The [3N] Method

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Abstract

The [3N] Mechanism reconciles the conflict between informational states. This paper takes the idea of the [3N] mechanism and reexplains it as the combination of the Market Capitalization [MCAP] weighting methodology which can be understood as the Rich-Get-Richer, Non-Normal approach [NN] and Value investing, which can be understood as Poor-Get-Richer, Normal approach [N]. The author illustrates how stock markets can be seen as a complex informational state and how a new mathematical approach can create a new S&P 500 beating Index methodology.

Introduction

The debate between Value and Growth Investing, Efficient and Inefficient Market theories, Normal and Non-Normal behavior, order and disorder, historically has been seen as conflictual by the investment management industry, modern financial theory, statisticians, and physicists respectively.

A [3N] method derived from the combination of the respective different states can explain the complexity and ensuing conflict between specific states or between not so specific states like slow and fast thinking selves, instant and delayed gratifying behavior, deep and shallow thinking networks, relevant and irrelevant states of information, or simply cause and effect. Generalization can be helpful in explaining the functioning of natural systems and how nature extracts order from disorder.

The author previously explained the mathematical structure in “The [3N] Model of Life” and this methodology paper extends the showcase of the mechanism into the investment management domain, especially the re-building of an Index like the S&P 500 using an approach different than the market capitalization (MCAP) method, where as a component becomes bigger, it gets bigger weight in the Index.

The Non-Normal (NN) Weight Obsessed Market Capitalization Method

Weight obsession cannot be overemphasized when it comes to MCAP methodology because it’s its least explained aspect. The MCAP method has an obsession with keeping weights up to date. This means the respective method updates the weights the instance the price of a component changes.

The instant the price changes, the same instant the Value which is price multiplied by the number of shares of the component changes. And the instant the Value (i.e. Size) of the component changes, the same instant the weightage of the component changes in the total value of the index.

This instant change in the allocation of a certain component makes rebalancing redundant for the MCAP methodology. If everything is instantly refreshed, rebalancing has no purpose. The idea of passiveness in the MCAP method is hence questionable. If a method keeps calibrating the component weight, at every instantaneous price change, how can the method be considered passive?
This weight obsession creates MCAP concentration where 10 stocks among 500 can own a disproportionately large weight and skew the portfolio into extreme risk, connected to a few components in an otherwise larger composite group.

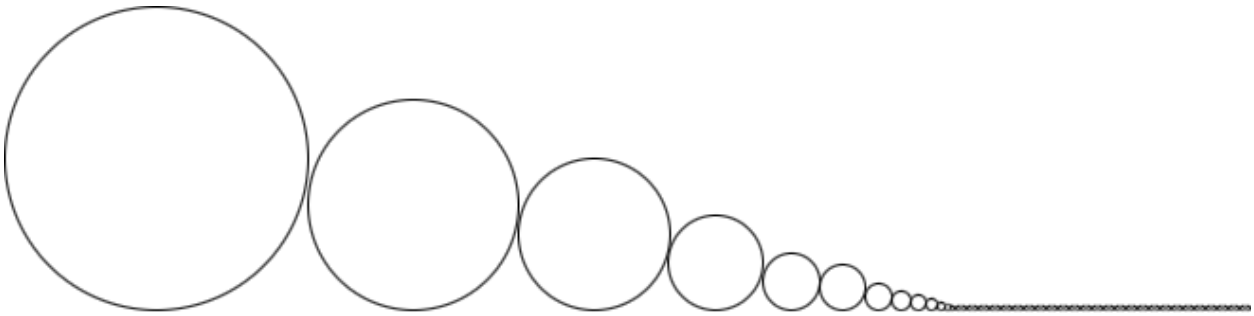

Figure 1: The MCAP concentrates in a few components

To build a non-concentrated version of the MCAP-weighted S&P 500 would require an understanding of the winner's bias. The MCAP method is winner biased. The winner is the large Size company. The bigger the Size gets, the bigger the weight gets.

Winner's bias is a part of the bigger bias complex. The winner's bias approach is linear as it focuses on the first mover advantage, the rich get richer (RGR), which over time starts expressing the 80-20 rule, i.e. 80% of the value is in 20% of the components. This is also sometimes referred to as the non-normal (NN) approach. This is why MCAP is in simple terms an NN method.

The winners are amplified, inflated, and swelled as they win more of their Size, disproportionately. While the losers are diminished, deflated, and shrunk, unreasonably.

The bigger a winner gets, the higher its probability becomes to influence the Index, so much so, that the MCAP approach conveniently ignores the Winner's probability to fail (q).

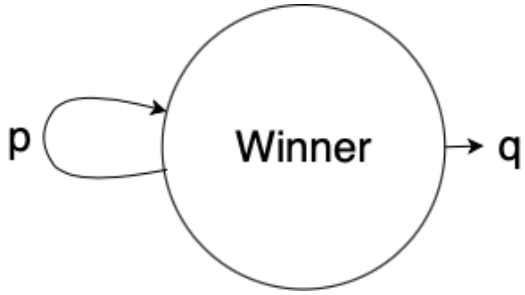

Figure 2: The MCAP method assumes Winner's success

The RGR eventually reaches the rich get poor (RGP) state. Ignoring the probability of failure q, makes MCAP prone to extreme risk from a momentum crash, like the ones witnessed in 1987, 2000, 2002, 2007, 2022, etc. The 80-20 principle comes with the Japanese curse that a market slowdown could take an eternity to recover. Japanese markets have not taken out their 1980 peak yet. MCAP's NN method is a slow-moving train that does not consider the possibility of long recovery periods.

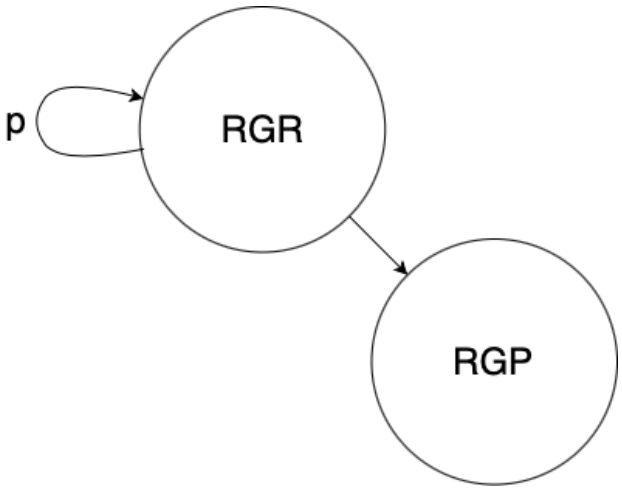

Figure 3: The MCAP method has an intrinsic risk of failure because Winner's always have some probability of failure.

The Loser's Normality (N)

The more inexpensive a loser gets' the more its probability to revert (bounce) increases. Investing in inexpensive stocks is also referred to as Value investing. Some refer to it as a 20-80 Venture business, where only 20% of the investments deliver 80% (significant) returns.

The probability of success is always accompanied by the probability of failure. For the Value investors, the task at hand hence is to seek large upside in few of the selections. The loser's reversion, normality N hence is a flip side of the 80-20 winners' bias. The poor get richer (PGR) is the desired state which is connected to poor get poorer (PGP) undesired state. The probability of success is always decaying even if it grows into probability of failure.

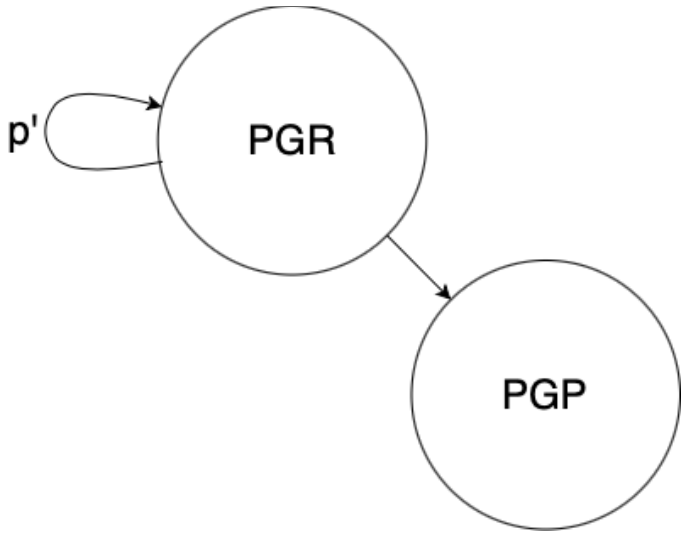

Figure 4: Like Winners, even Value investing or selection from losers have both probability of success and failure.

Combining the Losers and Winners

Probabilistically the winner and loser were always connected. They were always part of the same system. The 80-20 decision was interconnected with the 20-80 decision. This is how the Normal N is connected to the Non-Normal NN, together forming the [3N] a bi-stable, constantly vibrating, dynamic complex system, which starts from a discrete disconnected state. The idealised states being the RGR, RGP, PGR, and PGP.

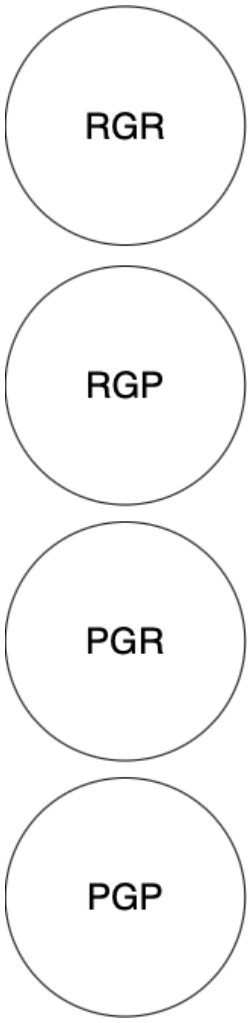

Figure 5: The idealised view begins with disconnected states.

As time passes, the states evolve, and the systems starts looking like coffee mixing with the milk. The components, like electrons, jump between states and as they travel, they change the probabilities of the states they left and the states they enter. A closed but vibrant system of change.

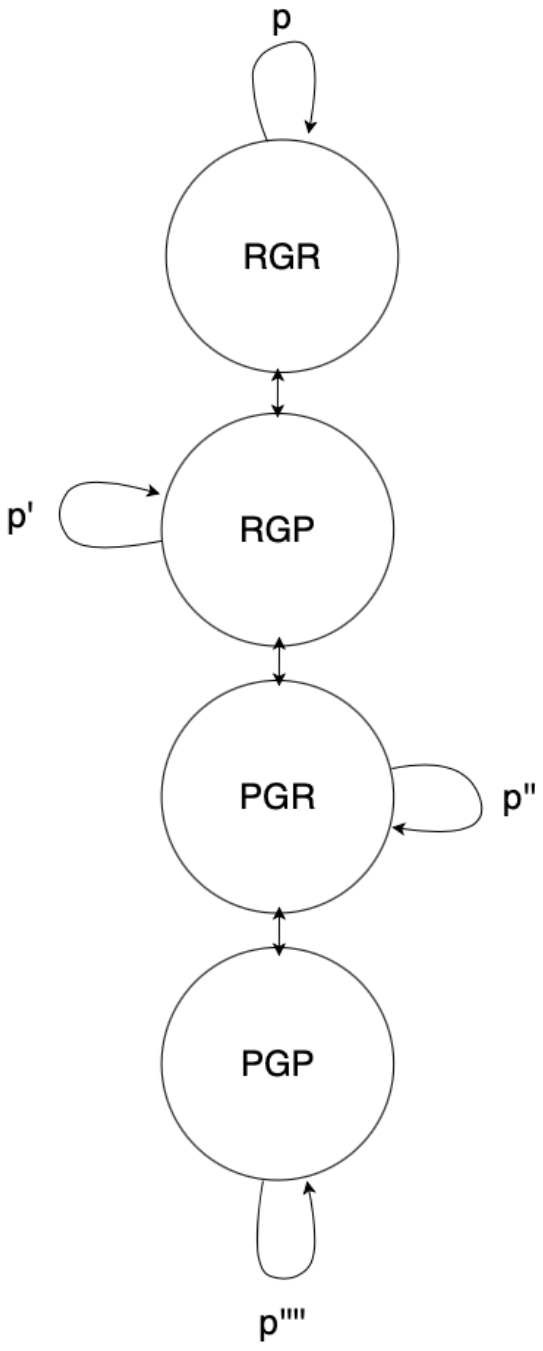

Figure 6: With passing time, the states start to connect.

Eventually, small change leads to big change, the change peaks and the system comes to state of no change, falling back to a state of equilibrium. It becomes hard to identify what was initial Value (losers) and Growth (Winners) as one transform into the other. The [3N] mechanism is an observational tool to observe state probabilities, understand an Index and its components (or any other natural world) through probabilities.

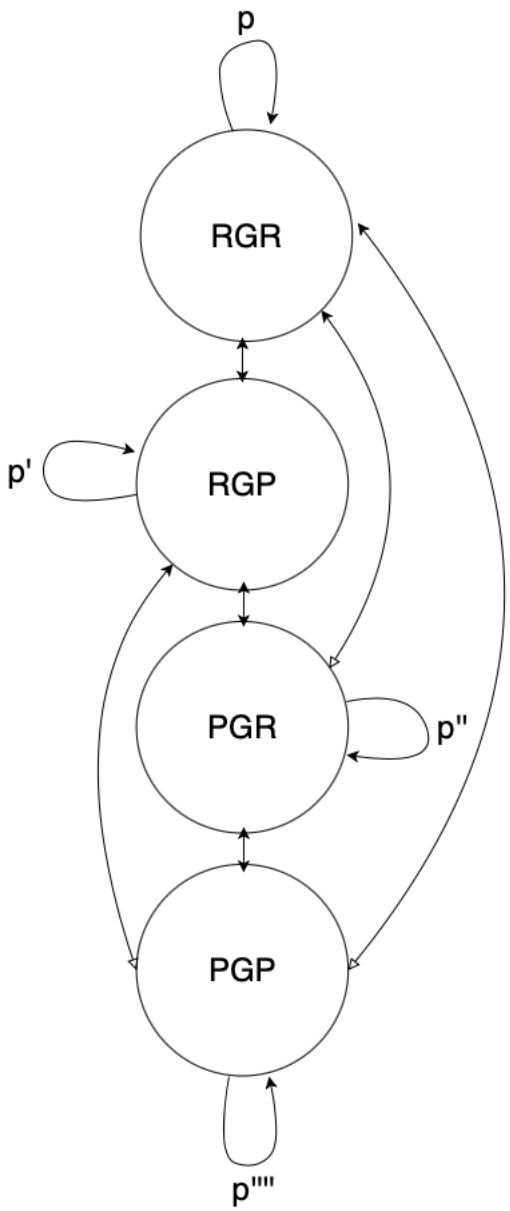

Figure 7: Eventually becoming a complex system driven the [3N] Model.

The Characteristics of the [3N] States

The [3N] model gives relative character to each state and its components. The winner or Rich state is always changing. The winner is either persisting in an RGR state, extending its positivity or it's ready to reverse, transform itself into other states like RGP and beyond, in either an undesirable direction or in a desirable direction. Either increasing the probability of outperformance or decreasing the respective probability.

The probabilities of the [3N] Mechanism

Estimating probabilities of the [3N] mechanism can assist in enhancing both Value investing and the MCAP method of building Indexes. The better the probability estimation, the better the rebalance. The better the rebalance, the better the allocation of weights. The better the allocation of weights, the lower the risk and concentration. The lower the risk and concentration, the higher the outperformance, all working around the [3N] context, which is explained by three key variables, the state [N or NN], the time, and the probability.

The Super Optimal Index

Since an Index is an open set of simple rules, the idea of the [3N] mechanism can be used to articulate an idealized set of rules that can function as an Index with the desired attributes. Left long enough in the public domain for validation and arbitrage. Such a [3N] context that is dynamic and probabilistic can supersede the performance of a simple MCAP [NN] method or any other fundamental factor.

The Simpler Definition

In order to make a computer function intelligently it must be given an extremely intelligent program. Hence a self-learning machine is intelligent if it seeks persisting behaviours not patterns that come and go and don't last long. Hence intelligent learning begins with understanding and seeking behaviors rather than transient patterns. It's hard to seek behavior without the assistance of a well-designed model that is simple, stable, general and can be tested and validated. The easiest way to generalize stock markets and group behavior is to look at them as a dynamic combination of multiple states. The following are examples of states.

A component is in a rising trend and continues to rise.
A component is in a rising trend but reverses direction.
A component is in a falling trend and continues to fall.
A component is in a falling trend but reverses direction.
A component is in a sideways action and continues to act sideways.

A way to beat the basket is to overweight the winners and losers and underweight the lackluster components. The basket contains all the stocks but is not concentrated singularly on winners.

If you throw a hammer, it will always fall on the heavy side. The outcome is always the same. However, if your throw a barbell, it will spin and will have an unpredictable outcome. A lot will depend on the angle, the thrower's bias, the air quality, etc. The barbell approach gives both losers and winners a probability to come on the top. Giving the combination of winners and losers a chance to prevail over the winners.

To increase the chances of the respective combination to outperform, the winners can be rebalanced for a shorter time compared to the losers, which are held for a relatively longer time. The moment we add more dynamism to the mix, we give the basket more opportunity to thrive in a complex environment. The element of time allows the new index to calibrate differently. In the end it becomes a game of probability where the barbell [3N] approach bets on both the 80-20 and 20-80.

Winners (MCAP method) on the other hand, owing to their singular approach can't change their outcome despite changing circumstances. Above that the concentration in a few stocks ties their fate to few large sized components.

Such simple rules can address most of the challenges of the MCAP [NN] method. It can reduce concentration, add more selections, let's dynamic refreshing work for better results, and serves a better. Once the set of rules is in place, an AI process can take over and enhance the process further. But it all starts from a well-designed model of the markets.

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