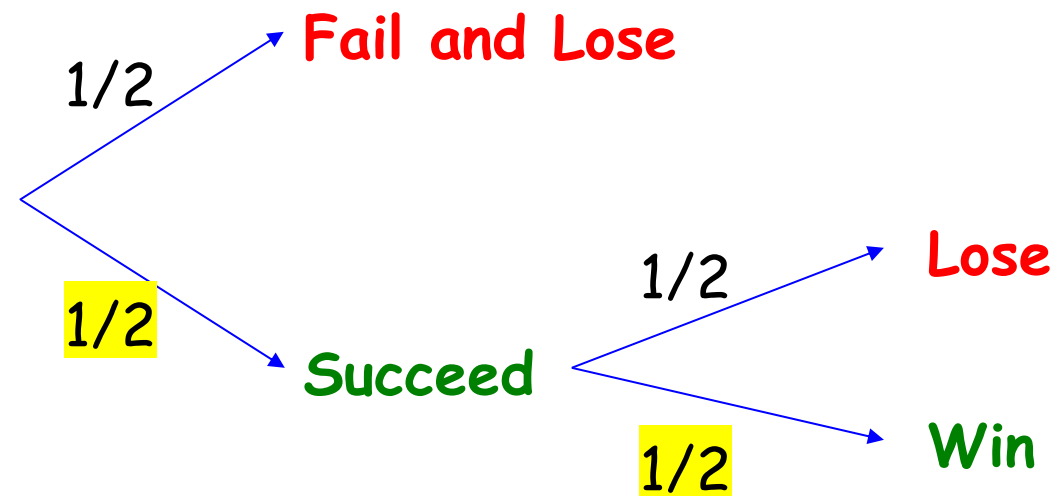




- **Option #1:** Go for a three-point shot $\Rightarrow P[\text{Win}] = \frac{1}{3}$



- **Option #2:** Go for a two-point shot $\Rightarrow P[\text{Win}] = \frac{1}{4}$





“In such a situation, the **three-point shot** is the rational choice. However, most coaches go for the two.

If the coach goes for the three and misses, not only will the team suffer an immediate stinging loss, but also critics will vilify the coach as “**greedy**” and “**reckless**.”

Chalk it up to **our aversion to regret**, says Richard Thaler, an economics professor at the University of Chicago.”



* More example?

- Two-point conversion in football

Denver, a Rare Display of the Go-for-it Mentality

Judy Battista, *New York Times*, (Sep. 16, 2008)



You play to win the game, but the **Denver Broncos** coach's decision to go for a 2-point conversion and a victory over the **San Diego Chargers**, instead of an extra point to tie the score, should teach a few other coaches a lesson: stop being so **conservative**.



Suppose that the probability of a point after succeeding is **0.99**, and the probability of a 2-point conversion succeeding (for the Broncos) is **0.536**, the probability of winning in extra time is **0.5**, and the probability of another score in regular time is small. Then, the probability of winning with a **2-point attempt** is **0.536**, and the probability of winning with a **P.A.T** is 0.99×0.5 , or **0.495**.

So the odds favor the **2-point attempt**, not the **P.A.T**. Home-field advantage and other factors may change these probabilities, but the fact remains that the **2-point try** is hardly a **reckless gamble** in this situation.

Movie Trivia II



During a pro football strike, the owners hire substitute players.

The Replacement (2000)



During a pro football strike, the owners hire substitute players.