kalman filter 与 moving average

1、https://www.ricequant.com/community/topic/1194/

卡尔曼滤波的简单应用：移动平均 以及 Code:

卡尔曼滤波器的优势在于不需要指定滚动时间窗口的长度，面临的过拟合的风险要小很多。卡尔曼滤波相比于常规的移动平均估计，其更加严谨并且效果更好

2、 *Forecast Structural Time Series Model and Kalman Filter by Andrew Harvey*

https://books.google.it/books?id=Kc6tnRHBwLcC&pg=PA175&lpg=PA175&dq=ewma+and+kalman+for+random+walk+with+noise&source=bl&ots=I3VOQsYZOC&sig=RdUCwgFE1s7zrPFylF3e3HxlUNY&hl=en&sa=X&redir_esc=y#v=onepage&q=ewma%20and%20kalman%20for%20random%20walk%20with%20noise&f=false

- 卡尔曼滤波（A random walk + noise model 的情形）等价于 EWMA (exponentially weighted moving average) P175
- 价格序列，最简单的模型是 random walk + local trend，而 trend 的取值是不可观测的，需要使用卡尔曼滤波来估计。Harvey (1984) 指出，当使用卡尔曼滤波分析 local trend 模型时，对 local trend 的最优估计是收益率序列的指数移动平均

3、*Double Exponential Smoothing: An Alternative to Kalman Filter-Based Predictive Tracking.*

http://cs.brown.edu/people/jlaviola/pubs/kfvsexp_final_laviola.pdf

讲述 an alternative to the Kalman and Extended Kalman filters-----match the Kalman filter but the results are obtained much faster.....these predictors are faster, easier to implement, and perform equivalently to the Kalman and extended Kalman filtering predictors

4、http://help.cqg.com/cqgic/default.htm#!Documents/kalmanfilter.htm

Kalman Filter is a more accurate smoothing/prediction algorithm than the moving average because it is adaptive: it accounts for estimation errors and tries to adjust its predictions from the information it learned in the previous stage.

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https://c.mql5.com/forextsd/forum/175/trend_without_hiccups_-_a_kalman_filter_approach.pdf

The red line representing the KF model 1 sticks much better to the price data than any of the two moving averages (standard and exponential ones with both 12 periods).

Figure 1: Comparison of Kalman filter with classical moving averages.
The red line representing the KF model 1 sticks much better to the price data than any of the two moving averages (standard and exponential ones with both 12 periods).

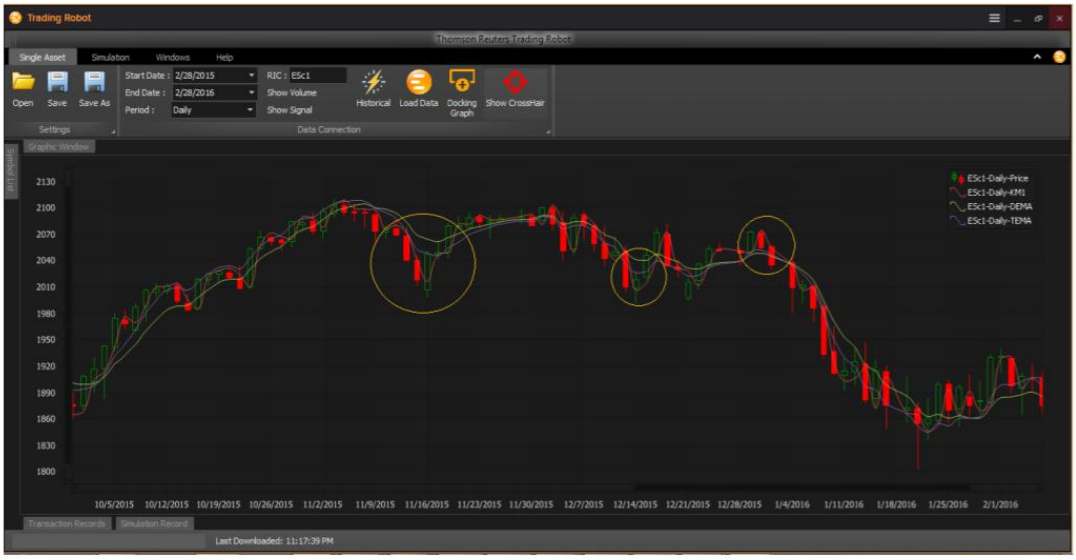

Figure 2: Comparison of Kalman filter with double and triple exponential moving averages
Red lines representing the KF model 1 stick much better to the price data than DEMA or TEMA as displayed in orange circles.

6、https://www.r-bloggers.com/the-kalman-filter-for-financial-time-series/

Fig 1. Kalman Filter estimates of mean and covariance of Random Walk

The kf is a fantastic example of an adaptive model, more specifically, a dynamic linear model, that is able to adapt to an ever changing environment. Unlike a simple moving average that has a fixed set of windowing parameters, the kalman filter constantly updates the information to produce adaptive filtering on the fly. Although there are a few TA based adaptive filters, such as Kaufman Adaptive Moving Average and variations of the exponential moving average; neither captures the optimal estimation of the series in the way that the KF does.