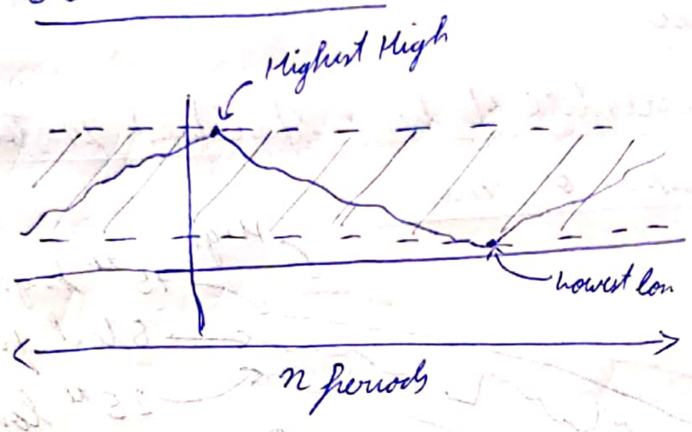
PROJECT-1 A Simple tactical Asset allocation Portfolio with percentile channels

-> Percentile channel -> Originated from Donchian channel.

Donchian channel



Area marked represents Donchian channel
-> If price stable, it will be narrow.

• Signals :-
1) above Highest High = long
2) below Lowest low = Short.

Percent Exposure Donchian Channel Method

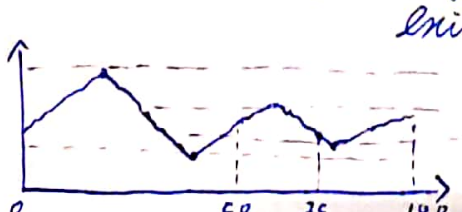
-> % distance from 52 week high as part of momentum factor.
-> Increase leverage & exposure as move is getting confirmed.

Eg. -> Exits and entries by new channel penetration.

New 50-day high - long position if,
Previous 50-day low - has triggered without previous 50-day high.

After new entry is triggered,
exit at half the original channel low.

i.e. ~~for~~ if you entered on 50-day high
exit on 25-day low.

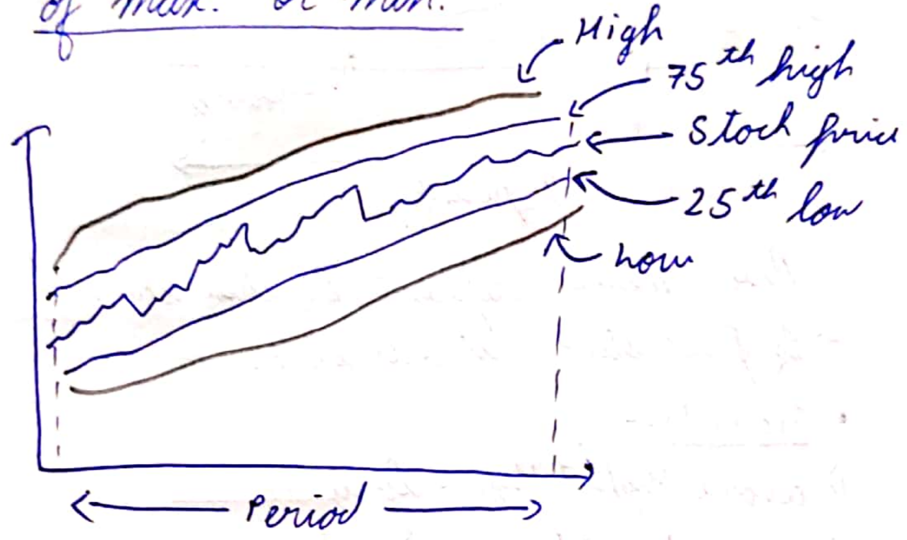


- Working of channels:-
  - 20% bet on new 20-day high breakout ↗.
  - 30% more on 50-day high breakout ↗.
  - 50% more on 100-day high " ↗.

Now,

Percentile Channels

Concept → Use percentile of price specified instead of max. or min.



STRATEGY (THEORY)

→ Use 60, 120, 180, 252-day percentile channels

with 0.75 → long
0.25 → short
$0.25 < x < 0.75$ → hold

→ To determine the position size

$$\boxed{\text{20 day historical volatility} = \frac{\frac{1}{\text{Volatility (Asset A)}}}{\sum_{i=0}^{n} \frac{1}{\text{Volatility (Asset } x_i)}}}$$

→ Rebalance ~~on new entry~~ every month the ~~volatily~~ volatility.

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STRATEGY (APPLICATION)

1) Find n-day quantile of upper & lower percentile.

2) Above percentile — 1
   Lower. percentile — -1
   Rest — NA

3) Make monthly subsets

4) NA takes the quantity of last value.

5) Initial NA=0

6) ~~Rep~~ Do this with 60, 120, 180, 252-day setting 25th & 75th percentiles

7) Add 4 tables & divide by 4 to obtain composite position.

8) obtain 20-day std dev of returns. & subsets for same indices.

9) Inverse volatility position = $\frac{1}{\text{volatility scores}}$ × composite positions.

10) Take absolute value of Inverse volatility position and normalize.

11) Keep all +ve composite pns. and re-invest the remainder into cash asset.

12) These are final positions to generate returns.