

Exploring Kelly

This notebook brings a exploration of the Kelly's criterion applied to the "MGLU3" stock. It considers the last 12 months of stock price variation and a baseline return rate of 2% a year.

```
library(convexity)
library(tidyverse)
```

```
mglu <- stock("MGLU3.SA")
head(mglu)
```

```
##           Date      Open      High      Low      Close      Volume  Adjusted
## 1 2011-05-02 0.503125 0.518750 0.503125 0.514062 280003200 -0.008697
## 2 2011-05-03 0.515625 0.521562 0.506250 0.509375 33670400  -0.008618
## 3 2011-05-04 0.510000 0.515000 0.510000 0.515000 39203200  -0.008713
## 4 2011-05-05 0.512812 0.512812 0.510000 0.511875 35097600  -0.008660
## 5 2011-05-06 0.510937 0.511875 0.500000 0.508125 38672000  -0.008596
## 6 2011-05-09 0.506562 0.507812 0.501250 0.503125  667680  -0.008512
```

```
variations <- mglu %>%
  mutate(Month = lubridate::floor_date(as.Date(Date), "month")) %>%
  group_by(Month) %>%
  mutate(rank = rank(Date)) %>%
  filter(rank == 1) %>%
  ungroup(Month) %>%
  mutate(Var = (Close - lag(Close)) / lag(Close)) %>%
  filter(Date >= '2019-10-26') %>%
  select(Date, Close, Var)
variations
```

```
## # A tibble: 12 x 3
##   Date      Close      Var
##   <chr>    <dbl>    <dbl>
## 1 2019-11-01 11.8    0.260
## 2 2019-12-02 11.2   -0.0481
## 3 2020-01-02 12.3    0.0982
## 4 2020-02-03 14.1    0.146
## 5 2020-03-02 13.1   -0.0704
## 6 2020-04-01  9.37  -0.287
## 7 2020-05-04 12.9    0.372
## 8 2020-06-01 15.9    0.238
## 9 2020-07-01 18.1    0.135
## 10 2020-08-03 20.6    0.142
## 11 2020-09-01 23.8    0.155
## 12 2020-10-01 23.0   -0.0360
```

```
mi = mean(variations$Var)
sigma = sd(variations$Var)
mi
```

```
## [1] 0.09211157
```

```
sigma
```

```
## [1] 0.1771988
```

```
baseline_return <- 0.02 / 12
```

```
criterion <- (mi - baseline_return) / sigma  
criterion
```

```
## [1] 0.5104148
```