Gyasi Bawuah: Forecasting Net Investment

```
# This Forecating Analytics uses the package, Prophet
```

```
## Loading required package: Rcpp
```

```
## -- Attaching packages ---------------------------------------------------------------------------- tidyverse 1.2.1 --
```

```
## v ggplot2 2.2.1     v purrr   0.2.5
## v tibble  1.4.2     v dplyr   0.7.5
## v tidyr   0.8.1     v stringr 1.3.1
## v readr   1.1.1     v forcats 0.3.0
```

```
## -- Conflicts ------------------------------------------------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
## Loading required package: timeDate
```

```
 data_prophet <- read_excel("data_prophet.xlsx")
```

```
data =  data_prophet
head(data)
```

ds <chr>	Purchases <dbl>	Redemptions <dbl>	y <dbl>	End AUM <dbl>
2009-01-31	2352990401	-1720013694	632976707	41087853049
2009-02-28	1424150793	-1288800695	135350098	38397226388
2009-03-31	1711056407	-1554395548	156660859	40688966458
2009-04-30	2125297657	-1253914259	871383399	43945978198
2009-05-31	1489885940	-1153860888	336025052	46109220663
2009-06-30	2225863712	-2081745947	144117765	45969106056

6 rows

```
df = select(data, 'ds',  'y')
head(df)
```

ds <chr>	y <dbl>
2009-01-31	632976707
2009-02-28	135350098

ds <chr>	<dbl>
2009-03-31	156660859
2009-04-30	871383399
2009-05-31	336025052
2009-06-30	144117765

6 rows

```
## Modeling with seasonality/Additive
```

```
m = prophet(df, seasonality.mode = 'additive', growth = 'linear')
```

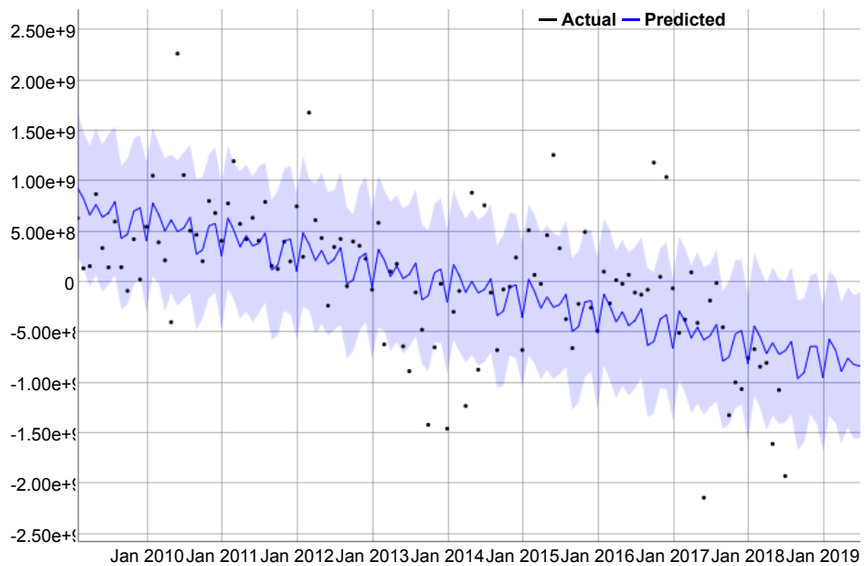
```
## Disabling weekly seasonality. Run prophet with weekly.seasonality=TRUE to override this.
```

```
## Disabling daily seasonality. Run prophet with daily.seasonality=TRUE to override this.
```

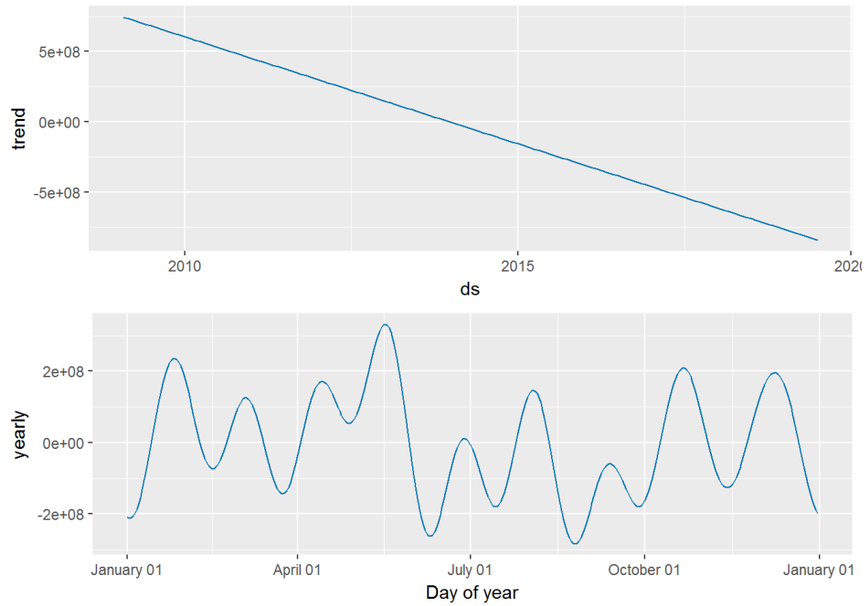
```
## Initial log joint probability = -12.3654
## Optimization terminated normally:
##   Convergence detected: absolute parameter change was below tolerance
```

```
future <- make_future_dataframe(m, periods = 12, freq = 'month', include_history = TRUE)
forecast = predict(m, future)
```

```
dyplot.prophet(m, forecast)
```



```
prophet_plot_components(m, forecast)
```




```
fcasts = forecast[c('ds', 'yhat', 'yhat_lower')]
tail(fcasts, 10)
```

	ds <S3: POSIXct>	yhat <dbl>	yhat_lower <dbl>
117	2018-09-30	-898800854	-1596434271
118	2018-10-30	-639966333	-1315419267
119	2018-11-30	-638580467	-1404765912
120	2018-12-30	-950755850	-1673598107
121	2019-01-30	-567818347	-1330705875
122	2019-03-02	-679442435	-1404264030
123	2019-03-30	-889477340	-1603016474
124	2019-04-30	-757495164	-1441088681
125	2019-05-30	-820637217	-1557951181
126	2019-06-30	-834667444	-1545789895

1-10 of 10 rows