Betting Progressions

Nearly every gambler uses some kind of system even if his system merely consists of guessing what to do next.
Betting systems or betting progressions have been devised for every gambling game. Many of them had their origins in eighteenth and nineteenth century roulette played on the French Riviera. While the particulars of different betting systems vary greatly, the systems fall into three broad categories:

1. Flat: Keep bets constant, waiting for a streak of successes.

2. Negative progressions: raise bets after losses, trying to recover an eventual win.

3. Positive progressions: raise bets after wins, hoping to use the "house money" to create a large win.

Each of these systems has positive and negative characteristics, but the approach, which catches the most flak from gaming experts, is the negative progression.

The advocates of positive progressions
don't think much of increasing your wager after a loss. By their thinking, increasing a bet after you have lost amounts to throwing good money after bad, with the probable outcome being that you will just lose more money. However, as we shall see, in the short run just the opposite is likely to be true.

Assume that we are going to bet the color black at roulette for eight decisions. Three different players will help us in this illustration.

Player A does not believe in ever changing the size of his bet. He bets *flat*, that is the same amount on every spin, regardless of the outcome of his preceding hand. In our example, he will bet $10 per roulette decision.

Player B likes to follow the system many experts recommend and he will *press* or double his bet after each win, gradually betting more and more as he uses the house's money. He will start with a $10 bet, increase it to $20 after a win, then wager $40 if he wins again. If his bet reaches as high as $160, he will stay at this level until he loses a wager. After any loss, he will drop back to betting

$10.

Player C has heard that increasing his bets after losses is the "surest way to win." He will start with a $10 bet. If he loses this bet he will wager $20. If this bet loses, he will increase his bet to $40, then $80, followed by $160 if this wager also loses. His maximum wager is $160. If he reaches this level he will continue to wager $160 until he has a win. After any win, he will regress to a $10 bet.

The following table compares the results of eight decisions, consisting of six losses and two wins.

Comparison of Bet Selection Methods

Player A
Bet 10 10 10 10 10 10 10 10
Win (loss) -10 -10 +10 -10 -10 -10 -10 +10
Net Win -10 -20 -10 -20 -30 -40 -50 -40

Player B
Bet 10 10 10 20 10 10 10 20
Win (loss) -10 -10 +10 -20 -10 -10 -10 -20
Net Win -10 -20 -10 -30 -40 -50 -60 -50

Player C
Bet 10 20 40 10 20 40 80 160
Win (loss) -10 -20 +40 -10 -20 -40 -80 +160
Net Win -10 -30 +10 -0- -20 -60 -140 +20

In this series of wagers, Player A loses $40, Player B loses $50, while Player C comes out $20 ahead. I purposely set up this example to illustrate some of the characteristics of each of the betting strategies.

For a given session, flat betting leads to sessions with the narrowest, most balanced range of expected wins and losses. In this series, we lost 75% of our wagers; therefore, we expect to have a loss.

Positive progressions, like the progression used by Player B, offer more likelihood of an adverse than a favorable session, with

intermittent large wins. In this example, increasing wagers after wins caused this player to lose $50, a greater loss than the one realized betting flat.

Negative progressions, like the one used by Player C, offer a greater chance of winning any given session but have the characteristic of generating many small wins with occasional large losses.

The exact result of sessions played in casinos depends on the details of each game and on variations applied to systems by individual players. However, by ignoring variations, using each system in its rawest form, we can test how each system performed against the same set of decisions and comment on general characteristics of each approach to wagering.

A test was created assuming that wagers are made on the color black only. Each game was 100 decisions long. Limits on the progressions were imposed which required any progression to end immediately if the next bet required in the series exceeded 256 units.

The following systems were tested. Please note that these are not presented as practical systems but are used to emphasize the differences you can expect in each approach to wagering.

1.**Flat Betting**: Single units are bet and the amount never varies.

2. **Positive Progression:** In this parlay type of progression, bets are doubled after every win and reduced to one unit after every loss. Assuming a string of nine consecutive wins, this progression would be: 1, 2, 4, 8, 16, 32, 64, 128, 256.

3. **Negative Progression:** A *Martingale* type of progression is used where bets are doubled after every loss and reduced to a single unit after any win. Assuming a string of nine consecutive losses, this series would consist of the following wagers: 1, 2, 4, 8, 16, 32, 64, 128, 256.

The results of a 2,000 session computer run using each technique are presented in a table on the following page.

This table shows some of the trade-offs among the systems. Notice

that while the average size bet for flat betting was 1 unit, it increased to 3.8 units using a positive progression, and was highest at 5.2 units for the negative progression. The average size bet was larger for negative than positive progression because runs of losing bets were longer, and therefore, required higher wagers than runs of winning bets. In this contest, which is also analogous to blackjack, the losing streaks tended to be longer than the winning streaks.

Flat betting won 38.70% of the games and lost 59.85% of them.

The positive progression showed the lowest win percentage of all, winning only 9.60% of the games while losing over 90% of them.

The negative progression won over 85% of the games and lost only about 15% of them. This strategy was clearly the winner in terms of the number of individual games won.

The last column in the table "Equivalent Amount Won or Lost" shows how much the amounts would have been if the flat and positive betting strategies' wagers had been raised so that the averages were the same as with the negative progression.

2,000 Session Computer Run Testing
Flat, Positive and Negative Betting Systems

Flat (1 unit is the average size bet)
Break even 1.45%
Won 38.70%
Lost 59.85%

Positive (3.8 units is the average size bet)
Break even 0.05%
Won 9.60%
Lost 90.35%

Negative (5.2 units is the average size bet)
Break even 0.00%
Won 85.35%
Lost 14.65%

There are a number of variables which affect your ability to avoid losing your bankroll. These variables include the type of betting

system used, the size of your bankroll, the games you play, the length of time you play, and your luck at winning any given gaming contest.

Let's compare the effects of using different betting systems on our ability to play without losing our bankroll.

The betting systems we will use are:
1. **Flat betting**. We will bet $25 regardless of previous

2. **Positive Progression.** We will start with a $10 base bet. After each win we will double our bet with a maximum wager of $80. If we reach the $80 betting level we will continue to wager $80 until we lose a wager. After any losing wager we will drop back to betting $10. The bets we would make in a winning streak would be: $10, $20, $40, $80, $80, until we have a loss.

3. **Negative Progression.** Again we will use a $10 base bet. After each loss we will double our bet, with our maximum bet to be $80. If we reach the $80 bet, we will continue to wager $80 until we have a win. After any win we will drop back to betting $10. A losing series would consist of: $10, $20, $40, $80, $80, until we have a win.

Here's the game we will face. We will play in a coin tossing contest and we will always wager heads. Heads wins even money less a 2 percent house commission. When tails shows we lose the wager. The chances here are 50-50 and the house edge is 1 percent. The next table shows how each betting system fares, varying the size of our bankroll and the number of games played. Each game consists of 100 bets.

Flat betting offers the least chance of losing your bankroll. If you are willing to use a bankroll of $2,000 in playing this coin-tossing game, you will have a 99% chance of not losing your bankroll if you flat bet.

Using a positive progression gives you almost as good a chance of keeping your bankroll intact as flat betting. A $500 bankroll offers a 94% chance of not losing all of your bankroll as compared to 96% for flat betting and only 83% for the negative progression at this level.

Computer Run Testing Different Betting Systems Comparing the Bankroll Used and the Length of Time Played.

Chance of Not Losing Bankroll

Bankroll	Number of Games	Flat	Positive	Negative
250	100	69%	66%	56%
500	100	96%	94%	83%
750	250	93%	87%	80%
1,000	500	90%	81%	76%
2,000	750	99%	98%	94%

Increasing your bets after losses greatly increases your chance of losing all of your bankroll.
Using the negative betting progression, the chance of keeping your bankroll is only 56% using a $250 bankroll, playing for 100 games. The pattern of much higher risk of losing your bankroll with a negative progression continues until we increase our bankroll to $2,000. With a $2,000 bankroll, we can play the coin-toss game for 750 rounds with only a 6% chance of losing our bankroll (94% chance of keeping it as shown in the table). This compares favorably with the flat bettor's percentage of 99% and the positive progression bettor's percentage of 98% at this level.

The moral of this comparison should be obvious. Using a negative betting progression greatly increases your likelihood of losing your bankroll unless you increase your bankroll to an adequate level. In this example, by increasing our bankroll to $2,000, we only give up 5% of the chance of losing our bankroll using a negative progression as compared to betting flat (94% as compared to 99%).

All gambling strategies involve compromises. Betting flat offers the greatest likelihood of keeping your bankroll, but the poorest chance of winning. You may recall in the earlier table comparing betting strategies that flat betting only won about 39% of its games.

Using a positive betting progression wins only 9.6% of its games (shown in earlier table), but you won't risk losing your bankroll much more using this system than with betting flat.

Referring again to the earlier table, we notice that using a negative progression gave us a win rate over 85%. At first glance at the table on the preceding page, it would seem that this high win rate came only by increasing our risk of losing our bankroll by a large factor. But please note the following. Once we increase our bankroll to a larger amount,

$2,000 in the example here, our risk of losing our bankroll using a negative progression is only 6%, not much greater than the 2% chance of losing with a positive progression, or the 1% chance of losing our bankroll betting flat.

If we are willing to use a somewhat larger bankroll, using a negative progression gives us the best of all worlds: A high probability of winning and a low possibility of losing our bankroll.

This is something that almost no gambling experts will ever tell you. Experts invariably recommend only the first two approaches to win any gaming contest.

The first approach is to gain a mathematical edge over the game.
At roulette, wheel watchers hope to gain an edge by finding an unbalanced wheel where the ball lands in one section of the wheel a higher percentage of the time than chance would explain.

The second approach to gambling, almost universally recommended by the experts, is to use a positive betting progression. That this is the best system for capitalizing on winning streaks is the number one reason cited for using this system. Almost never mentioned by the experts is that this system has a dismal winning rate, losing about 9 out of every 10 sessions.

As we have seen, the betting strategy with the greatest chance of winning is the negative progression. With an adequate bankroll, the risk of loss can be reduced to a reasonable amount.