A HMM Based on Daily Return for SSE

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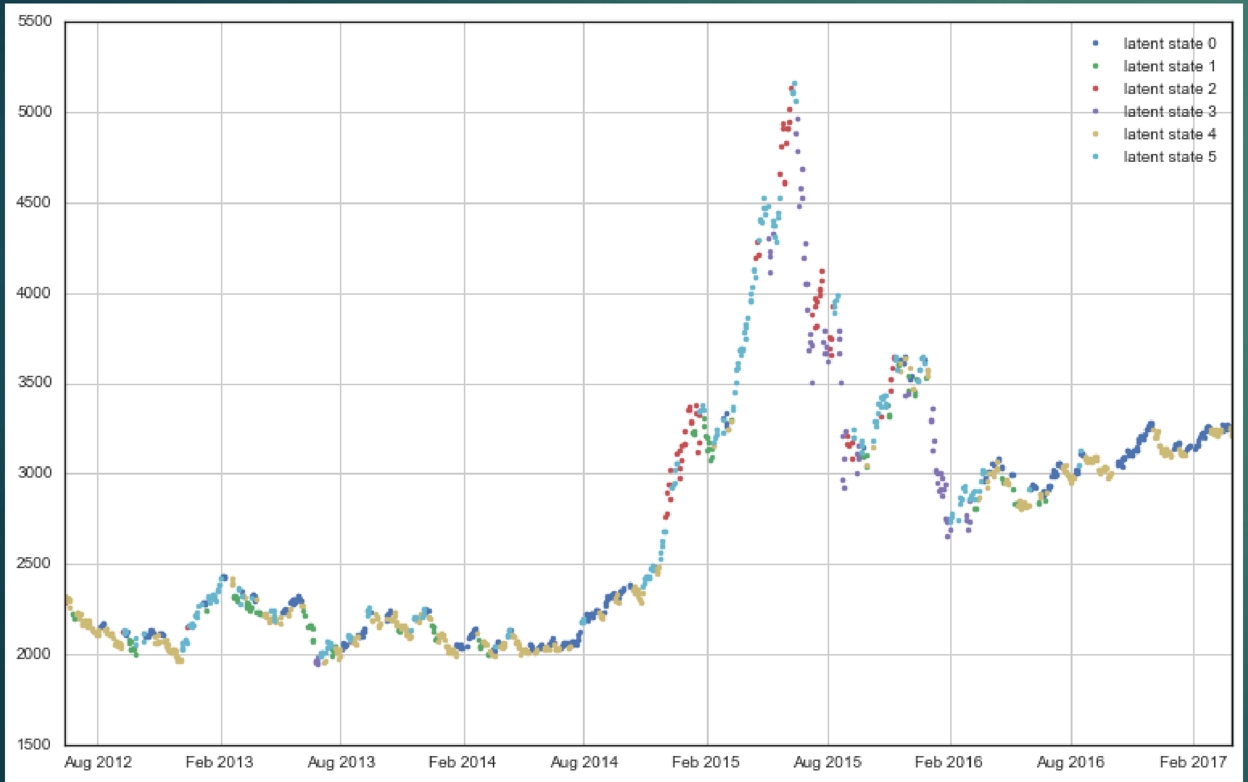
Fctor Screening

Here I test 10 indicators in largest retracement, return to retracement and success rate.

indicator	swing	Logre turn	logret urn5	boll	cci	dma	kdj	mtm	macd	sar
Largest retracement	15%	37%	24%	32%	22%	26%	24%	19%	20%	30%
Return to retracement	24	3.8	15	9.6	25	9.1	12	22	15	8.7
Success rate	85%	55%	70%	53%	64%	53%	51%	64%	53%	53%

Finally, I choose **swing** and **logreturn5** as my input factor.

- Return in test period: 533%
- Annualized return: 41%
- Largest retracement: 19%
- Return to retracement: 28
- Success rate: 52.4%



A tradeoff

Number of latent variables vs. running time

Number of latent variables	6	9	12	15	18
annualized return	41.0%	38.5%	46.4%	55.6%	57.8%
Largest retracement	19%	19.8%	13.6%	18.1%	12.4%
Return to retracement	28	26.8	55.3	45.5	74.2
Success rate	52.4%	55.4%	57.7%	65.2%	68.3%
time	1.6407	2.5501	4.8797	7.9901	16.031

Other thinking

In factor screening part, I find the result of logreturn5 is obviously better than logreturn. Is it means that hmm is more accurate in long period. I did another test on 1 day(1), 1 week(5), half a month(10), 1 month(20), three month(60).

indicator	Logreturn	logreturn5	logreturn10	logreturn20	logreturn60
Largest retracement	37%	24%	29%	15%	27%
Return to retracement	3.8	15	13	31	7.1
Success rate	55%	70%	58%	74%	63%

Other thinking

How to optimize our trading strategy?

- Don't trading every day
- Buy and hold

Conclusion

- The HMM model based on the daily return has such a high yield and high winning rate because of its ability to form recognition and automatic switching strategy.
- In trend market, like many momentum strategies, the model can seize the trend in the case of reducing the frequency of transactions, as much as possible to share the benefits of the entire trend.
- In the shock market, our model can acquire short-term or even shortshort-term gains through increasing the number of transactions and improving profit to loss ratio and winning probability.

Thank you