ROI on Hand Picked Stocks 2007-2020

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portfolio <- read.csv('all\_portfolio\_prices.csv', header=TRUE, na.strings=c('',' '),  
 row.names=1)

portfolio$Date <- row.names(portfolio)

Vol <- grep('Volume', colnames(portfolio))  
close <- grep('Close',colnames(portfolio))  
Close <- portfolio[,close]  
Volume <- portfolio[,Vol]  
colnames(Close)

## [1] "TGT.Close" "FTR.Close" "UBSI.Close" "HD.Close" "JPM.Close"   
## [6] "XOM.Close" "CVX.Close" "NSANY.Close" "GNBT.Close" "MGM.Close"   
## [11] "TEVA.Close" "HST.Close" "FCAU.Close" "WFC.Close" "WWE.Close"   
## [16] "INO.Close" "QSR.Close" "GRPN.Close" "SCE.PB.Close" "FFIN.Close"   
## [21] "GOOG.Close" "WM.Close" "ONCY.Close" "S.Close" "GM.Close"   
## [26] "F.Close" "ASCCY.Close" "ARWR.Close" "COST.Close" "AAL.Close"   
## [31] "JWN.Close" "CSSEP.Close" "NUS.Close" "AMC.Close" "ADDYY.Close"   
## [36] "KSS.Close" "MSFT.Close" "LUV.Close" "HMC.Close" "PCG.Close"   
## [41] "DLTR.Close" "KGJI.Close" "NKE.Close" "AMZN.Close" "ROST.Close"   
## [46] "TMUS.Close" "WMT.Close" "TJX.Close" "TM.Close" "PBYI.Close"   
## [51] "T.Close" "JNJ.Close" "C.Close" "EPD.Close" "VZ.Close"   
## [56] "HRB.Close" "NFLX.Close" "AAP.Close" "HOFT.Close" "SIG.Close"   
## [61] "SDC.Close" "RRGB.Close" "M.Close" "JBLU.Close" "YELP.Close"

Remove NAs from the data. The colSums(is.na(Close)) isn’t returning the columns with NAs, so this must be done manually.

Close\_noNAs <- Close[,-c(9,13,17,18,25,27,32,34,46,50,61,65)]  
Volume\_noNAs <- Volume[,-c(9,13,17,18,25,27,32,34,46,50,61,65)]  
  
Close\_noNAs$SCE.PB.Close <- as.numeric(Close\_noNAs$SCE.PB.Close)  
Volume\_noNAs$SCE.PB.Volume <- as.numeric(Volume\_noNAs$SCE.PB.Volume)

Add in a value of the portfolio column for each day’s closing price of all stock that don’t have NAs.

Close\_noNAs$DailyValue <- rowSums(Close\_noNAs,na.rm=TRUE)

Add in a daily change column of the portfolio closing prices.

dayVal <- as.data.frame(Close\_noNAs$DailyValue)  
colnames(dayVal) <- 'previousDayValue'  
zero <- as.data.frame(as.numeric(dayVal$previousDayValue[1]))  
colnames(zero) <- 'previousDayValue'  
prevDay <- rbind(zero,dayVal)  
Close\_noNAs$prevDay <- prevDay[1:3303,1]  
dailyChange <- as.data.frame(Close\_noNAs$DailyValue-Close\_noNAs$prevDay)  
colnames(dailyChange) <- 'dailyValueChange'  
  
Close1 <- cbind(Close\_noNAs,dailyChange)

Add a column that gives the return in dollars on initial dollars invested.

Close1$ROI\_dollars <- Close1$DailyValue-Close1$DailyValue[1]

Add some date fields to look at the values by date, day of the week, month, and year in analyzing this data.

Close1$Date <- as.Date.character(row.names(Close1))

Close1$DayOfWeek <- weekdays(as.Date(Close1$Date))

month <- month(as.Date(Close1$Date))  
Month <- month.abb[month]  
Close1$Month <- Month

Add in the year of the Date column.

Year <- year(as.Date(Close1$Date))  
  
Close1$Year <- Year  
  
Close1$MonthYear <- paste(Close1$Month, Close1$Year, sep='-')  
Close1$MonthYear <- as.factor(Close1$MonthYear)

Add in some [unemployment](https://data.bls.gov/pdq/SurveyOutputServlet) information as a column to see how the portfolio is doing by date.

ue <- read.delim('BLS\_unemploymentRates2007-2020.txt', sep=',',header=TRUE,   
 na.strings=c('',' '))  
UE <- ue[,-14]#remove the empty 'Annual' column

Use tidyr to gather the month fields with their respective unemployment rates per month.

gatherMonths <- gather(UE, 'UE\_Month', 'UE\_monthlyRate',2:13)  
  
gatherMonths$MonthYear <- paste(gatherMonths$UE\_Month, gatherMonths$Year, sep='-')  
gatherMonths$MonthYear <- as.factor(gatherMonths$MonthYear)

UE2 <- gatherMonths[,3:4]  
Close2 <- merge(Close1, UE2, by.x='MonthYear', by.y='MonthYear')  
row.names(Close2) <- row.names(Close1)

write.csv(Close2, 'ROI\_UE\_2007\_2020.csv', row.names=FALSE)

Lets add in the volume of trades per day from the Volume\_noNAs data set. But lets add in some fields for total portfolio trades per day,

Volume1 <- Volume\_noNAs  
Volume1$DailyVolume <- rowSums(Volume1, na.rm=TRUE)  
  
dayVol <- as.data.frame(Volume1$DailyVolume)  
colnames(dayVol) <- 'previousDayVolume'  
zero <- as.data.frame(as.numeric(dayVol$previousDayVolume[1]))  
colnames(zero) <- 'previousDayVolume'  
prevDay1 <- rbind(zero,dayVol)  
Volume1$prevDayVolume <- prevDay1[1:3303,1]  
  
dailyVolumeChange <- as.data.frame(Volume1$DailyVolume-Volume1$prevDayVolume)  
colnames(dailyVolumeChange) <- 'dailyVolumeChange'  
  
Volume2 <- cbind(Volume1,dailyVolumeChange)  
Volume2$VolumeRatioDaily2Initial <- Volume2$DailyVolume/Volume2$prevDayVolume[1]

stocks <- cbind(Close2, Volume2)  
  
Stocks <- stocks[,c(2:54,64:116,1,55:63,117:120)]  
colnames(Stocks)

## [1] "TGT.Close" "FTR.Close"   
## [3] "UBSI.Close" "HD.Close"   
## [5] "JPM.Close" "XOM.Close"   
## [7] "CVX.Close" "NSANY.Close"   
## [9] "MGM.Close" "TEVA.Close"   
## [11] "HST.Close" "WFC.Close"   
## [13] "WWE.Close" "INO.Close"   
## [15] "SCE.PB.Close" "FFIN.Close"   
## [17] "GOOG.Close" "WM.Close"   
## [19] "ONCY.Close" "S.Close"   
## [21] "F.Close" "ARWR.Close"   
## [23] "COST.Close" "AAL.Close"   
## [25] "JWN.Close" "NUS.Close"   
## [27] "ADDYY.Close" "KSS.Close"   
## [29] "MSFT.Close" "LUV.Close"   
## [31] "HMC.Close" "PCG.Close"   
## [33] "DLTR.Close" "KGJI.Close"   
## [35] "NKE.Close" "AMZN.Close"   
## [37] "ROST.Close" "WMT.Close"   
## [39] "TJX.Close" "TM.Close"   
## [41] "T.Close" "JNJ.Close"   
## [43] "C.Close" "EPD.Close"   
## [45] "VZ.Close" "HRB.Close"   
## [47] "NFLX.Close" "AAP.Close"   
## [49] "HOFT.Close" "SIG.Close"   
## [51] "RRGB.Close" "M.Close"   
## [53] "JBLU.Close" "TGT.Volume"   
## [55] "FTR.Volume" "UBSI.Volume"   
## [57] "HD.Volume" "JPM.Volume"   
## [59] "XOM.Volume" "CVX.Volume"   
## [61] "NSANY.Volume" "MGM.Volume"   
## [63] "TEVA.Volume" "HST.Volume"   
## [65] "WFC.Volume" "WWE.Volume"   
## [67] "INO.Volume" "SCE.PB.Volume"   
## [69] "FFIN.Volume" "GOOG.Volume"   
## [71] "WM.Volume" "ONCY.Volume"   
## [73] "S.Volume" "F.Volume"   
## [75] "ARWR.Volume" "COST.Volume"   
## [77] "AAL.Volume" "JWN.Volume"   
## [79] "NUS.Volume" "ADDYY.Volume"   
## [81] "KSS.Volume" "MSFT.Volume"   
## [83] "LUV.Volume" "HMC.Volume"   
## [85] "PCG.Volume" "DLTR.Volume"   
## [87] "KGJI.Volume" "NKE.Volume"   
## [89] "AMZN.Volume" "ROST.Volume"   
## [91] "WMT.Volume" "TJX.Volume"   
## [93] "TM.Volume" "T.Volume"   
## [95] "JNJ.Volume" "C.Volume"   
## [97] "EPD.Volume" "VZ.Volume"   
## [99] "HRB.Volume" "NFLX.Volume"   
## [101] "AAP.Volume" "HOFT.Volume"   
## [103] "SIG.Volume" "RRGB.Volume"   
## [105] "M.Volume" "JBLU.Volume"   
## [107] "MonthYear" "DailyValue"   
## [109] "prevDay" "dailyValueChange"   
## [111] "ROI\_dollars" "Date"   
## [113] "DayOfWeek" "Month"   
## [115] "Year" "UE\_monthlyRate"   
## [117] "DailyVolume" "prevDayVolume"   
## [119] "dailyVolumeChange" "VolumeRatioDaily2Initial"

Add a value of stock daily to the initial value as a ratio.

Stocks$ValueRatioDaily2Initial <- Stocks$DailyValue/Stocks$DailyValue[1]

Add a field that multiplies the daily value and daily volume ratios compared to the initial value and volume by the unemployment rate.

Stocks$DailyRatios\_X\_UE <- Stocks$ValueRatioDaily2Initial\*Stocks$VolumeRatioDaily2Initial\*Stocks$UE\_monthlyRate

Add an exponential calculation field based on the unemployment rate for rate, and using numeric day of the month for t, and k as the month.

dayOfMonth <- day(Stocks$Date)  
ue1 <- Stocks$UE\_monthlyRate  
  
Stocks$poisson <- (exp(-(ue1))\*(ue1)^dayOfMonth)/(factorial(dayOfMonth))

write.csv(Stocks, 'StocksStats.csv', row.names=TRUE)