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| --- |
| #importing data  ror **<-** read.csv**(**"ror.csv", sep**=**";", dec**=**","**)**  #We choose three assets for further analysis  portfolio4 **<-** ror**[**c**(**1, 2, 3, 4**)]**  #Variables for all calculations  wig **<-** portfolio4**$**WIG  gold **<-** portfolio4**$**Gold  silver **<-** portfolio4**$**Silver  platinium **<-** portfolio4**$**Platinium  #importing weights from file  weights4inv **<-** read.table**(**"weights4inv.txt",dec**=**",", header**=TRUE**, quote**=**"\"",stringsAsFactors**=FALSE)**  w1 **<-** weights4inv**$**W1  w1 **<-** as.numeric**(**w1**)**  w2 **<-** weights4inv**$**W2  w2 **<-** as.numeric**(**w2**)**  w3 **<-** weights4inv**$**W3  w3 **<-** as.numeric**(**w3**)**  w4 **<-** weights4inv**$**W4  w4 **<-** as.numeric**(**w4**)**  #calculating SD  s1 **<-** sd**(**wig**)**  s2 **<-** sd**(**gold**)**  s3 **<-** sd**(**silver**)**  s4 **<-** sd**(**platinium**)**  #Calculating corellation  corr12 **<-** cor**(**wig,gold**)**  corr13 **<-** cor**(**wig,silver**)**  corr14 **<-** cor**(**wig, platinium**)**  corr23 **<-** cor**(**gold, silver**)**  corr24 **<-** cor**(**gold, platinium**)**  corr34 **<-** cor**(**silver, platinium**)**  #calculating ip  iportfolio **<-** mean**(**wig**)\***w1**+**mean**(**gold**)\***w2**+**mean**(**silver**)\***w3**+**mean**(**platinium**)\***w4  #portfolio risk  sdp **<-** **(**w1**^**2**\***s1**^**2 **+** w2**^**2**\***s2**^**2 **+** w3**^**2**\***s3**^**2 **+** w4**^**2**\***s4**^**2 **+** 2**\***w1**\***w2**\***s1**\***s2**\***corr12 **+** 2**\***w1**\***w3**\***s1**\***s3**\***corr13 **+** 2**\***w1**\***w4**\***s1**\***s4**\***corr14 **+**  2**\***w2**\***w3**\***s2**\***s3**\***corr23 **+** 2**\***w2**\***w4**\***s2**\***s4**\***corr24 **+** 2**\***w3**\***w4**\***s3**\***s4**\***corr34**)^**0.5  #calculating effectivness  rf <- 0.0  sharp <- **(**iportfolio**-**rf**)/**sdp  #preparing df with results  data **<-** cbind**(**w1, w2, w3, w4, iportfolio, sdp, sharp**)**  data **<-** as.data.frame**(**data**)**  #finding interesting portfolios  min.risk **<-** subset**(**data, data**$**sdp**==**min**(**data**$**sdp**))**  max.effectivness **<-** subset**(**data, data**$**sharp**==**max**(**data**$**sharp**))**  max.ip **<-** subset**(**data, data**$**iportfolio**==**max**(**data**$**iportfolio**))**  max.w1 **<-** subset**(**data, data**$**w1**==**1**)**  max.w2 **<-** subset**(**data, data**$**w2**==**1**)**  max.w3 **<-** subset**(**data, data**$**w3**==**1**)**  max.w4 **<-** subset**(**data, data**$**w4**==**1**)**  des **<-** c**(**"Minimal risk portfolio", "Maximum efficiency portfolio", "Maximum rate of return portfolio", "Max weight one portfolio", "Max weight two portfolio", "Max weight three portfolio", "Max weight four portfolio"**)**  #Creating table with results 3 portfolios and showing results in console  results **<-** cbind**(**rbind**(**min.risk, max.effectivness, max.ip, max.w1, max.w2, max.w3, max.w4**)**, des**)**  results  write.csv**(**x**=**results, file **=** "results.csv", row.names**=FALSE)**  #creating and saving OS  plot**(**sdp, iportfolio, type**=** "p", col **=** "red"**)**  title**(**main**=**"Opportunity set for four risky assets without SS"**)**  points**(**min.risk**$**sdp, min.risk**$**iportfolio, pch**=**19, col**=**"green"**)**  points**(**max.effectivness**$**sdp, max.effectivness**$**iportfolio, pch**=**19, col**=**"blue"**)**  points**(**max.ip**$**sdp, max.ip**$**iportfolio, pch**=**19, col**=**"yellow"**)**  points**(**max.w1**$**sdp, max.w1**$**iportfolio, pch**=**19, col**=**"black"**)**  points**(**max.w2**$**sdp, max.w2**$**iportfolio, pch**=**19, col**=**"black"**)**  points**(**max.w3**$**sdp, max.w3**$**iportfolio, pch**=**19, col**=**"black"**)**  points**(**max.w4**$**sdp, max.w4**$**iportfolio, pch**=**19, col**=**"black"**)**  legend**(**legend **=** c**(**"Opportunity set without SS", "Minimum risk portfolio", "Maximum efficiency portfolio", "Maximum RoR portfolio",  "One-element portfolio"**)**,  pch **=** c**(**19, 19, 19, 19, 19**)**,  col **=** c**(**"red", "green", "blue", "yellow", "black"**)**,  "right"**)**  dev.copy**(**png, filename**=**"plot.png"**)**  dev.off **()** |