Introduction to Financial Risk Management (with R)

Exercise 4 – Longer Horizon Returns of Gold

Overview

The goal of this exercise is to use R to calculate weekly, monthly, quarterly, and yearly log returns and discrete returns for Gold.

Longer Horizon Returns of the Whilshire 5000 Index from FRED

In the lectures, we ran the following R script to create a data series called "wilsh":

```
library(quantmod)
getSymbols("WILL5000IND",src="FRED")
wilsh <- na.omit(WILL5000IND)
wilsh <- wilsh["1979-12-31/2017-12-31"]
names(wilsh) <- "TR"
```

Next, we calculated its daily log returns:

```
logret <- diff(log(wilsh))[-1]
```

We then used the following R commands to calculate longer horizon log returns:

```
logret.w <- apply.weekly(logret,sum)
logret.m <- apply.monthly(logret,sum)
logret.q <- apply.quarterly(logret,sum)
logret.y <- apply.yearly(logret,sum)
```

From these series, we calculated longer horizon discrete returns:

```
ret.w <- exp(logret.w)-1
ret.m <- exp(logret.m)-1
ret.q <- exp(logret.q)-1
ret.y <- exp(logret.y)-1
```

Longer Horizon Returns of Gold

In Exercise 2, you retrieved the price of gold in the London Bullion Market at 3pm from FRED: "GOLDPMGBD228NLBM"

In Exercise 3, you calculated the log returns of Gold from 1979-12-31 to 2017-12-31.

In this exercise, you will calculate the weekly, monthly, quarterly, and yearly log returns and discrete returns for Gold.