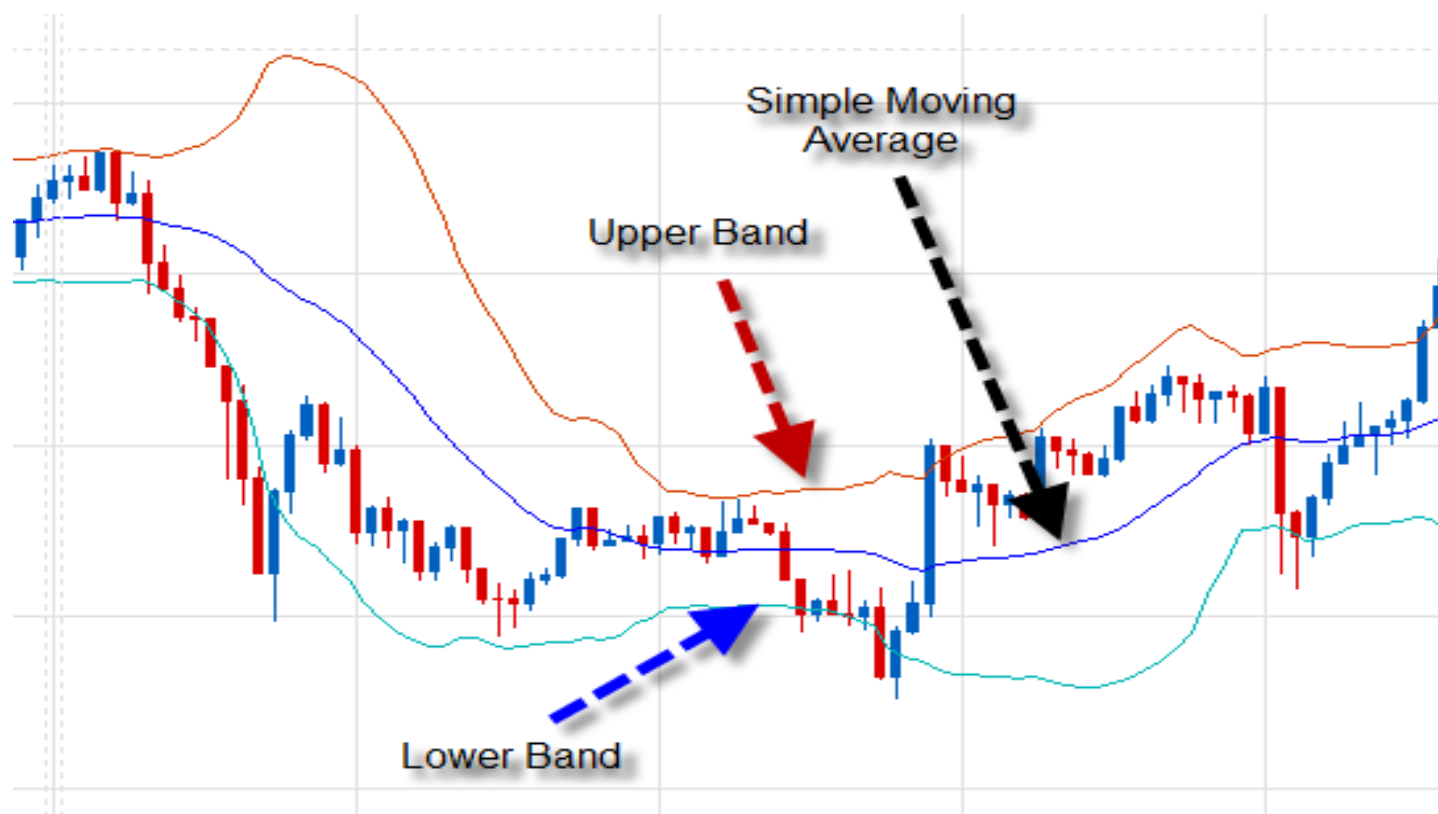## Central Tendency & Measures of Dispersion in Stock Market:

The empirical rule of the statistics says that **95% of observations will fall within the 2 Standard deviations from Mean**. While Randomness plays its part in every variable we have, it is hard to believe that 95% will fall within 2 Standard Deviation. But if that is true can we make money with that Rule?

Stock markets are the home for Randomness and predicting the price movements are always a challenge. Empirical rule was applied in stock market and results were amazing. Bollinger Bands – an indicator in stock markets helps investors to find perfect bottom to buy and perfect high to sell. When an observation moves out of range, traders tend to believe that it will come back to normal (Central Tendency - Mean).

Z score of +2 forms the upper band (Red line) and -2 Z Score forms the bottom of the band (Green). The middle line is the mean (Moving average for a said period), (Blue line). We can see that if a price falls near to lower band, it has tendency to move up to the mean level, that indicates there will be demand for the stock and vice versa for upper bands to sell. Also, we can visually see that prices always move within the bands and only maybe 5% of total time they move out of range.

Central Tendency & Measures of Dispersion in IPL:

Assume below are the scores of 10 matches in IPL,

WINNING TEAM SCORE		LOSING TEAM SCORE		WINNING MARGIN
RCB	210	CSK	154	56
MI	185	RCB	152	33
CSK	141	MI	130	11
CSK	191	RCB	164	27
SRH	188	DC	175	13
DC	156	SRH	137	19
KXIP	138	KKR	136	2
KKR	141	KXIP	133	8
CSK	166	RCB	100	66
SRH	201	DC	110	91
Average	171.7		139.1	32.6
Std Dev.	26.8		23.1	29.2

A team can infer from the above data that in order to win a match in IPL (batting first) it must look to score above 171 runs to have an edge. The Run rate for 171 will be 8.55 (171 by 20 overs) and any bowler who has economy below that has a good chance of getting selected.

Assuming the scores follow a normal distribution, we can make some estimations. For e.g. What is the percentage of IPL matches in which a winning team scores more than 200?

$$Calculate\ Z\ score = (200-171.7)/26.8$$

$$Z\ score = 1.05.$$

Using the Empirical rule, we can conclude that 16% i.e. [(1-68%)/2] of the IPL matches are likely to see more than 200 runs scored by winning team. Similarly, we can create estimations for percentage of winning team scoring below 150 by getting the Z score and referring to the standard normal distribution table.