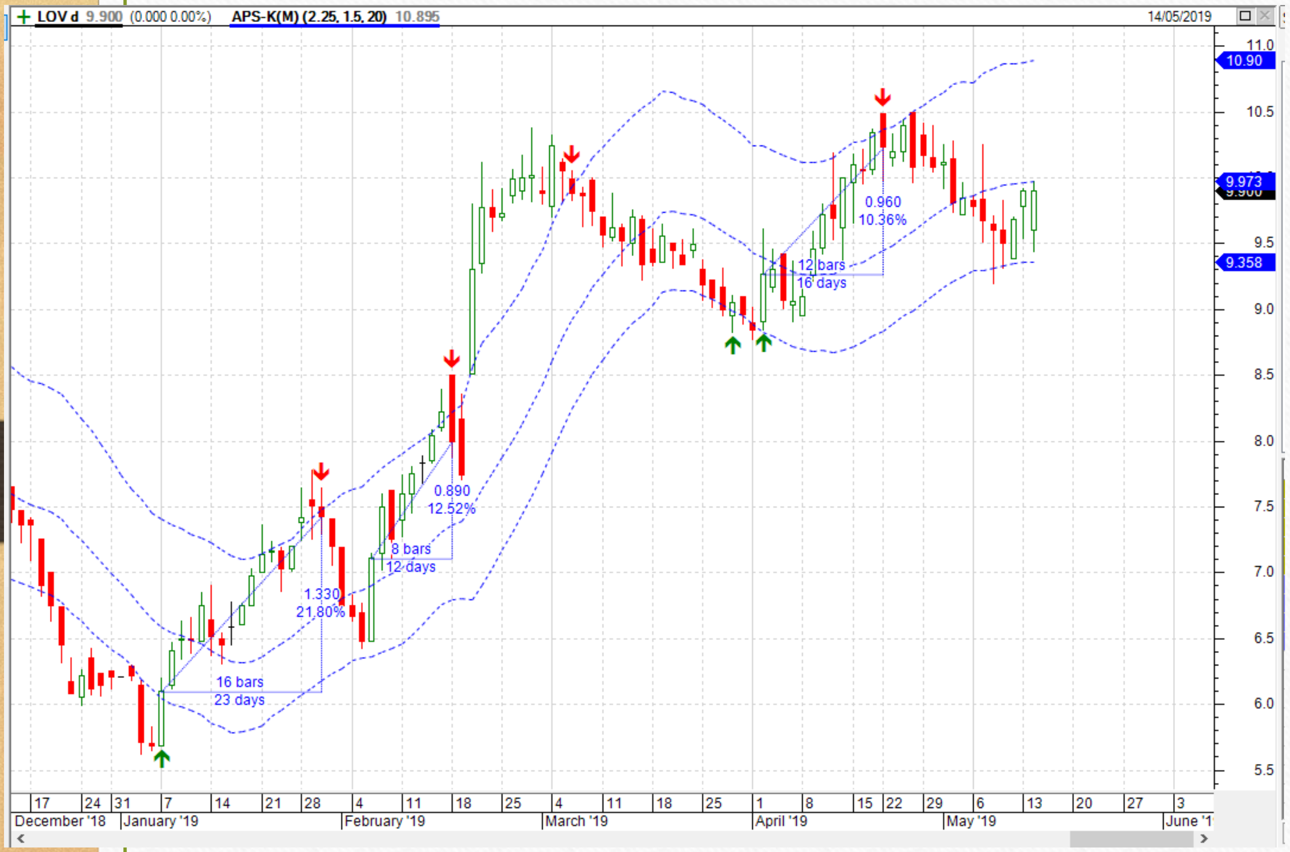
Mean Reversion

based on Keltner Channels

Keltner Channel

Bollinger Band



Keltner Channel

- use the Average True Range (ATR) to set channel distance above and below exponential moving average.

Bollinger Bands

- use the standard deviation to set the bands

Objectives

System Design

Mean Reversion - Keltner Channel

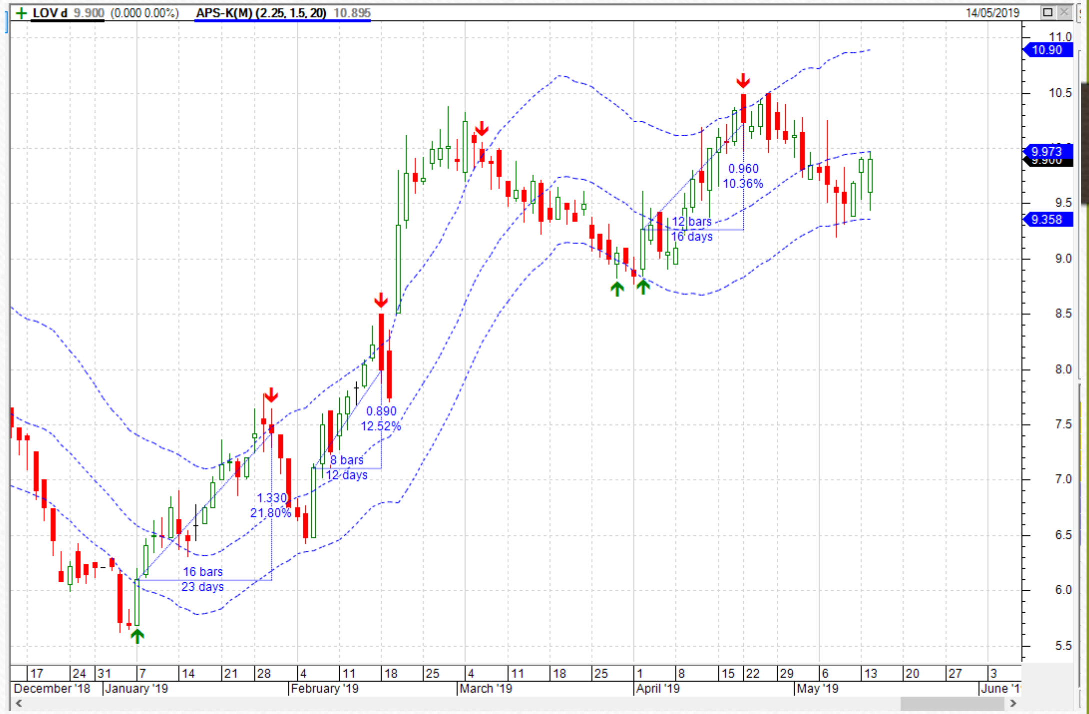
Objective	Why	Target
High Win rate	Easy to trade	> 70%
Low Draw Down	Easy to keep trading	< 20%
Adequate Return to draw down ratio	Compensated well for risk	> 1.0
Short holding period	Reduced market risk	< 5 Trading day
Trades frequently	Increased Compounding potential	> 15 Trades (m)
Adequate expectancy	Allow for friction costs	> 1% P&L per Trade

Baseline Setup

- In a Uptrend: Price above 230 day MA
- Liquidity: Stock Turnover > $300k per day & price > $0.50
- Volatile: ATR > 1.5%
- Short Term Volatility > Long Term Volatility
- Universe: ASX500
- Max Open Positions: 10
- Position Size: 10% per position
- Test Period: IS 2005-2012 / OOS 2013 - present

Entry / Exit Rules

- Keltner Channel (20, 1.5) test and optimise
- Enter Long at Close of 3rd below band
  - or with % range of band
  - or oversold STO
- Exit at Close of top band
  - or with % range of top
  - or above centre line
  - or first close above 5day SMA

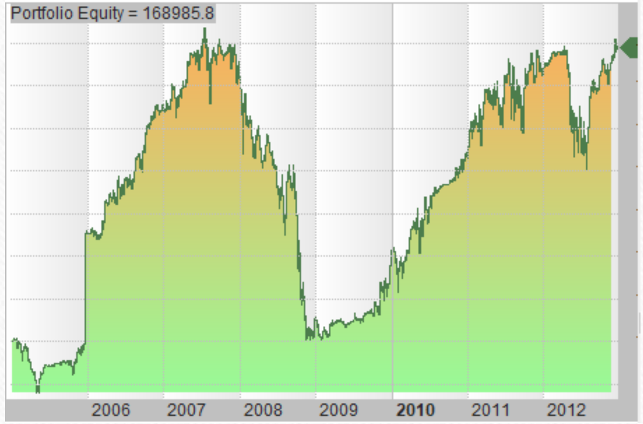


Test 1

Rules	Parameters 1	Parameters 2
MA	230	
Kelt-Ch	20, 2.25	
Enter	Close below band	
Exit	Close > top Band	

Metric	Test 1	Test 2	Test 3	Test 4
CAR	6.78%			
Trades pa	26			
Avg Hold	57			
Win Rate	71%			
MDD	42%			

Equity Graph



Issues

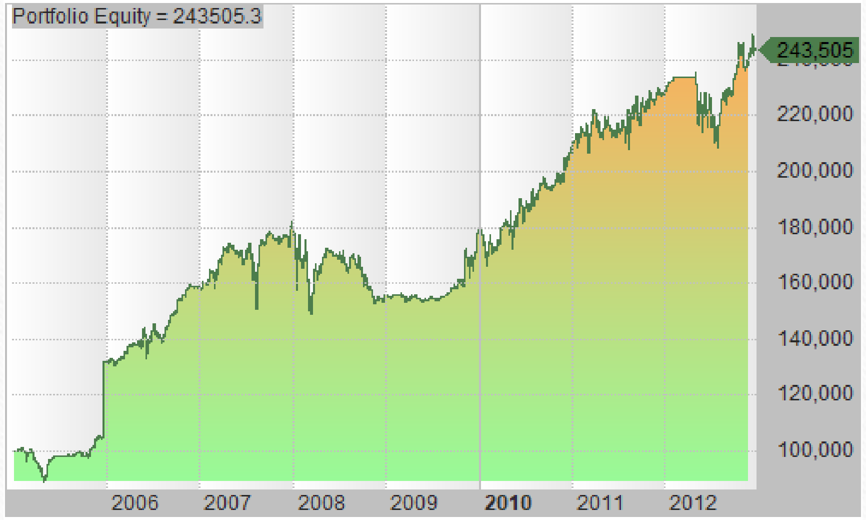
- Low Annual Return (6.%)
- Lack of trade opportunities (26)
- Avg hold time (57d)
- Excessive drawdown (42%)

Test 2

Rules	Parameters 1	Parameters 2
MA	150	
Kelt-Ch	15, 2.25	
Enter	Close below band	
Exit	Close > top Band	

Metric	Test 1	Test 2	Test 3	Test 4
CAR	6.78%	11.78%		
Trades pa	26	21		
Avg Hold	57	59		
Win Rate	71%	74%		
MDD	42%	18%		

Equity Graph



Issues

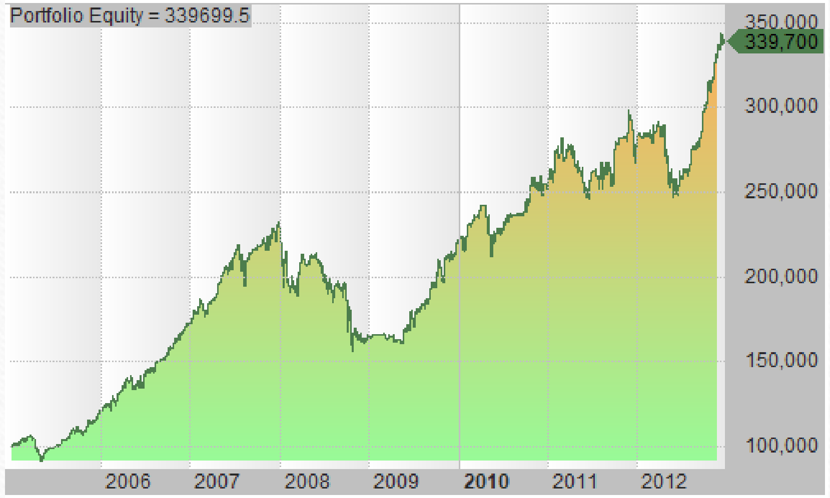
- Low Annual Return (11%)
- Lack of trade opportunities (21)
- Avg hold time (59d)

Test 3

Rules	Parameters 1	Parameters 2
MA	150	
Kelt-Ch	15, 1.25	
Enter	Close below band	
Exit	Close > top Band	

Metric	Test 1	Test 2	Test 3	Test 4
CAR	6.78%	11.78%	16.5%	
Trades pa	26	21	67	
Avg Hold	57	59	24	
Win Rate	71%	74%	72.25%	
MDD	42%	18%	33%	

Equity Graph



Issues

- Low Annual Return (16%)
- Improved trade opportunities (67)
- Reduced Avg hold time (24d)

Test 4

Rules	Parameters 1	Parameters 2
MA	150	
Kelt-Ch	15, 1.25	
Enter	Close 3rd below band	15% of lower band
Exit	Close > 65% of Top	

Metric	Test 1	Test 2	Test 3	Test 4
CAR	6.78%	11.78%	16.5%	**18.5%**
Trades pa	26	21	67	**118**
Avg Hold	57	59	24	**13.5**
Win Rate	71%	74%	72.25%	**73%**
MDD	42%	18%	33%	**21%**

Objectives

Objective	Target
High Win rate	> 70%
Low Draw Down	< 20%
Adequate Return to draw down ratio	> 1.0
Short holding period	< 5 Trading day
Trades frequently	> 15 Trades (m)

Issues

- Annual Return only 18%
- Trade opportunities
- Win Rate 73%
- Hold Time 13 days
- Draw Down (21%)

Results

Bollinger Bands

Metric	Test 1	Test 2	Test 3	Test 4
CAR	4.1%	9.2%	21%	24.5%
Trades pa	29	51	142	168
Avg Hold	73	13	12	6.7
Win Rate	69%	71%	70%	72%
MDD	40%	17%	26%	16.64%

Keltner Channel

Metric	Test 1	Test 2	Test 3	Test 4
CAR	6.78%	11.78%	16.5%	18.5%
Trades pa	26	21	67	118
Avg Hold	57	59	24	13.5
Win Rate	71%	74%	72.25%	73%
MDD	42%	18%	33%	21%

Summary

Issues

- Keltner Channel may not be the best indicator for mean reversion
- They may be better for identifying pullbacks in trending stock
- Bollinger Bands may be better for mean reversion which volatility
- Back testing results speeak for themselves
  - Keltner Channel (18.5%)
  - Bollinger Band (24.5%)

Opportunities

- Trade Management
  - Need to be focussed and disciplined
- Entry
  - Try adding a oversold RSI/STO
  - Slim opportunities in last few months
- Exit
  - Try DJB – Happy Face ?
- In the mean time ….
  - I am going to trade Bollinger Bands

Example Trades


FPH d 15.040 (+0.140 +0.94%)
APS-K(M) (2.25, 1.5, 20) 15.361
10/05/2019
15.36
15.04
14.70
14.25
15.5
14.5
14.0
13.5
13.0
12.5
Enter: 15/4/2019
Exit: 21/4/2019
5 bars
5% Profit
3/5 Long
3/5 Long
3/5 Short
3/5 Long
SMD Long
SMD Short
SMD Long
KC Long
KC Short
KC Long
D-S (5, 12, 9) 0.433
0.000
stoch (5, 3, 3, S, C, 200) 61.580
61.58
42.39
0
Above
25
4
11
18
25
1
8
15
22
29
6
13
20
27
3
February '19
March '19
April '19
May '19
27/05/2019

MIN d 15.020 (-0.350 -2.28%)
APS-K(M) (2.25, 1.5, 20) 17.006
10/05/2019
18.0
17.5
17.01
16.5
15.96
15.5
15.27
15.02
14.5
14.0
1.080
6.75%
23 bars
33 days
Enter: 7/3/2019
Exit: 9/4/2019
23 bars
6.75%
3/5 Long
3/5 Long
3/5 Short
3/5 Short
3/5 Long
3/5 Short
SMD Long
SMD Short
SMD Long
SMD Short
SMD Long
SMD Long
SMD Short
KC Long
KC Short
KC Long
D-S (5, 12, 9) -1.748
5.000
0.000
-1.556
stoch (5, 3, 3, S, C, 200) 36.364
0.1k
34.05
0.0k
4 31 7 14 21 28 4 11 18 25 4 11 18 25 1 8 15 22 29 6 13 20
r '18 January '19 February '19 March '19 April '19 May '19

API d 1.320 (+0.005 +0.38%)
APS-K(M) (2.25, 1.5, 20) 1.519
10/05/2019
Ener: 5/2/2019
Exit: 21/2/2019
12 bars
5.7%
1.65
1.60
1.55
1.519
1.45
1.425
1.40
1.363
1.320
1.25
3/5 Short
3/5 Short
3/5 Long
3/5 Short
3/5 Long
3/5 Short
SMD Long
SMD Short
SMD Long
SMD Short
SMD Long
SMD Short
KC Long
KC Short
KC Long
D-S (5, 12, 9) -3.009
0.000
-2.441
stoch (5, 3, 3, S, C, 200) 18.000
80
80
80
80
109.3
12.82
10
17
24
31
7
14
21
28
4
11
18
25
4
11
December '18
January '19
February '19
06/03/2019

TTT d 2.470 (0.000 0.00%)
APS-K(M) (2.25, 1.5, 20) 2.736
10/05/2019
Enter: 30/1/2019
Exit: 4/2/2019
5 days
6.8% Loss
2.486
2.320
3/5 Long
3/5 Long
3/5 Long
3/5 Short
3/5 Short
3/5 Long
3/5 Short
3/5 Long
SMD Long
SMD Short
SMD Long
SMD Short
SMD Short
SMD Long
SMD Lon
KC Short
KC Long
D-S (5, 12, 9) 0.017
5.000
0.000
stoch (5, 3, 3, S, C, 200) 31.667
27.00
Above
November '18
December '18
January '19
February '19


IMF d 2.890 (+0.030 +1.05%)
APS-K(M) (2.25, 1.5, 20) 2.902
10/05/2019
Enter: 11/3/2019
Exit: 18/3/2019
5 bars
-7.6% Loss
3.0
2.902
2.731
2.616
2.5
3/5 Long
3/5 Short
3/5 Short
3/5 Long
SMD Long
SMD Short
SMD Short
SMD Long
KC Long
KC Short
KC Long
D-S (5, 12, 9) 1.803
5.000
0.000
-5
stoch (5, 3, 3, S, C, 200) 72.727
79.98
0.0k
11
18
25
4
11
18
25
1
8
15
22
29
6
13
20
February '19
March '19
April '19
May '19