Jonathan Ortiz

Finalytics

Final Project

Code

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title: "My Project"

output:

flexdashboard::flex\_dashboard:

orientation: columns

vertical\_layout: fill

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```{r setup, include=FALSE}

library(readxl)

BKHW\_Portfolio\_2019 <- read\_excel("BKHW-Portfolio 2019.xlsx")

library(flexdashboard)

library(shiny)

library(dplyr)

library(quantmod)

library(PerformanceAnalytics)

library(fPortfolio)

library(xts)

library(tidyr)

library(ggplot2)

library(plotly)

BKHW <- BKHW\_Portfolio\_2019

BKHW <- BKHW[,c(1,6)]

BKHW <- (BKHW[c(2:11),])

BKHW <- as.data.frame(BKHW)

colnames(BKHW[1]) <- "stock"

colnames(BKHW[2]) <- "2019"

BKHW

getSymbols("BRK-A",src="yahoo",from="2017-1-1",to="2020-1-1")

DRBRK <- dailyReturn((`BRK-A`)[,6])

MRBRK <- monthlyReturn(DRBRK)

getSymbols("AAPL",from="2017-1-1", to = "2020-1-1")

DRAAPL <- dailyReturn(AAPL$AAPL.Adjusted)

MRAAPL <- monthlyReturn(DRAAPL)

getSymbols("BAC",from="2017-1-1",to="2020-1-1")

DRBAC <- dailyReturn(BAC$BAC.Adjusted)

MRBAC <- monthlyReturn(DRBAC)

getSymbols("KO",from="2017-1-1",to="2020-1-1")

DRKO <- dailyReturn(KO$KO.Adjusted)

MRKO <- monthlyReturn(DRKO)

getSymbols("AXP",from="2017-1-1",to="2020-1-1")

DRAXP <- dailyReturn(AXP$AXP.Adjusted)

MRAXP <- monthlyReturn(DRAXP)

getSymbols("WFC",from="2017-1-1",to="2020-1-1")

DRWFC <- dailyReturn(WFC$WFC.Adjusted)

MRWFC <- monthlyReturn(DRWFC)

getSymbols("KHC",from="2017-1-1",to="2020-1-1")

DRKHC <- dailyReturn(KHC$KHC.Adjusted)

MRKHC <- monthlyReturn(DRKHC)

getSymbols("JPM",from="2017-1-1",to="2020-1-1")

DRJPM <- dailyReturn(JPM$JPM.Adjusted)

JPM <- monthlyReturn(JPM$JPM.Adjusted)

getSymbols("USB",from="2017-1-1",to="2020-1-1")

DRUSB <- dailyReturn(USB$USB.Adjusted)

MRUSB <- monthlyReturn(DRUSB)

getSymbols("MCO",from="2017-1-1",to="2020-1-1")

DRMCO <- dailyReturn(MCO$MCO.Adjusted)

MRMCO <- monthlyReturn(DRMCO)

getSymbols("DAL",from="2017-1-1",to="2020-1-1")

DRDAL <- dailyReturn(DAL$DAL.Adjusted)

MRDAL <- monthlyReturn(DRDAL)

ALLDR <- cbind(DRAAPL,DRBAC,DRKO,DRAXP,DRWFC,DRKHC,DRJPM,DRUSB,DRMCO,DRDAL)

ALLDR <- na.omit(ALLDR)

colnames(ALLDR) <- c("Apple", "Bank of America", "Coca-Cola", "American Express", "Wells Fargo", "Kraft Heinz", "J.P Morgan", "U.S. Bancorp", "Moody's Corporation", "Delta Airlines" )

ALLDRDF <- data.frame(index(ALLDR), coredata(ALLDR))

colnames(ALLDRDF)[1] <- "DATE"

ALLDRL <- pivot\_longer(ALLDRDF, -DATE, names\_to = "Companies", values\_to = "Daily.Returns")

ALLDRL$Daily.Returns <- round(ALLDRL$Daily.Returns, 3)

DRBRKDF <- data.frame(index(DRBRK),coredata(DRBRK))

colnames(DRBRKDF) <- c("DATE", "Daily.Returns")

DRBRKDF$Daily.Returns <- round(DRBRKDF$Daily.Returns, 3)

BRKplot <- ggplot(DRBRKDF, aes(x=DATE, y=Daily.Returns)) + geom\_line() + labs(title= "Berkshire Hathaway")

PFplot <- ggplot(ALLDRL, aes(x=DATE, y=Daily.Returns, color=Companies)) + geom\_line() + facet\_wrap(~ALLDRL$Companies, nrow = 5)

BRKW <- Return.portfolio(DRBRK, wealth.index = TRUE)

AAPLW <- Return.portfolio(DRAAPL, wealth.index = TRUE)

BACW <- Return.portfolio(DRBAC, wealth.index = TRUE)

KOW <- Return.portfolio(DRKO, wealth.index = TRUE)

AXPW <- Return.portfolio(DRAXP, wealth.index = TRUE)

WFCW <- Return.portfolio(DRWFC, wealth.index = TRUE)

KHCW <- Return.portfolio(DRKHC, wealth.index = TRUE)

JPMW <- Return.portfolio(DRJPM, wealth.index = TRUE)

USBW <- Return.portfolio(DRUSB, wealth.index = TRUE)

MCOW <- Return.portfolio(DRMCO, wealth.index = TRUE)

DALW <- Return.portfolio(DRDAL, wealth.index = TRUE)

WIALL <- cbind(BRKW, AAPLW,BACW,KOW,AXPW,WFCW,KHCW,JPMW,USBW,MCOW,DALW)

colnames(WIALL) <- c("Berkshire","Apple", "Bank of America", "Coca-Cola", "American Express", "Wells Fargo", "Kraft Heinz", "J.P Morgan", "U.S. Bancorp", "Moody's Corporation", "Delta Airlines" )

WIDF <- data.frame(index(WIALL), coredata(WIALL))

colnames(WIDF) <- c("DATE", "Berkshire","Apple", "Bank of America", "Coca-Cola", "American Express", "Wells Fargo", "Kraft Heinz", "J.P Morgan", "U.S. Bancorp", "Moody's Corporation", "Delta Airlines" )

WIDFL <- pivot\_longer(WIDF, -DATE, names\_to = "Companies", values\_to = "Wealth.Index")

WIDFL$Wealth.Index <- round(WIDFL$Wealth.Index, 4)

WIplot <- ggplot(WIDFL, aes(x=DATE, y=Wealth.Index, color= Companies)) + geom\_line() + facet\_wrap(~WIDFL$Companies, nrow = 3)

pf <- cbind(DRAAPL,DRBAC,DRKO,DRAXP,DRWFC,DRKHC,DRJPM,DRUSB,DRMCO,DRDAL)

colnames(pf) <- c("Apple", "Bank of America", "Coca-Cola", "American Express", "Wells Fargo", "Kraft Heinz", "J.P Morgan", "U.S. Bancorp", "Moody's Corporation", "Delta Airlines" )

pf <- as.timeSeries(pf)

any(is.na(pf))

pf <- na.omit(pf)

minrisk <- minvariancePortfolio(pf)

minrisk

rf <- portfolioSpec()

400 -> setNFrontierPoints(rf)

.0017 -> setRiskFreeRate(rf)

rf

tangencyPortfolio(pf, rf) -> maxsharpe

maxsharpe

myfrontier <- portfolioFrontier(pf, rf)

mypoints <- frontierPoints(myfrontier)

myweights <- getWeights(myfrontier)

head(mypoints)

head(myweights)

MaxSharpeweights <- getWeights(maxsharpe)

MaxSharpeweights

combined <- cbind(mypoints, myweights)

combined <- as.data.frame(combined)

TPF <- ggplot(combined , aes(x=targetRisk, y=targetReturn)) + geom\_point() + xlab("Standard Deviation of Daily Returns") + ylab("Expected Daily Return")

DRbkpf <- Return.portfolio(ALLDR, weights = c(.2974,.1346,.0915,.078,.0718,.0432,.0343,.0324,.0242,.0171), geometric = FALSE)

Berkshire.PortfolioWI <- Return.portfolio(DRbkpf, wealth.index=TRUE)

Berkshire.PortfolioWI <- Berkshire.PortfolioWI\*100000

DRbk <- Return.portfolio(DRBRK, geometric = FALSE)

DRbkWI <- Return.portfolio(DRbk, wealth.index = TRUE)

BerkshireWI <- DRbkWI\*100000

MaxSharpeWI <- Return.portfolio(ALLDR, weights = c(1,0,0,0,0,0,0,0,0,0), geometric = FALSE)

MaxSharpeWI <- Return.portfolio(MaxSharpeWI, wealth.index = TRUE)

MaxSharpeWI <- MaxSharpeWI\*100000

MinRiskWI <- Return.portfolio(ALLDR, weights = c(.0555,0,.5288,.0212,.0301,.04,0,.2669,.0427,.0149), geometric = FALSE)

MinRiskWI <- Return.portfolio(MinRiskWI, wealth.index = TRUE)

MinRiskWI <- MinRiskWI\*100000

ALLWI <- cbind(BerkshireWI, Berkshire.PortfolioWI, MaxSharpeWI, MinRiskWI)

ALLWI <- data.frame(index(ALLWI),coredata(ALLWI))

colnames(ALLWI) <- c("DATE","BerkshireWI", "Berkshire.PortfolioWI", "MaxSharpeWI", "MinRiskWI")

ALLWI <- pivot\_longer(ALLWI, -DATE, names\_to = "Portfolio", values\_to = "Wealth.Index")

ALLWIplot <- ggplot(ALLWI, aes(x=DATE, y=Wealth.Index, color= Portfolio)) + geom\_line()

```

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Row {.tabset .tabset-fade}

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### Portfolio Time Series

```{r}

ggplotly(PFplot)

```

### Berkshire Time Series

```{r}

ggplotly(BRKplot)

```

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### Welath Indecies

```{r}

ggplotly(WIplot)

```

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### Tangency Portfolio

```{r}

ggplotly(TPF)

```

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### WHats better?

```{r}

ggplotly(ALLWIplot)









