α-Sutte Indicator : Suatu Pendekan Baru dalam Peramalan Data

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α-Sutte Indicator (**α-Sutte**) merupakan pengembangan dari Sutte Indicator. Sutte Indicator dapat digunakan untuk memprediksi pergerakan saham. Sejalan dengan perkembangan ilmu pengetahuan, maka Sutte Indicator kemudian dikembangkan tidak hanya untuk memprediksi pergerakan saham tetapi juga dapat meramalkan data dalam bidang keuangan, asuransi, dan data time series lainnya. Pengembangan dari Sutte Indicator ini kemudian dikenal dengan nama **α-Sutte Indicator** (**α-Sutte**).

α-Sutte dikembangkan menggunakan prinsip metode peramalan yaitu menggunakan data sebelumnya. **α-Sutte** diadopsi dari metode moving average. Moving Average yang digunakan adalah Simple Moving Average-2 (SMA2). SMA2 ini digunakan untuk melihat trend data. Selain itu, **α-Sutte** juga menggunakan 4 data sebelumnya (X_{t-1}, X_{t-2}, X_{t-3}, dan X_{t-4}) dengan asumsi bahwa 4 data sebelumnya berpengaruh terhadap prediksi data berikutnya.

Adapun rumus dari **α-Sutte** sebagai berikut :

$$a_t = \frac{\alpha\left(\frac{\Delta x}{\frac{\alpha+\delta}{2}}\right) + \beta\left(\frac{\Delta y}{\frac{\beta+\alpha}{2}}\right) + \gamma\left(\frac{\Delta z}{\frac{\gamma+\beta}{2}}\right)}{3}$$

dimana :

$\delta = a_{t-4}$

$\alpha = a_{t-3}$

$\beta = a_{t-2}$

$\gamma = a_{t-1}$

$\Delta x = \alpha - \delta = a_{t-3} - a_{t-4}$

$\Delta y = \beta - \alpha = a_{t-2} - a_{t-3}$

$\Delta z = \gamma - \beta = a_{t-1} - a_{t-2}$

a_t = data pada waktu ke-t

a_{t-k} = data pada waktu ke-$(t - k)$

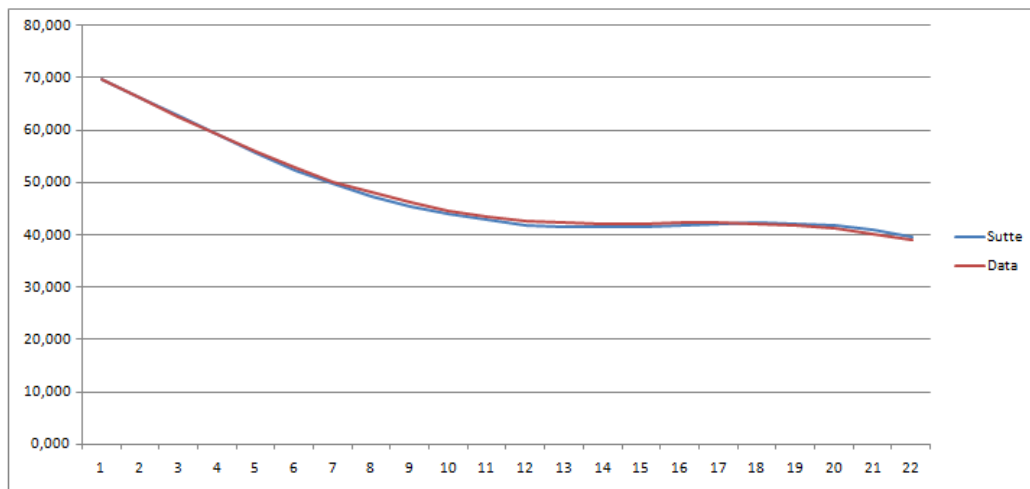Berikut hasil uji coba yang dilakukan dengan menggunakan **α-Sutte.**

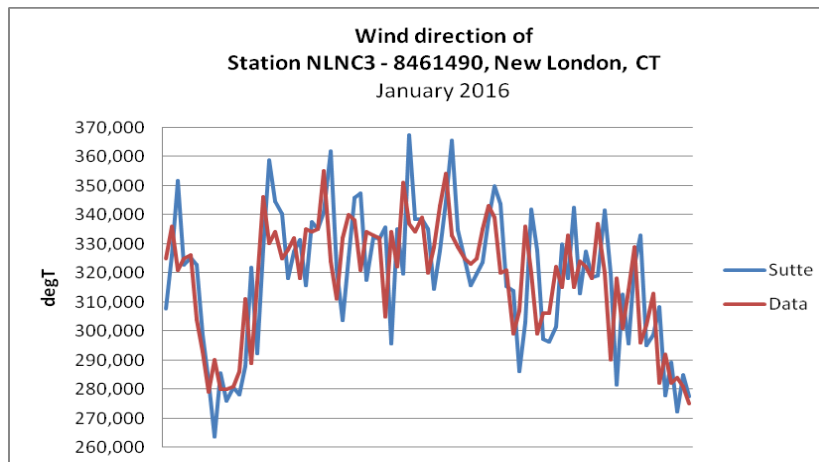1. Peramalan Infant Mortality Rate in China:

SPDYNIMRTINCHN   Infant Mortality Rate for China, Number per 1,000 Live Births, Annual, Not Seasonally Adjusted

Frequency: Annual

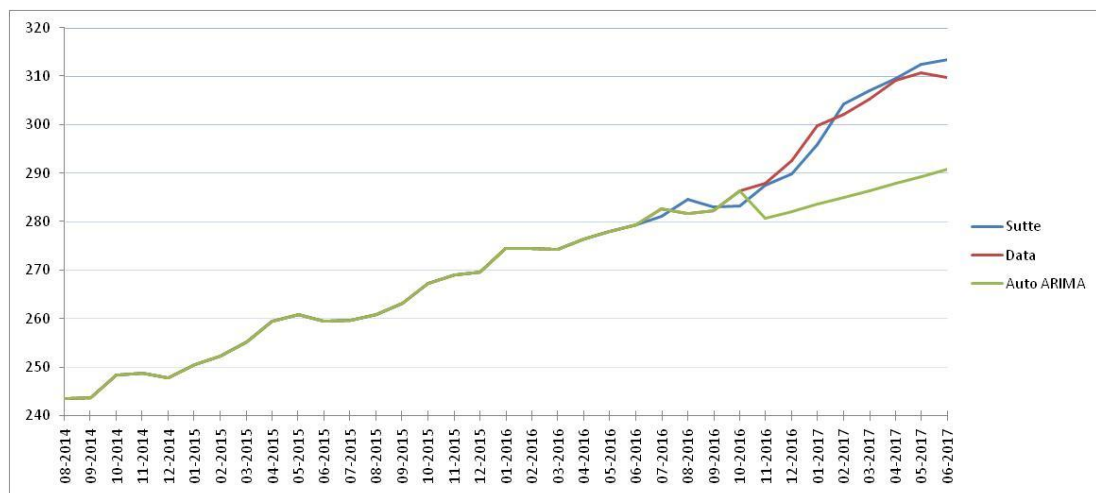| observation_date	SPDYNIMRTINCHN	Sutte	Data	Error
1969-01-01	84,1			
1970-01-01	80,4			
1971-01-01	76,8			
1972-01-01	73,3	Sutte	Data	Error
1973-01-01	69,7	69,782	69,700	0,08243
1974-01-01	66,2	66,218	66,200	0,01823
1975-01-01	62,6	62,754	62,600	0,15413
1976-01-01	59,1	59,127	59,100	0,02713
1977-01-01	55,8	55,664	55,800	0,13619
1978-01-01	52,9	52,432	52,900	0,46798
1979-01-01	50,2	49,758	50,200	0,4424
1980-01-01	48,0	47,314	48,000	0,68571
1981-01-01	46,1	45,466	46,100	0,63421
1982-01-01	44,6	43,886	44,600	0,71388
1983-01-01	43,4	42,771	43,400	0,62918
1984-01-01	42,6	41,893	42,600	0,70682
1985-01-01	42,2	41,450	42,200	0,75046
1986-01-01	42,0	41,409	42,000	0,59144
1987-01-01	42,0	41,537	42,000	0,4634

2. Peramalan Wind Direction of Station NLNC3-8461490 - New London

   Hasil Peramalan Wind Direction of Station NLNC3-8461490 - New London

Sumber data: http://www.ndbc.noaa.gov/station_history.php?station=NLNC3

3. Hasil Permalan Data Consumer Price Index and Indices by Regions Turki

Hasil Perbandingan Peramalan α-Sutte dengan Auto ARIMA (*Automatic ARIMA modeling*) yang dikembangkan oleh Hyndman-Khandakar

Date	Data	α-Sutte	Abs. Error	Auto ARIMA	Abs. Error
11-2016	287,81	287,5902	0,048306	280,6587	51,14109
12-2016	292,54	289,8378	7,302126	282,1555	107,8378
01-2017	299,74	295,9871	14,08412	283,5722	261,3978
02-2017	302,17	304,2533	4,340128	285,0079	294,5377
03-2017	305,24	307,002	3,104511	286,4435	353,3084
04-2017	309,23	309,511	0,078933	287,877	455,9506
05-2017	310,61	312,4104	3,241483	289,3115	453,6261
06-2017	309,78	313,4382	13,38218	290,7458	362,3008
		MSE	5,697723	**MSE**	292,5125

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