table\_stat\_desc

SALL

11/01/2021

# final folder à remettre au prof  
  
  
rm(list=ls())  
  
  
# Importer base de données ------------------------------------------------  
  
variables\_2000\_1 <- read.csv("base\_de\_donnees\_2000.csv",   
 header = TRUE, sep = ",", quote = "\"",  
 dec = ".", fill = TRUE, comment.char = "")  
  
  
variables\_2007\_1 <- read.csv("base\_de\_donnees\_2007.csv",   
 header = TRUE, sep = ",", quote = "\"",  
 dec = ".", fill = TRUE, comment.char = "")  
  
  
variables\_2008\_1 <- read.csv("base\_de\_donnees\_2008.csv",   
 header = TRUE, sep = ",", quote = "\"",  
 dec = ".", fill = TRUE, comment.char = "")  
  
  
variables\_2009\_1 <- read.csv("base\_de\_donnees\_2009.csv",   
 header = TRUE, sep = ",", quote = "\"",  
 dec = ".", fill = TRUE, comment.char = "")  
  
  
variables\_2016\_1 <- read.csv("base\_de\_donnees\_2016.csv",   
 header = TRUE, sep = ",", quote = "\"",  
 dec = ".", fill = TRUE, comment.char = "")  
  
  
variables\_2018\_1 <- read.csv("base\_de\_donnees\_2018.csv",   
 header = TRUE, sep = ",", quote = "\"",  
 dec = ".", fill = TRUE, comment.char = "")  
  
  
variables\_2019\_1 <- read.csv("base\_de\_donnees\_2019.csv",   
 header = TRUE, sep = ",", quote = "\"",  
 dec = ".", fill = TRUE, comment.char = "")  
  
  
  
  
  
  
# ENLEVONS LA PREMIERE COLONNE --------------------------------------------  
  
variables\_2000 <- variables\_2000\_1[-1]  
variables\_2007 <- variables\_2007\_1[-1]  
variables\_2008 <- variables\_2008\_1[-1]  
variables\_2009 <- variables\_2009\_1[-1]  
variables\_2016 <- variables\_2016\_1[-1]  
variables\_2018 <- variables\_2018\_1[-1]  
variables\_2019 <- variables\_2019\_1[-1]  
  
  
  
  
# METTONS EN FACTOR LA VARIABLE COTE DE CREDIT ----------------------------  
  
variables\_2000$Cote\_crédit <- factor(variables\_2000$Cote\_crédit, levels = c("AAA", "AA", "A", "BBB", "BB", "B", "CCC"))  
is.factor(variables\_2000$Cote\_crédit)

## [1] TRUE

variables\_2007$Cote\_crédit <- factor(variables\_2007$Cote\_crédit, levels = c("AAA", "AA", "A", "BBB", "BB", "B", "CCC"))  
is.factor(variables\_2007$Cote\_crédit)

## [1] TRUE

variables\_2008$Cote\_crédit <- factor(variables\_2008$Cote\_crédit, levels = c("AAA", "AA", "A", "BBB", "BB", "B", "CCC"))  
is.factor(variables\_2008$Cote\_crédit)

## [1] TRUE

variables\_2009$Cote\_crédit <- factor(variables\_2009$Cote\_crédit, levels = c("AAA", "AA", "A", "BBB", "BB", "B", "CCC"))  
is.factor(variables\_2009$Cote\_crédit)

## [1] TRUE

variables\_2016$Cote\_crédit <- factor(variables\_2016$Cote\_crédit, levels = c("AAA", "AA", "A", "BBB", "BB", "B", "CCC"))  
is.factor(variables\_2016$Cote\_crédit)

## [1] TRUE

variables\_2018$Cote\_crédit <- factor(variables\_2018$Cote\_crédit, levels = c("AAA", "AA", "A", "BBB", "BB", "B", "CCC"))  
is.factor(variables\_2018$Cote\_crédit)

## [1] TRUE

variables\_2019$Cote\_crédit <- factor(variables\_2019$Cote\_crédit, levels = c("AAA", "AA", "A", "BBB", "BB", "B", "CCC"))  
is.factor(variables\_2019$Cote\_crédit)

## [1] TRUE

class(variables\_2019$Cote\_crédit)

## [1] "factor"

levels(variables\_2000$Cote\_crédit)

## [1] "AAA" "AA" "A" "BBB" "BB" "B" "CCC"

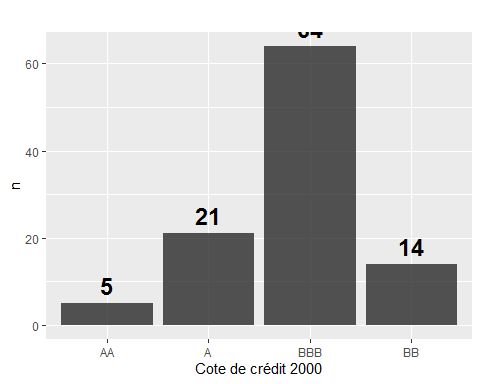
# METTONS EN FACTOR firm\_inv et firm\_spec ---------------------------------  
  
   
  
variables\_2000$binaire\_cote\_credit\_2000 <- factor(variables\_2000$binaire\_cote\_credit\_2000, levels = c("firm\_inv", "firm\_spec"))  
variables\_2007$binaire\_cote\_credit\_2007 <- factor(variables\_2007$binaire\_cote\_credit\_2007, levels = c("firm\_inv", "firm\_spec"))  
variables\_2008$binaire\_cote\_credit\_2008 <- factor(variables\_2008$binaire\_cote\_credit\_2008, levels = c("firm\_inv", "firm\_spec"))  
variables\_2009$binaire\_cote\_credit\_2009 <- factor(variables\_2009$binaire\_cote\_credit\_2009, levels = c("firm\_inv", "firm\_spec"))  
variables\_2016$binaire\_cote\_credit\_2016 <- factor(variables\_2016$binaire\_cote\_credit\_2016, levels = c("firm\_inv", "firm\_spec"))  
variables\_2018$binaire\_cote\_credit\_2018 <- factor(variables\_2018$binaire\_cote\_credit\_2018, levels = c("firm\_inv", "firm\_spec"))  
variables\_2019$binaire\_cote\_credit\_2019 <- factor(variables\_2019$binaire\_cote\_credit\_2019, levels = c("firm\_inv", "firm\_spec"))  
  
  
  
  
# REPRESNTATION DIAGRAMME EN BARRE COTE DE CREDIT -------------------------  
  
library(ggplot2)  
  
library(dplyr)

##   
## Attaching package: 'dplyr'

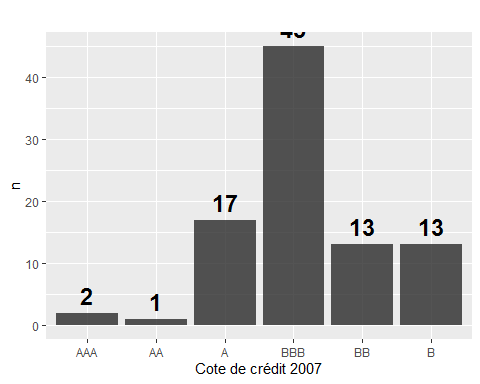
## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

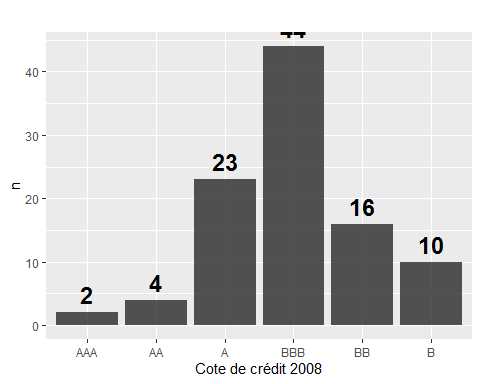
count\_data\_2000 <- variables\_2000 %>%   
 count(Cote\_crédit)  
  
ggplot(count\_data\_2000, aes(x=Cote\_crédit, y=n))+  
 geom\_bar(stat = "identity", position = position\_dodge(), alpha = 0.8, fill="gray16")+  
 geom\_text(aes(label=n), fontface = "bold",vjust=-0.500, position = position\_dodge(0.9),size = 6)+  
 labs(x="Cote de crédit 2000", u="Nombre d'observation",  
 title = "")



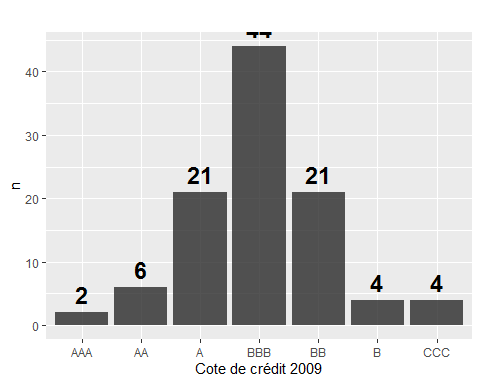
library(dplyr)  
count\_data\_2007 <- variables\_2007 %>%   
 count(Cote\_crédit)  
  
ggplot(count\_data\_2007, aes(x=Cote\_crédit, y=n))+  
 geom\_bar(stat = "identity", position = position\_dodge(), alpha = 0.8, fill="gray16")+  
 geom\_text(aes(label=n), fontface = "bold",vjust=-0.500, position = position\_dodge(0.9),size = 6)+  
 labs(x="Cote de crédit 2007", u="Nombre d'observation",  
 title = "")



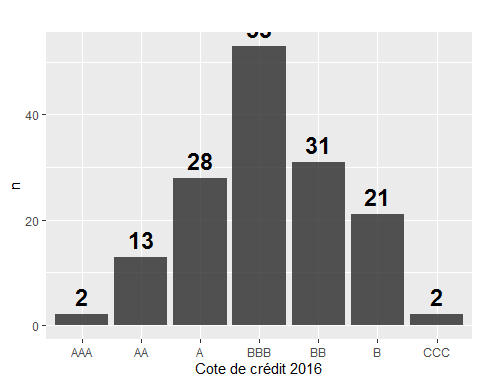
library(dplyr)  
count\_data\_2008 <- variables\_2008 %>%   
 count(Cote\_crédit)  
  
ggplot(count\_data\_2008, aes(x=Cote\_crédit, y=n))+  
 geom\_bar(stat = "identity", position = position\_dodge(), alpha = 0.8, fill="gray16")+  
 geom\_text(aes(label=n), fontface = "bold",vjust=-0.500, position = position\_dodge(0.9),size = 6)+  
 labs(x="Cote de crédit 2008", u="Nombre d'observation",  
 title = "")



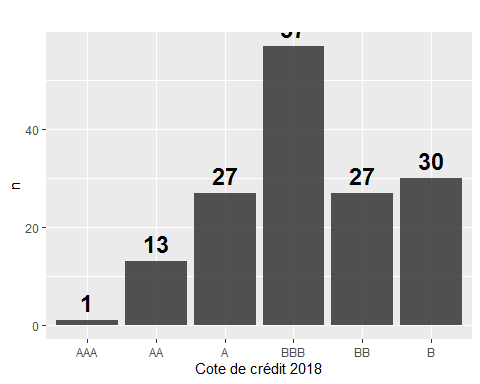
library(dplyr)  
count\_data\_2009 <- variables\_2009 %>%   
 count(Cote\_crédit)  
  
ggplot(count\_data\_2009, aes(x=Cote\_crédit, y=n))+  
 geom\_bar(stat = "identity", position = position\_dodge(), alpha = 0.8, fill="gray16")+  
 geom\_text(aes(label=n), fontface = "bold",vjust=-0.500, position = position\_dodge(0.9),size = 6)+  
 labs(x="Cote de crédit 2009", u="Nombre d'observation",  
 title = "")



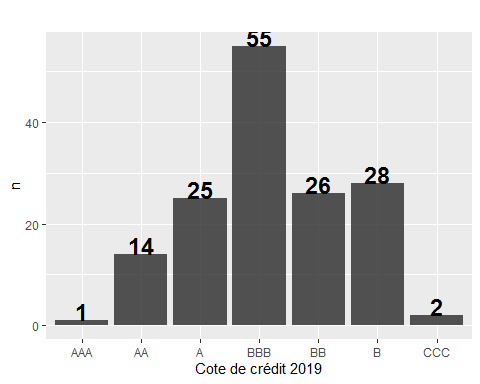
library(dplyr)  
count\_data\_2016 <- variables\_2016 %>%   
 count(Cote\_crédit)  
  
ggplot(count\_data\_2016, aes(x=Cote\_crédit, y=n))+  
 geom\_bar(stat = "identity", position = position\_dodge(), alpha = 0.8, fill="gray16")+  
 geom\_text(aes(label=n), fontface = "bold",vjust=-0.500, position = position\_dodge(0.9),size = 6)+  
 labs(x="Cote de crédit 2016", u="Nombre d'observation",  
 title = "")



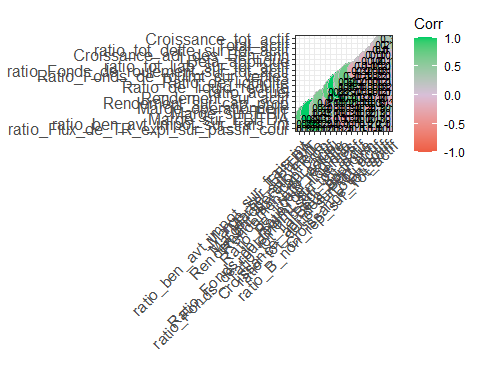
library(dplyr)  
count\_data\_2018 <- variables\_2018 %>%   
 count(Cote\_crédit)  
  
ggplot(count\_data\_2018, aes(x=Cote\_crédit, y=n))+  
 geom\_bar(stat = "identity", position = position\_dodge(), alpha = 0.8, fill="gray16")+  
 geom\_text(aes(label=n), fontface = "bold",vjust=-0.500, position = position\_dodge(0.9),size = 6)+  
 labs(x="Cote de crédit 2018", u="Nombre d'observation",  
 title = "")



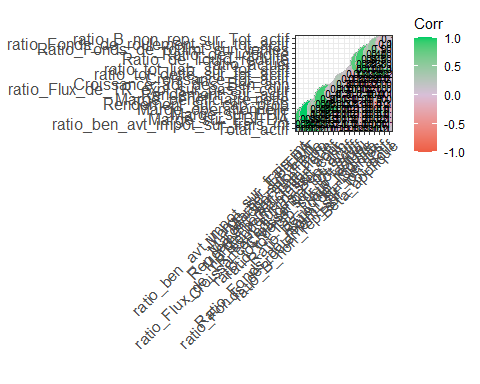
library(dplyr)  
count\_data\_2019 <- variables\_2019 %>%   
 count(Cote\_crédit)  
  
ggplot(count\_data\_2019, aes(x=Cote\_crédit, y=n))+  
 geom\_bar(stat = "identity", position = position\_dodge(), alpha = 0.8, fill="gray16")+  
 geom\_text(aes(label=n), fontface = "bold",vjust=0.00, position = position\_dodge(0.9),size = 6)+  
 labs(x="Cote de crédit 2019", u="Nombre d'observation",  
 title = "")



# STATISTIQUES DESCRIPTIVES ---------------------------------------------------  
  
  
# (1) CALCULONS LA MATRICE DE CORRELATION ------------------------------------  
  
  
library(ggplot2)  
library(ggcorrplot)  
  
  
# corrélation 2019  
corr\_2019 = round(cor(variables\_2019[,c(-1,-2)]), 1)  
  
#dev.new()  
  
ggcorrplot(corr\_2019, hc.order = TRUE,  
 type = "lower",  
 lab = TRUE,  
 lab\_size = 3,  
 method = "circle",  
 colors = c("tomato2", "thistle", "springgreen3"),  
 ggtheme = theme\_bw)



# corrélation 2018  
corr\_2018 = round(cor(variables\_2018[,c(-1,-2)]), 1)  
  
  
#POUR TENIR COMPTE DE : marge bénéfciaie et beta appliqué car pas présent dans 2019  
ggcorrplot(corr\_2018, hc.order = TRUE,  
 type = "lower",  
 lab = TRUE,  
 lab\_size = 3,  
 method = "circle",  
 colors = c("tomato2", "thistle", "springgreen3"),  
 ggtheme = theme\_bw)



# (2) STATISTIQUES DESCRIPTIVES -------------------------------------------  
  
  
names(variables\_2019)

## [1] "binaire\_cote\_credit\_2019"   
## [2] "Cote\_crédit"   
## [3] "Marge\_sur\_EBITDA"   
## [4] "Marge\_sur\_EBIT"   
## [5] "Rendement\_sur\_cap\_prop"   
## [6] "Rendement\_sur\_actif"   
## [7] "Croissance\_adj\_des\_Bén\_ann"   
## [8] "Croissance\_tot\_actif"   
## [9] "ratio\_ben\_avt\_impot\_sur\_frais\_int"   
## [10] "ratio\_tot\_dette\_sur\_tot\_actif"   
## [11] "ratio\_tot\_liab\_sur\_tot\_actif"   
## [12] "ratio\_B\_non\_rep\_sur\_Tot\_actif"   
## [13] "ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour"   
## [14] "ratio\_actuel"   
## [15] "Ratio\_de\_liquid\_réduite"   
## [16] "Ratio\_de\_liquidité"   
## [17] "Ratio\_Fonds\_de\_roulmt\_sur\_ventes"   
## [18] "ratio\_Fonds\_de\_roulement\_sur\_tot\_actif"  
## [19] "Total\_actif"   
## [20] "Marge\_opérationnelle"   
## [21] "Beta\_applique"

# Table T\_x2 :  
  
table(variables\_2019$Cote\_crédit) #ça me compte le nombre de chaque élément de chaque facter

##   
## AAA AA A BBB BB B CCC   
## 1 14 25 55 26 28 2

#AAA j'en ai que 2 donc si je le fixe comme reférence only ça ne fera pas de sens  
#pour les prédictions donc dans multinomial logit reg fixer AAA, AA et A comme ref  
  
  
table(variables\_2000$Cote\_crédit)

##   
## AAA AA A BBB BB B CCC   
## 0 5 21 64 14 0 0

table(variables\_2007$Cote\_crédit)

##   
## AAA AA A BBB BB B CCC   
## 2 1 17 45 13 13 0

table(variables\_2008$Cote\_crédit)

##   
## AAA AA A BBB BB B CCC   
## 2 4 23 44 16 10 0

table(variables\_2009$Cote\_crédit)

##   
## AAA AA A BBB BB B CCC   
## 2 6 21 44 21 4 4

table(variables\_2016$Cote\_crédit)

##   
## AAA AA A BBB BB B CCC   
## 2 13 28 53 31 21 2

table(variables\_2018$Cote\_crédit)

##   
## AAA AA A BBB BB B CCC   
## 1 13 27 57 27 30 0

table(variables\_2019$Cote\_crédit)

##   
## AAA AA A BBB BB B CCC   
## 1 14 25 55 26 28 2

length(variables\_2000$Cote\_crédit)

## [1] 104

length(variables\_2007$Cote\_crédit)

## [1] 91

length(variables\_2008$Cote\_crédit)

## [1] 99

length(variables\_2009$Cote\_crédit)

## [1] 102

length(variables\_2016$Cote\_crédit)

## [1] 150

length(variables\_2018$Cote\_crédit)

## [1] 155

length(variables\_2019$Cote\_crédit)

## [1] 151

summary(variables\_2000)

## binaire\_cote\_credit\_2000 Cote\_crédit Marge\_bénéficiaire.nette Marge\_sur\_EBITDA  
## firm\_inv :90 AAA: 0 Min. :-74.435 Min. :-59.41   
## firm\_spec:14 AA : 5 1st Qu.: 2.550 1st Qu.: 11.03   
## A :21 Median : 7.143 Median : 24.51   
## BBB:64 Mean : 7.852 Mean : 26.17   
## BB :14 3rd Qu.: 14.236 3rd Qu.: 38.91   
## B : 0 Max. : 43.823 Max. : 82.24   
## CCC: 0   
## Marge\_sur\_EBIT Rendement\_sur\_cap\_prop Rendement\_sur\_actif  
## Min. :-69.003 Min. :-45.770 Min. :-22.129   
## 1st Qu.: 6.383 1st Qu.: 6.579 1st Qu.: 2.740   
## Median : 12.032 Median : 10.656 Median : 4.818   
## Mean : 14.964 Mean : 11.570 Mean : 4.800   
## 3rd Qu.: 20.339 3rd Qu.: 15.284 3rd Qu.: 7.091   
## Max. : 64.485 Max. : 73.743 Max. : 19.179   
##   
## ratio\_ben\_avt\_impot\_sur\_frais\_int ratio\_tot\_dette\_sur\_tot\_actif  
## Min. :-702.160 Min. : 0.00   
## 1st Qu.: 2.029 1st Qu.:17.96   
## Median : 4.190 Median :30.52   
## Mean : 4.972 Mean :29.52   
## 3rd Qu.: 9.044 3rd Qu.:38.87   
## Max. : 426.000 Max. :87.28   
##   
## ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour ratio\_actuel   
## Min. :-1.7362 Min. : 0.2696   
## 1st Qu.: 0.2440 1st Qu.: 0.9031   
## Median : 0.4902 Median : 1.2558   
## Mean : 0.6860 Mean : 1.7980   
## 3rd Qu.: 1.0139 3rd Qu.: 1.8974   
## Max. : 2.6595 Max. :24.9828   
##   
## Ratio\_de\_liquid\_réduite Ratio\_de\_liquidité Ratio\_Fonds\_de\_roulmt\_sur\_ventes  
## Min. : 0.1656 Min. : 0.00000 Min. :-0.79570   
## 1st Qu.: 0.4729 1st Qu.: 0.03243 1st Qu.:-0.03395   
## Median : 0.8550 Median : 0.20795 Median : 0.08685   
## Mean : 1.2317 Mean : 0.65050 Mean : 0.18565   
## 3rd Qu.: 1.2078 3rd Qu.: 0.60350 3rd Qu.: 0.21018   
## Max. :23.9958 Max. :22.54620 Max. : 5.63000   
##   
## ratio\_Fonds\_de\_roulement\_sur\_tot\_actif Total\_actif Marge\_opérationnelle  
## Min. :-0.27095 Min. : 68.87 Min. :-69.003   
## 1st Qu.:-0.02399 1st Qu.: 697.60 1st Qu.: 6.383   
## Median : 0.04858 Median : 1885.48 Median : 12.032   
## Mean : 0.08359 Mean : 4322.31 Mean : 14.964   
## 3rd Qu.: 0.14226 3rd Qu.: 5193.35 3rd Qu.: 20.339   
## Max. : 0.63651 Max. :51383.00 Max. : 64.485   
##   
## Beta\_applique   
## Min. :-0.5193   
## 1st Qu.: 0.3718   
## Median : 0.5943   
## Mean : 0.6292   
## 3rd Qu.: 0.8219   
## Max. : 1.9251   
##

summary(variables\_2007)

## binaire\_cote\_credit\_2007 Cote\_crédit Marge\_bénéficiaire.nette Marge\_sur\_EBITDA  
## firm\_inv :65 AAA: 2 Min. : -6.989 Min. : 2.934   
## firm\_spec:26 AA : 1 1st Qu.: 2.481 1st Qu.: 9.825   
## A :17 Median : 6.721 Median :22.058   
## BBB:45 Mean : 11.679 Mean :26.409   
## BB :13 3rd Qu.: 16.334 3rd Qu.:40.233   
## B :13 Max. :173.461 Max. :72.164   
## CCC: 0   
## Marge\_sur\_EBIT Rendement\_sur\_cap\_prop Rendement\_sur\_actif  
## Min. :-4.985 Min. :-25.426 Min. :-9.590   
## 1st Qu.: 5.345 1st Qu.: 7.327 1st Qu.: 2.452   
## Median :14.258 Median : 12.018 Median : 4.179   
## Mean :17.107 Mean : 12.415 Mean : 4.993   
## 3rd Qu.:25.449 3rd Qu.: 17.912 3rd Qu.: 6.773   
## Max. :62.896 Max. : 49.651 Max. :20.275   
##   
## ratio\_ben\_avt\_impot\_sur\_frais\_int ratio\_tot\_dette\_sur\_tot\_actif  
## Min. : -5.585 Min. : 0.00   
## 1st Qu.: 2.154 1st Qu.: 19.38   
## Median : 4.123 Median : 30.29   
## Mean : 18.804 Mean : 31.02   
## 3rd Qu.: 7.494 3rd Qu.: 42.08   
## Max. :402.143 Max. :102.28   
##   
## ratio\_B\_non\_rep\_sur\_Tot\_actif ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour  
## Min. :-0.79757 Min. :-0.4884   
## 1st Qu.: 0.03421 1st Qu.: 0.2673   
## Median : 0.17489 Median : 0.5857   
## Mean : 0.17869 Mean : 0.7514   
## 3rd Qu.: 0.29890 3rd Qu.: 1.1514   
## Max. : 3.76315 Max. : 3.2556   
##   
## ratio\_actuel Ratio\_de\_liquid\_réduite Ratio\_de\_liquidité  
## Min. :0.0801 Min. :0.0700 Min. :0.0000   
## 1st Qu.:0.8555 1st Qu.:0.4827 1st Qu.:0.0451   
## Median :1.2259 Median :0.7014 Median :0.2046   
## Mean :1.5939 Mean :1.0479 Mean :0.5448   
## 3rd Qu.:1.8736 3rd Qu.:1.1620 3rd Qu.:0.5544   
## Max. :8.8029 Max. :8.7666 Max. :8.1923   
##   
## Ratio\_Fonds\_de\_roulmt\_sur\_ventes ratio\_Fonds\_de\_roulement\_sur\_tot\_actif  
## Min. :-1.07130 Min. :-0.42379   
## 1st Qu.:-0.04700 1st Qu.:-0.01908   
## Median : 0.04350 Median : 0.02920   
## Mean : 0.07295 Mean : 0.06767   
## 3rd Qu.: 0.15865 3rd Qu.: 0.13399   
## Max. : 1.58510 Max. : 0.62554   
##   
## Total\_actif Marge\_opérationnelle  
## Min. : 421.5 Min. :-4.985   
## 1st Qu.: 2533.2 1st Qu.: 5.345   
## Median : 5173.7 Median :14.258   
## Mean : 8562.6 Mean :17.107   
## 3rd Qu.:12907.1 3rd Qu.:25.449   
## Max. :38230.0 Max. :62.896   
##

summary(variables\_2008)

## binaire\_cote\_credit\_2008 Cote\_crédit Marge\_bénéficiaire.nette Marge\_sur\_EBITDA  
## firm\_inv :73 AAA: 2 Min. :-129.825 Min. :-6.363   
## firm\_spec:26 AA : 4 1st Qu.: 1.448 1st Qu.:10.244   
## A :23 Median : 6.788 Median :20.395   
## BBB:44 Mean : 8.792 Mean :26.793   
## BB :16 3rd Qu.: 14.978 3rd Qu.:40.731   
## B :10 Max. : 173.461 Max. :70.722   
## CCC: 0   
## Marge\_sur\_EBIT Rendement\_sur\_cap\_prop Rendement\_sur\_actif  
## Min. :-13.574 Min. :-63.963 Min. :-17.453   
## 1st Qu.: 5.696 1st Qu.: 4.124 1st Qu.: 1.800   
## Median : 12.072 Median : 11.301 Median : 4.115   
## Mean : 17.198 Mean : 9.208 Mean : 3.780   
## 3rd Qu.: 27.599 3rd Qu.: 17.939 3rd Qu.: 6.431   
## Max. : 62.896 Max. : 49.651 Max. : 20.275   
##   
## ratio\_ben\_avt\_impot\_sur\_frais\_int ratio\_tot\_dette\_sur\_tot\_actif  
## Min. :-10.139 Min. : 0.00   
## 1st Qu.: 1.879 1st Qu.: 22.08   
## Median : 3.673 Median : 32.11   
## Mean : 16.897 Mean : 34.62   
## 3rd Qu.: 7.224 3rd Qu.: 45.68   
## Max. :526.125 Max. :102.89   
##   
## ratio\_B\_non\_rep\_sur\_Tot\_actif ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour  
## Min. :-1.69694 Min. :-0.1110   
## 1st Qu.: 0.01242 1st Qu.: 0.2551   
## Median : 0.14874 Median : 0.4450   
## Mean : 0.12103 Mean : 0.6929   
## 3rd Qu.: 0.26536 3rd Qu.: 1.0117   
## Max. : 1.67642 Max. : 3.6254   
##   
## ratio\_actuel Ratio\_de\_liquid\_réduite Ratio\_de\_liquidité  
## Min. :0.0801 Min. :0.0700 Min. :0.00000   
## 1st Qu.:0.7815 1st Qu.:0.4466 1st Qu.:0.04465   
## Median :1.0714 Median :0.6088 Median :0.13740   
## Mean :1.3635 Mean :0.8431 Mean :0.38768   
## 3rd Qu.:1.7315 3rd Qu.:0.9682 3rd Qu.:0.42790   
## Max. :8.8029 Max. :8.7666 Max. :8.19230   
##   
## Ratio\_Fonds\_de\_roulmt\_sur\_ventes ratio\_Fonds\_de\_roulement\_sur\_tot\_actif  
## Min. :-1.07130 Min. :-0.582827   
## 1st Qu.:-0.08375 1st Qu.:-0.031916   
## Median : 0.00810 Median : 0.002831   
## Mean : 0.02977 Mean : 0.037443   
## 3rd Qu.: 0.15365 3rd Qu.: 0.105855   
## Max. : 1.58510 Max. : 0.625538   
##   
## Total\_actif Marge\_opérationnelle  
## Min. : 432.2 Min. :-13.574   
## 1st Qu.: 2691.7 1st Qu.: 5.696   
## Median : 5269.4 Median : 12.072   
## Mean : 9490.1 Mean : 17.198   
## 3rd Qu.:13219.5 3rd Qu.: 27.599   
## Max. :42650.0 Max. : 62.896   
##

summary(variables\_2009)

## binaire\_cote\_credit\_2009 Cote\_crédit Marge\_bénéficiaire.nette  
## firm\_inv :73 AAA: 2 Min. :-52.532   
## firm\_spec:29 AA : 6 1st Qu.: 1.710   
## A :21 Median : 7.007   
## BBB:44 Mean : 9.988   
## BB :21 3rd Qu.: 16.019   
## B : 4 Max. : 88.351   
## CCC: 4   
## Marge\_sur\_EBITDA Marge\_sur\_EBIT Rendement\_sur\_cap\_prop Rendement\_sur\_actif  
## Min. :-32.215 Min. :-45.403 Min. :-62.376 Min. :-19.032   
## 1st Qu.: 8.248 1st Qu.: 3.689 1st Qu.: 4.694 1st Qu.: 1.466   
## Median : 20.201 Median : 13.339 Median : 11.431 Median : 3.754   
## Mean : 26.340 Mean : 16.269 Mean : 9.416 Mean : 3.315   
## 3rd Qu.: 44.269 3rd Qu.: 28.574 3rd Qu.: 16.297 3rd Qu.: 5.957   
## Max. : 74.799 Max. : 63.189 Max. : 44.542 Max. : 15.265   
##   
## ratio\_ben\_avt\_impot\_sur\_frais\_int ratio\_tot\_dette\_sur\_tot\_actif  
## Min. : -64.807 Min. : 0.00   
## 1st Qu.: 1.584 1st Qu.: 20.43   
## Median : 3.356 Median : 33.12   
## Mean : 19.243 Mean : 33.43   
## 3rd Qu.: 5.527 3rd Qu.: 43.21   
## Max. :1389.667 Max. :102.78   
##   
## ratio\_tot\_liab\_sur\_tot\_actif ratio\_B\_non\_rep\_sur\_Tot\_actif  
## Min. :0.2237 Min. :-0.766814   
## 1st Qu.:0.5080 1st Qu.: 0.009481   
## Median :0.6047 Median : 0.142547   
## Mean :0.6784 Mean : 0.139234   
## 3rd Qu.:0.7064 3rd Qu.: 0.274831   
## Max. :3.5583 Max. : 1.825449   
##   
## ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour ratio\_actuel Ratio\_de\_liquid\_réduite  
## Min. :-1.3096 Min. :0.0962 Min. :0.0874   
## 1st Qu.: 0.2559 1st Qu.:0.7782 1st Qu.:0.4679   
## Median : 0.5857 Median :1.1345 Median :0.7318   
## Mean : 0.6954 Mean :1.3587 Mean :0.8871   
## 3rd Qu.: 0.9763 3rd Qu.:1.6186 3rd Qu.:1.0978   
## Max. : 4.5148 Max. :5.6600 Max. :5.6309   
##   
## Ratio\_de\_liquidité Ratio\_Fonds\_de\_roulmt\_sur\_ventes  
## Min. :0.0000 Min. :-1.582300   
## 1st Qu.:0.0611 1st Qu.:-0.096700   
## Median :0.2098 Median : 0.008000   
## Mean :0.4309 Mean : 0.009612   
## 3rd Qu.:0.5768 3rd Qu.: 0.121350   
## Max. :5.2028 Max. : 1.351000   
##   
## ratio\_Fonds\_de\_roulement\_sur\_tot\_actif Total\_actif Marge\_opérationnelle  
## Min. :-0.38830 Min. : 426.6 Min. :-45.403   
## 1st Qu.:-0.03358 1st Qu.: 2730.4 1st Qu.: 3.689   
## Median : 0.01715 Median : 5604.0 Median : 13.339   
## Mean : 0.04723 Mean :10253.3 Mean : 16.269   
## 3rd Qu.: 0.11143 3rd Qu.:13222.5 3rd Qu.: 28.574   
## Max. : 0.62562 Max. :69746.0 Max. : 63.189   
##

summary(variables\_2016)

## binaire\_cote\_credit\_2016 Cote\_crédit Marge\_bénéficiaire.nette  
## firm\_inv :96 AAA: 2 Min. :-539.1182   
## firm\_spec:54 AA :13 1st Qu.: -0.5230   
## A :28 Median : 5.2290   
## BBB:53 Mean : -0.5412   
## BB :31 3rd Qu.: 10.9281   
## B :21 Max. : 70.8621   
## CCC: 2   
## Marge\_sur\_EBITDA Marge\_sur\_EBIT Rendement\_sur\_cap\_prop  
## Min. :-466.31 Min. :-501.462 Min. :-130.743   
## 1st Qu.: 12.44 1st Qu.: 4.708 1st Qu.: -0.215   
## Median : 25.87 Median : 10.929 Median : 6.567   
## Mean : 24.13 Mean : 9.107 Mean : 6.263   
## 3rd Qu.: 39.81 3rd Qu.: 20.553 3rd Qu.: 14.935   
## Max. : 92.99 Max. : 70.738 Max. : 142.208   
##   
## Rendement\_sur\_actif ratio\_ben\_avt\_impot\_sur\_frais\_int  
## Min. :-32.7511 Min. :-12.563   
## 1st Qu.: -0.1456 1st Qu.: 1.084   
## Median : 2.0107 Median : 2.527   
## Mean : 1.4315 Mean : 4.500   
## 3rd Qu.: 4.8170 3rd Qu.: 4.562   
## Max. : 14.7654 Max. : 77.812   
##   
## ratio\_tot\_dette\_sur\_tot\_actif ratio\_tot\_liab\_sur\_tot\_actif  
## Min. : 0.076 Min. :0.2115   
## 1st Qu.: 24.109 1st Qu.:0.5370   
## Median : 35.441 Median :0.6342   
## Mean : 38.282 Mean :0.8443   
## 3rd Qu.: 48.262 3rd Qu.:0.7715   
## Max. :126.170 Max. :8.6508   
##   
## ratio\_B\_non\_rep\_sur\_Tot\_actif ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour  
## Min. :-5.66304 Min. :-3.5410   
## 1st Qu.:-0.04571 1st Qu.: 0.3503   
## Median : 0.05009 Median : 0.5360   
## Mean : 0.03008 Mean : 0.8573   
## 3rd Qu.: 0.20145 3rd Qu.: 0.8436   
## Max. : 4.40363 Max. :34.3488   
##   
## ratio\_actuel Ratio\_de\_liquid\_réduite Ratio\_de\_liquidité  
## Min. : 0.1341 Min. : 0.0000 Min. : 0.0000   
## 1st Qu.: 0.8633 1st Qu.: 0.3819 1st Qu.: 0.0858   
## Median : 1.1979 Median : 0.7581 Median : 0.2435   
## Mean : 1.5142 Mean : 0.9541 Mean : 0.5766   
## 3rd Qu.: 1.6894 3rd Qu.: 1.1343 3rd Qu.: 0.7070   
## Max. :12.0410 Max. :10.2292 Max. :10.1074   
##   
## Ratio\_Fonds\_de\_roulmt\_sur\_ventes ratio\_Fonds\_de\_roulement\_sur\_tot\_actif  
## Min. :-2.13050 Min. :-0.25167   
## 1st Qu.:-0.05580 1st Qu.:-0.01293   
## Median : 0.05850 Median : 0.02375   
## Mean : 0.09748 Mean : 0.04580   
## 3rd Qu.: 0.17733 3rd Qu.: 0.08341   
## Max. : 2.40570 Max. : 0.61866   
##   
## Total\_actif Marge\_opérationnelle  
## Min. : 161.4 Min. :-501.462   
## 1st Qu.: 2050.7 1st Qu.: 4.557   
## Median : 5818.7 Median : 11.566   
## Mean : 13804.5 Mean : 9.710   
## 3rd Qu.: 15108.8 3rd Qu.: 20.968   
## Max. :287940.0 Max. : 87.131   
##

summary(variables\_2018)

## binaire\_cote\_credit\_2018 Cote\_crédit Marge\_bénéficiaire.nette  
## firm\_inv :98 AAA: 1 Min. :-205.2109   
## firm\_spec:57 AA :13 1st Qu.: 0.4298   
## A :27 Median : 7.1916   
## BBB:57 Mean : 6.1081   
## BB :27 3rd Qu.: 13.6642   
## B :30 Max. : 273.2479   
## CCC: 0   
## Marge\_sur\_EBITDA Marge\_sur\_EBIT Rendement\_sur\_cap\_prop  
## Min. :-133.23 Min. :-173.135 Min. :-130.7433   
## 1st Qu.: 12.43 1st Qu.: 5.362 1st Qu.: 0.3958   
## Median : 23.98 Median : 12.379 Median : 8.1910   
## Mean : 27.36 Mean : 12.556 Mean : 3.9695   
## 3rd Qu.: 42.74 3rd Qu.: 23.427 3rd Qu.: 15.1047   
## Max. : 92.72 Max. : 69.571 Max. : 59.8695   
##   
## Rendement\_sur\_actif Croissance\_adj\_des\_Bén\_ann Croissance\_tot\_actif  
## Min. :-40.1009 Min. :-78.135 Min. :-24.423   
## 1st Qu.: 0.1518 1st Qu.: -3.822 1st Qu.: -2.301   
## Median : 2.8095 Median : 5.674 Median : 6.047   
## Mean : 2.4328 Mean : 10.875 Mean : 5.290   
## 3rd Qu.: 5.2457 3rd Qu.: 23.671 3rd Qu.: 11.592   
## Max. : 70.6576 Max. :173.570 Max. : 60.715   
##   
## ratio\_ben\_avt\_impot\_sur\_frais\_int ratio\_tot\_dette\_sur\_tot\_actif  
## Min. :-110.975 Min. : 0.00   
## 1st Qu.: 1.494 1st Qu.: 23.62   
## Median : 2.781 Median : 35.45   
## Mean : 4.863 Mean : 37.63   
## 3rd Qu.: 5.458 3rd Qu.: 47.43   
## Max. : 101.500 Max. :109.80   
##   
## ratio\_tot\_liab\_sur\_tot\_actif ratio\_B\_non\_rep\_sur\_Tot\_actif  
## Min. :0.2587 Min. :-15.17808   
## 1st Qu.:0.5382 1st Qu.: -0.06096   
## Median :0.6432 Median : 0.06216   
## Mean :0.8322 Mean : -0.07512   
## 3rd Qu.:0.7903 3rd Qu.: 0.20095   
## Max. :6.9719 Max. : 2.04128   
##   
## ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour ratio\_actuel Ratio\_de\_liquid\_réduite  
## Min. :-0.5116 Min. :0.0851 Min. :0.0000   
## 1st Qu.: 0.2916 1st Qu.:0.7805 1st Qu.:0.3805   
## Median : 0.6005 Median :1.1390 Median :0.6701   
## Mean : 0.7536 Mean :1.3831 Mean :0.8460   
## 3rd Qu.: 1.0177 3rd Qu.:1.6906 3rd Qu.:0.9999   
## Max. : 4.3769 Max. :5.6849 Max. :5.5617   
##   
## Ratio\_de\_liquidité Ratio\_Fonds\_de\_roulmt\_sur\_ventes  
## Min. :0.0000 Min. :-3.05430   
## 1st Qu.:0.0552 1st Qu.:-0.04150   
## Median :0.2009 Median : 0.03780   
## Mean :0.4754 Mean : 0.04022   
## 3rd Qu.:0.5513 3rd Qu.: 0.15305   
## Max. :4.6825 Max. : 1.22640   
##   
## ratio\_Fonds\_de\_roulement\_sur\_tot\_actif Total\_actif Marge\_opérationnelle  
## Min. :-0.45114 Min. : 161.4 Min. :-173.135   
## 1st Qu.:-0.01793 1st Qu.: 2019.1 1st Qu.: 5.362   
## Median : 0.01970 Median : 6205.0 Median : 12.379   
## Mean : 0.03919 Mean :12603.0 Mean : 13.393   
## 3rd Qu.: 0.08801 3rd Qu.:15597.6 3rd Qu.: 23.784   
## Max. : 0.53332 Max. :98920.0 Max. : 87.596   
##   
## Beta\_applique   
## Min. :0.1036   
## 1st Qu.:0.7401   
## Median :1.0000   
## Mean :1.0274   
## 3rd Qu.:1.2441   
## Max. :2.1463   
##

summary(variables\_2019)

## binaire\_cote\_credit\_2019 Cote\_crédit Marge\_sur\_EBITDA Marge\_sur\_EBIT   
## firm\_inv :95 AAA: 1 Min. :-28.50 Min. :-40.839   
## firm\_spec:56 AA :14 1st Qu.: 12.24 1st Qu.: 5.105   
## A :25 Median : 25.94 Median : 11.655   
## BBB:55 Mean : 30.64 Mean : 15.150   
## BB :26 3rd Qu.: 48.02 3rd Qu.: 25.880   
## B :28 Max. : 90.58 Max. : 69.672   
## CCC: 2   
## Rendement\_sur\_cap\_prop Rendement\_sur\_actif Croissance\_adj\_des\_Bén\_ann  
## Min. :-185.1165 Min. :-30.6379 Min. :-97.660   
## 1st Qu.: 0.8908 1st Qu.: 0.5061 1st Qu.:-12.821   
## Median : 7.8584 Median : 2.6742 Median : 3.459   
## Mean : 2.9971 Mean : 2.0403 Mean : 7.606   
## 3rd Qu.: 15.6062 3rd Qu.: 5.0544 3rd Qu.: 23.320   
## Max. : 89.5780 Max. : 24.6134 Max. :149.604   
##   
## Croissance\_tot\_actif ratio\_ben\_avt\_impot\_sur\_frais\_int  
## Min. :-28.502 Min. :-41.741   
## 1st Qu.: 1.296 1st Qu.: 1.317   
## Median : 5.892 Median : 2.706   
## Mean : 6.514 Mean : 4.228   
## 3rd Qu.: 11.294 3rd Qu.: 4.288   
## Max. : 43.383 Max. :101.500   
##   
## ratio\_tot\_dette\_sur\_tot\_actif ratio\_tot\_liab\_sur\_tot\_actif  
## Min. : 0.00 Min. :0.1035   
## 1st Qu.: 23.97 1st Qu.:0.5314   
## Median : 37.79 Median :0.6497   
## Mean : 38.71 Mean :0.7672   
## 3rd Qu.: 48.54 3rd Qu.:0.7741   
## Max. :113.00 Max. :5.0270   
##   
## ratio\_B\_non\_rep\_sur\_Tot\_actif ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour  
## Min. :-20.22914 Min. :-0.4002   
## 1st Qu.: -0.08136 1st Qu.: 0.3025   
## Median : 0.04210 Median : 0.6234   
## Mean : -0.12112 Mean : 0.7403   
## 3rd Qu.: 0.19228 3rd Qu.: 1.0106   
## Max. : 0.73721 Max. : 3.5758   
##   
## ratio\_actuel Ratio\_de\_liquid\_réduite Ratio\_de\_liquidité  
## Min. :0.1350 Min. :0.0000 Min. :0.0000   
## 1st Qu.:0.7973 1st Qu.:0.3923 1st Qu.:0.0568   
## Median :1.2078 Median :0.6133 Median :0.1860   
## Mean :1.4755 Mean :0.8956 Mean :0.5191   
## 3rd Qu.:1.8837 3rd Qu.:1.1850 3rd Qu.:0.7219   
## Max. :7.0401 Max. :6.7676 Max. :6.3703   
##   
## Ratio\_Fonds\_de\_roulmt\_sur\_ventes ratio\_Fonds\_de\_roulement\_sur\_tot\_actif  
## Min. :-0.99120 Min. :-0.45114   
## 1st Qu.:-0.06235 1st Qu.:-0.02019   
## Median : 0.03920 Median : 0.02354   
## Mean : 0.04520 Mean : 0.04494   
## 3rd Qu.: 0.15995 3rd Qu.: 0.10336   
## Max. : 1.27020 Max. : 0.51369   
##   
## Total\_actif Marge\_opérationnelle Beta\_applique   
## Min. : 161.4 Min. :-40.839 Min. :0.0733   
## 1st Qu.: 2194.0 1st Qu.: 5.105 1st Qu.:0.7372   
## Median : 6758.1 Median : 11.655 Median :1.0000   
## Mean :14224.2 Mean : 15.796 Mean :1.0291   
## 3rd Qu.:15825.5 3rd Qu.: 26.483 3rd Qu.:1.1317   
## Max. :99279.0 Max. : 83.921 Max. :2.3266   
##

#Construction Table Stat Descriptives pour une meilleur importation des résultats  
  
as.data.frame(variables\_2019)

## binaire\_cote\_credit\_2019 Cote\_crédit Marge\_sur\_EBITDA Marge\_sur\_EBIT  
## 1 firm\_spec B 13.0854 -27.54830  
## 2 firm\_inv BBB 18.2840 9.29930  
## 3 firm\_spec BB 19.0058 8.62470  
## 4 firm\_inv A 16.7336 12.32180  
## 5 firm\_spec B -9.7588 -17.43420  
## 6 firm\_inv BBB 40.1759 22.67940  
## 7 firm\_inv BBB 10.5096 2.00730  
## 8 firm\_inv A 77.4441 48.40580  
## 9 firm\_inv A 46.6213 33.08540  
## 10 firm\_spec CCC 25.9394 8.83650  
## 11 firm\_spec BB 11.6815 6.68750  
## 12 firm\_spec B 2.4654 1.22190  
## 13 firm\_inv BBB 90.5835 69.67170  
## 14 firm\_spec BB 50.7356 3.87170  
## 15 firm\_spec BB 72.3820 37.57570  
## 16 firm\_inv BBB 41.6959 23.34330  
## 17 firm\_inv BBB 43.5682 26.80690  
## 18 firm\_inv A 59.2894 31.47450  
## 19 firm\_spec B -0.4823 -3.16050  
## 20 firm\_inv BBB 52.1849 51.77530  
## 21 firm\_inv AA 28.5018 9.05510  
## 22 firm\_inv BBB 66.0403 44.40190  
## 23 firm\_inv BBB 44.3080 25.90570  
## 24 firm\_inv BBB 66.0403 39.26170  
## 25 firm\_spec B 7.3450 7.11890  
## 26 firm\_inv BBB 19.7625 4.96050  
## 27 firm\_inv A 49.1118 37.49410  
## 28 firm\_inv BBB 48.5553 24.23820  
## 29 firm\_inv A 35.9252 21.99950  
## 30 firm\_inv BBB 14.4980 9.97430  
## 31 firm\_inv A 52.6248 37.72090  
## 32 firm\_inv BBB 42.0899 14.47750  
## 33 firm\_inv BBB 36.3855 19.27710  
## 34 firm\_spec BB 10.9488 5.16410  
## 35 firm\_inv BBB 19.6869 13.49290  
## 36 firm\_spec B 16.3951 12.37940  
## 37 firm\_spec BB 4.8350 2.53550  
## 38 firm\_inv BBB 19.1930 8.04500  
## 39 firm\_inv BBB 25.9429 -0.49630  
## 40 firm\_inv BBB 66.4298 68.38130  
## 41 firm\_spec B 17.9601 10.43210  
## 42 firm\_spec BB 47.7814 26.84270  
## 43 firm\_spec BB 33.4719 22.98050  
## 44 firm\_spec B 49.2503 9.96250  
## 45 firm\_inv A 53.5343 38.06960  
## 46 firm\_spec B 7.3500 6.36730  
## 47 firm\_spec B -22.3899 -30.90730  
## 48 firm\_inv BBB 13.6124 6.49290  
## 49 firm\_inv A 47.1476 18.41740  
## 50 firm\_spec B 48.8073 23.66570  
## 51 firm\_inv BBB 76.6323 64.75210  
## 52 firm\_inv A 22.7399 8.87230  
## 53 firm\_inv A 21.0362 12.34860  
## 54 firm\_inv BBB 22.1672 12.59060  
## 55 firm\_inv A 38.5730 20.97640  
## 56 firm\_inv AAA 70.6492 15.15008  
## 57 firm\_spec BB 5.5225 3.98000  
## 58 firm\_inv BBB 9.1851 5.43690  
## 59 firm\_inv BBB 56.4083 55.80420  
## 60 firm\_spec B 33.9562 11.65480  
## 61 firm\_inv A 49.7780 34.58950  
## 62 firm\_inv A 70.2329 36.94670  
## 63 firm\_spec BB 31.6153 25.85500  
## 64 firm\_spec B 13.3353 8.59010  
## 65 firm\_spec B 25.1280 4.59860  
## 66 firm\_spec B 20.1241 -3.76290  
## 67 firm\_inv BBB 27.3564 20.63080  
## 68 firm\_inv A 48.0540 28.60190  
## 69 firm\_spec B 7.4283 5.04510  
## 70 firm\_inv A 7.5041 -0.99730  
## 71 firm\_spec B 4.6764 -23.33590  
## 72 firm\_inv BBB 17.5199 -9.98350  
## 73 firm\_spec B 10.5382 5.76170  
## 74 firm\_spec B -5.7730 -31.73750  
## 75 firm\_inv AA 11.7693 6.33660  
## 76 firm\_inv BBB 35.4139 29.74770  
## 77 firm\_inv BBB 73.4550 38.52420  
## 78 firm\_inv BBB 41.7899 27.73240  
## 79 firm\_spec BB 13.2888 7.98760  
## 80 firm\_inv BBB 22.5997 14.90550  
## 81 firm\_inv BBB 49.2494 28.33900  
## 82 firm\_inv BBB 9.9798 4.72550  
## 83 firm\_inv A 10.8671 6.00290  
## 84 firm\_inv AA 11.8830 1.01050  
## 85 firm\_inv AA 13.1158 4.73920  
## 86 firm\_spec B 24.6726 6.07650  
## 87 firm\_spec BB 16.2502 5.76970  
## 88 firm\_inv BBB 7.8813 6.17330  
## 89 firm\_spec B 1.8607 -0.82550  
## 90 firm\_spec B -10.7873 -40.83900  
## 91 firm\_inv AA -28.5000 -37.10000  
## 92 firm\_spec B 37.0758 -1.25280  
## 93 firm\_spec BB 6.9324 -0.92430  
## 94 firm\_spec B 23.0196 8.17700  
## 95 firm\_inv BBB 76.9964 49.04830  
## 96 firm\_spec BB 23.1148 17.14660  
## 97 firm\_inv BBB 56.8519 31.71300  
## 98 firm\_inv BBB 35.6643 19.02100  
## 99 firm\_inv BBB 39.6989 21.97680  
## 100 firm\_spec B 53.1319 13.28600  
## 101 firm\_inv BBB 28.0535 14.88950  
## 102 firm\_inv A 12.2292 6.91810  
## 103 firm\_inv A 41.1083 18.53950  
## 104 firm\_spec BB 6.7794 3.63630  
## 105 firm\_inv BBB 27.0274 19.99170  
## 106 firm\_inv BBB 19.8153 4.59640  
## 107 firm\_spec BB 27.7809 6.13610  
## 108 firm\_spec BB 42.9550 25.47860  
## 109 firm\_inv AA -6.0681 4.87600  
## 110 firm\_inv BBB 53.0035 -8.27860  
## 111 firm\_inv BBB 56.3578 56.69500  
## 112 firm\_spec BB 23.2916 16.70390  
## 113 firm\_inv BBB 40.8014 23.78420  
## 114 firm\_spec BB 50.3015 19.01960  
## 115 firm\_inv BBB 40.5618 21.06740  
## 116 firm\_spec BB 12.0189 7.79150  
## 117 firm\_spec BB 6.8805 3.96340  
## 118 firm\_inv AA 41.9370 27.09420  
## 119 firm\_inv BBB 15.3029 11.24040  
## 120 firm\_inv A 34.1462 6.57470  
## 121 firm\_spec CCC 7.4610 3.02430  
## 122 firm\_spec BB 18.1324 9.27830  
## 123 firm\_spec B 14.6979 -18.64610  
## 124 firm\_inv BBB 12.3094 -1.25690  
## 125 firm\_spec BB 81.7365 52.50770  
## 126 firm\_inv BBB 39.7128 22.08360  
## 127 firm\_inv BBB 37.8906 20.30970  
## 128 firm\_inv BBB 32.4416 20.30140  
## 129 firm\_inv A 15.9203 8.96200  
## 130 firm\_inv AA 90.4462 15.15008  
## 131 firm\_inv A 78.9721 51.08880  
## 132 firm\_spec BB 44.4823 14.27350  
## 133 firm\_inv BBB 63.0404 43.65150  
## 134 firm\_inv BBB 62.1275 42.73860  
## 135 firm\_inv BBB 17.5431 10.18490  
## 136 firm\_inv AA 10.5719 3.07450  
## 137 firm\_inv AA 11.8951 6.67810  
## 138 firm\_inv AA 14.5592 8.72970  
## 139 firm\_inv AA 12.2421 6.42990  
## 140 firm\_inv AA 56.4962 28.62130  
## 141 firm\_inv AA 61.0653 48.59190  
## 142 firm\_spec BB 50.6978 13.83690  
## 143 firm\_inv BBB 2.0504 -3.26020  
## 144 firm\_inv BBB 44.5596 27.89290  
## 145 firm\_spec B 12.3616 3.27940  
## 146 firm\_inv BBB 10.5290 5.90310  
## 147 firm\_inv A 9.9532 6.56640  
## 148 firm\_inv A 47.9801 26.15810  
## 149 firm\_spec BB 58.6652 29.40700  
## 150 firm\_spec B 36.9150 27.21560  
## 151 firm\_inv A 0.3112 -2.95400  
## Rendement\_sur\_cap\_prop Rendement\_sur\_actif Croissance\_adj\_des\_Bén\_ann  
## 1 -185.1165 -11.4498 -17.6043  
## 2 4.1950 2.1495 -2.7604  
## 3 38.4525 5.9466 13.1653  
## 4 17.3866 6.4271 40.6421  
## 5 -24.5621 -29.4052 -97.6604  
## 6 15.6311 5.2278 3.8441  
## 7 13.0858 3.8515 -78.1354  
## 8 7.5629 2.6489 -6.1223  
## 9 12.9758 2.2776 12.8690  
## 10 22.5859 12.5980 -62.0127  
## 11 6.3827 2.7938 20.5262  
## 12 -7.3248 -1.5283 103.2396  
## 13 27.3488 11.8437 28.6509  
## 14 -0.4151 -0.2027 84.5040  
## 15 13.3053 4.5626 109.3394  
## 16 18.1878 5.4433 3.7596  
## 17 26.5778 6.2966 -9.5273  
## 18 2.0602 1.1797 -25.2551  
## 19 36.1536 -7.1981 -97.6604  
## 20 15.5813 4.4523 6.4297  
## 21 4.5518 1.2669 -3.5511  
## 22 2.9732 0.4283 3.7172  
## 23 0.9061 0.5017 31.6074  
## 24 -0.7506 -0.0974 1.1305  
## 25 7.8002 3.0578 -19.5324  
## 26 1.4818 0.9582 -9.3518  
## 27 23.6310 9.9202 13.8381  
## 28 16.1756 7.2368 9.5568  
## 29 9.9686 4.5536 109.3394  
## 30 18.1937 4.2298 24.3146  
## 31 17.4307 4.5434 8.7917  
## 32 2.8859 1.5433 123.8227  
## 33 4.3581 2.1944 -9.5637  
## 34 4.6031 1.3620 23.3607  
## 35 17.1286 6.7839 6.4297  
## 36 28.2033 12.5538 0.7770  
## 37 5.2297 1.9264 -9.3458  
## 38 11.9665 6.1901 40.6421  
## 39 -2.2570 -1.0241 -24.9158  
## 40 -17.6640 -3.7356 -4.6268  
## 41 26.4204 5.7708 8.1115  
## 42 16.7937 5.4550 3.3766  
## 43 -50.0981 -14.4706 119.9377  
## 44 1.3338 0.8315 -7.3814  
## 45 16.1556 4.5395 21.4056  
## 46 -130.7433 -30.6379 28.6509  
## 47 -145.4856 -19.1433 -9.3318  
## 48 18.8397 6.4650 -18.4635  
## 49 -24.2252 -2.0353 31.6074  
## 50 2.4062 1.7372 149.6044  
## 51 37.9223 6.8867 127.2198  
## 52 20.8081 1.8748 7.2078  
## 53 12.3648 3.2525 5.1088  
## 54 6.7898 2.5150 23.4155  
## 55 6.2475 2.0927 5.2709  
## 56 4.5968 0.6898 -12.2642  
## 57 7.8584 3.7778 -45.1814  
## 58 11.4583 4.1417 16.4063  
## 59 8.5349 3.8938 0.8958  
## 60 -0.6014 -0.2361 -9.5637  
## 61 10.4029 3.2352 3.4595  
## 62 8.8596 2.7436 8.8296  
## 63 8.9689 5.3721 28.6509  
## 64 -65.8721 4.7793 127.2198  
## 65 -3.1940 -7.0403 89.8447  
## 66 -15.1548 -3.8610 109.3394  
## 67 23.5246 7.9107 17.6845  
## 68 -15.1548 2.1476 0.7503  
## 69 3.8678 1.2414 -9.3318  
## 70 -9.2573 -1.7173 -25.2551  
## 71 -17.0753 -7.5219 -36.6009  
## 72 -7.9975 -4.0090 23.5876  
## 73 9.8981 4.7586 47.1767  
## 74 -16.2483 -10.5482 -23.6834  
## 75 9.0229 5.2605 -18.4635  
## 76 19.0585 7.3572 -7.3373  
## 77 -6.9959 -0.4351 16.1838  
## 78 13.3837 4.4157 -15.8080  
## 79 16.1446 4.0595 23.5082  
## 80 15.1530 6.2736 2.0820  
## 81 14.6277 8.3852 29.8369  
## 82 9.3318 3.2530 31.9177  
## 83 16.3942 6.8232 0.1168  
## 84 7.7789 -0.1061 7.0480  
## 85 5.1480 0.6569 -37.6445  
## 86 -1.6024 -0.7619 121.0583  
## 87 6.1745 1.7901 -50.3616  
## 88 12.2711 6.4702 0.7503  
## 89 -71.5223 -2.1123 10.0474  
## 90 -32.1790 -14.2860 -37.6445  
## 91 0.0000 0.0000 -9.3518  
## 92 -7.7133 -3.3964 -7.3373  
## 93 -5.5010 -2.1745 -81.2500  
## 94 22.3611 4.9753 89.8447  
## 95 38.3050 3.0821 10.0474  
## 96 20.6270 11.1393 -50.3616  
## 97 14.6381 3.4333 1.3201  
## 98 10.6977 2.5908 -3.0418  
## 99 8.9143 2.2071 5.7610  
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## 104 22.0271 5.5407 47.9648  
## 105 10.6018 4.9885 29.3074  
## 106 3.9632 1.9093 -19.5324  
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## 109 2.1813 1.2273 -37.6445  
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## 111 9.7152 5.3154 10.4391  
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## 122 13.4029 3.9111 47.1767  
## 123 -16.4565 -5.7501 -51.1392  
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## 127 16.7828 4.9161 7.2078  
## 128 16.8302 9.1161 36.9550  
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## 130 18.2208 1.9691 89.8447  
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## 133 15.2510 4.1776 4.8286  
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## 135 10.0027 4.3919 -13.3783  
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## 142 1.2446 0.5405 13.4405  
## 143 -5.5866 -3.1716 -90.2182  
## 144 0.8754 0.5105 -61.4061  
## 145 4.0104 1.3774 -29.9901  
## 146 2.8255 0.5282 31.9177  
## 147 8.6242 4.3702 -18.4635  
## 148 2.1829 0.4037 -1.9029  
## 149 5.5196 2.9821 23.2783  
## 150 -71.5518 24.6134 -16.0382  
## 151 0.4290 3.6962 -62.0127  
## Croissance\_tot\_actif ratio\_ben\_avt\_impot\_sur\_frais\_int  
## 1 21.8644 -1.3647  
## 2 22.2947 3.3610  
## 3 21.1231 3.4375  
## 4 -19.0753 10.2570  
## 5 4.9197 2.3617  
## 6 25.3036 2.0306  
## 7 18.7131 0.3190  
## 8 4.7115 2.3394  
## 9 4.1749 3.0470  
## 10 -13.3988 0.9503  
## 11 11.4397 3.1724  
## 12 7.9414 0.6175  
## 13 5.5540 15.5632  
## 14 -1.0373 0.5627  
## 15 5.4738 4.5737  
## 16 5.3733 4.6812  
## 17 22.0551 4.7920  
## 18 -1.7699 1.4410  
## 19 -1.9913 -0.7444  
## 20 21.8644 2.4897  
## 21 4.9197 1.2536  
## 22 5.5583 2.5328  
## 23 27.8332 1.8905  
## 24 12.4512 1.7155  
## 25 10.4016 3.8235  
## 26 -2.5994 1.4637  
## 27 6.6809 10.3959  
## 28 5.3499 6.6124  
## 29 5.1785 101.5000  
## 30 6.0466 13.5359  
## 31 3.7154 3.0246  
## 32 9.7494 1.7971  
## 33 -1.0373 2.1622  
## 34 7.1344 2.5545  
## 35 21.8663 7.7204  
## 36 -9.1360 15.8659  
## 37 6.6257 3.0162  
## 38 7.6573 3.3190  
## 39 1.1901 -0.0801  
## 40 13.7129 1.6308  
## 41 9.0904 2.0906  
## 42 2.4996 4.0396  
## 43 8.5717 3.0151  
## 44 3.4524 0.8171  
## 45 4.2020 2.8676  
## 46 -19.0753 1.7592  
## 47 7.2388 -2.6628  
## 48 15.2777 1.7267  
## 49 6.6809 1.0449  
## 50 -8.8622 3.2301  
## 51 -0.4772 2.3617  
## 52 5.9504 1.1097  
## 53 14.7303 2.1477  
## 54 5.8408 4.2274  
## 55 14.7595 2.9398  
## 56 5.6726 -0.1499  
## 57 -1.1819 3.5770  
## 58 2.5839 4.3367  
## 59 5.1417 2.4252  
## 60 6.7830 0.5780  
## 61 15.2777 2.9353  
## 62 6.9019 2.3119  
## 63 6.5632 4.3946  
## 64 10.4016 2.0077  
## 65 8.5717 0.3697  
## 66 5.5583 -0.2607  
## 67 -10.7829 8.4899  
## 68 1.3450 1.3800  
## 69 2.6301 2.2552  
## 70 17.8841 -0.5046  
## 71 1.3043 -3.6896  
## 72 -3.1389 -4.7957  
## 73 -1.7699 6.1235  
## 74 -1.7699 -41.7407  
## 75 0.6560 14.4681  
## 76 43.3830 51.6923  
## 77 18.5960 0.9994  
## 78 8.4147 2.9604  
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## 80 14.3051 3.9490  
## 81 0.2769 9.1854  
## 82 43.3830 2.9673  
## 83 7.3691 22.7596  
## 84 3.8990 0.3414  
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## 86 -4.5535 0.7273  
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## 90 22.2745 -3.3044  
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## 92 -11.0750 -0.1499  
## 93 1.2872 -0.4444  
## 94 11.6639 2.7058  
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## 105 24.1028 4.7763  
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## 108 1.3872 2.5371  
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## 111 0.6863 4.1380  
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## 144 -9.1360 2.0062  
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## 149 -10.6301 6.2218  
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## ratio\_tot\_dette\_sur\_tot\_actif ratio\_tot\_liab\_sur\_tot\_actif  
## 1 83.8204 0.9905123  
## 2 23.7270 0.5113357  
## 3 33.2937 0.8414928  
## 4 20.6607 0.5705795  
## 5 12.2964 5.0269536  
## 6 36.1231 0.5657440  
## 7 37.8459 0.6277350  
## 8 51.4528 0.6497126  
## 9 43.9340 0.6379302  
## 10 27.9349 0.4172045  
## 11 31.7247 0.5857845  
## 12 71.6639 0.8150179  
## 13 12.4707 0.3280997  
## 14 31.2385 0.5016626  
## 15 32.7711 1.5814384  
## 16 43.7203 0.6440661  
## 17 52.7413 0.6643552  
## 18 5.6160 4.8719228  
## 19 39.3240 1.2367051  
## 20 45.1792 0.6349896  
## 21 63.1337 0.7347615  
## 22 45.9300 0.1035474  
## 23 40.5307 0.6061483  
## 24 30.8313 0.4920008  
## 25 34.8486 0.4522787  
## 26 13.4197 0.3274813  
## 27 32.6535 0.5879545  
## 28 29.1740 0.5520923  
## 29 18.8636 0.5509287  
## 30 39.9963 0.7179724  
## 31 45.0210 0.6547096  
## 32 40.7648 0.6406721  
## 33 38.1871 0.4805242  
## 34 40.8565 0.6780478  
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## 40 41.9915 0.5582236  
## 41 61.3604 0.7387453  
## 42 45.9827 0.6117470  
## 43 37.9283 0.7359733  
## 44 24.1725 0.3706059  
## 45 48.5011 0.6998555  
## 46 77.4310 1.3852658  
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## 49 88.0736 0.9549876  
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## 52 54.5423 0.8361510  
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## 55 26.9766 0.6756851  
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## 57 32.1263 0.5092732  
## 58 33.6728 0.6469115  
## 59 46.4845 0.4780856  
## 60 35.6124 0.5691599  
## 61 43.4162 0.6233803  
## 62 46.8080 0.6873827  
## 63 30.8584 4.1961547  
## 64 98.6493 1.2057409  
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## 66 63.4306 0.7753994  
## 67 31.1161 0.6620076  
## 68 97.3918 1.0339532  
## 69 43.0054 0.6731603  
## 70 26.4510 0.8310308  
## 71 23.9500 0.5852470  
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## 77 73.6913 0.9034344  
## 78 52.9750 0.6842581  
## 79 49.6042 0.7346033  
## 80 40.2234 0.5935887  
## 81 20.8495 0.4124504  
## 82 46.6854 0.6882040  
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## 84 26.4721 1.0000000  
## 85 8.9720 0.6028192  
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## 90 46.2764 0.5914087  
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## 93 37.7408 0.6335242  
## 94 54.2160 0.7727641  
## 95 68.8514 0.8558260  
## 96 13.8920 0.4325544  
## 97 51.9649 0.7022838  
## 98 48.5481 0.7381125  
## 99 49.5666 0.7298851  
## 100 27.5527 0.4214727  
## 101 13.4755 0.7560321  
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## 104 42.4216 0.7512658  
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## 106 26.1266 0.5115308  
## 107 45.7090 0.5328726  
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## 112 35.7198 0.5931754  
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## 119 13.0011 1.7625755  
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## 149 14.5212 0.4070842  
## 150 47.8533 1.0509670  
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## 1 -1.055656273 0.35654421  
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## 6 -0.033644138 0.70093319  
## 7 -0.070868170 0.19695370  
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## 13 -0.219003424 1.19234007  
## 14 -0.565694124 3.57577120  
## 15 -0.038575409 1.86475157  
## 16 -0.077012603 0.81395111  
## 17 -0.394241687 0.86124197  
## 18 0.575133498 1.18140510  
## 19 -0.435968284 -0.04440091  
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## 49 -0.189988730 0.77372636  
## 50 -0.479652694 0.74789715  
## 51 -0.044738676 1.09746589  
## 52 0.032848457 0.78006195  
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## 63 0.209281156 1.01715434  
## 64 -0.227310964 0.22032321  
## 65 -0.219269180 0.33814793  
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## 68 -0.033953161 0.83247080  
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## 77 -0.138078255 0.37431025  
## 78 -0.064765199 0.27148021  
## 79 -0.085693256 0.57320141  
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## 81 -1.083010137 1.89975630  
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## 89 -0.151307745 1.09699782  
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## 91 0.005522682 -0.12355212  
## 92 -1.054111652 1.23094823  
## 93 -0.155648100 0.07307692  
## 94 -0.100744084 1.00407494  
## 95 -0.139925704 0.66931212  
## 96 0.464786463 1.32253711  
## 97 0.009258624 0.59876965  
## 98 0.060072595 0.35463918  
## 99 0.036838138 0.36605857  
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## 102 -0.274164617 0.07236393  
## 103 0.154900344 2.08412941  
## 104 0.005709361 0.47521097  
## 105 -0.056797273 1.73781743  
## 106 0.367219673 0.78224777  
## 107 -0.296484232 1.33364342  
## 108 -0.006590650 0.95839924  
## 109 -0.004319225 0.21693785  
## 110 0.042103454 0.30652174  
## 111 0.228617953 0.14158733  
## 112 0.320284108 0.66391559  
## 113 0.200410600 0.75888665  
## 114 0.165821225 3.06564851  
## 115 0.111530104 0.55308642  
## 116 0.133610122 -0.07846355  
## 117 0.009363448 0.48638219  
## 118 0.517072299 0.08673630  
## 119 0.436851881 0.44573434  
## 120 0.172303908 0.98899117  
## 121 -0.232770786 0.02418011  
## 122 -0.386531061 0.78544915  
## 123 -0.218418409 0.15796591  
## 124 0.367141042 1.11599424  
## 125 0.174107317 2.32939331  
## 126 0.061543268 0.21507920  
## 127 0.115102041 0.70452099  
## 128 0.287077190 0.21808015  
## 129 0.185110838 0.71524570  
## 130 0.099418232 -0.40015099  
## 131 -0.083697758 0.40929568  
## 132 -0.153029028 0.76007162  
## 133 0.039837226 0.54903481  
## 134 0.039837226 0.54903481  
## 135 0.282907610 0.94359423  
## 136 0.000000000 0.87257969  
## 137 0.082004746 0.24621142  
## 138 0.000000000 0.26631393  
## 139 0.000000000 0.71096255  
## 140 0.000000000 1.19347252  
## 141 0.737205658 1.44086744  
## 142 -0.305319189 1.97848442  
## 143 0.398243359 0.13739546  
## 144 0.099822306 0.82275132  
## 145 0.242684767 0.30642047  
## 146 0.099680003 0.33979412  
## 147 0.230624497 0.61774675  
## 148 0.229842780 0.95257443  
## 149 -0.485275108 1.27766895  
## 150 -20.229143595 2.20199270  
## 151 -1.015825737 0.15976817  
## ratio\_actuel Ratio\_de\_liquid\_réduite Ratio\_de\_liquidité  
## 1 2.3256 1.8369 1.2927  
## 2 1.1683 0.4615 0.0735  
## 3 0.9667 0.8765 0.7574  
## 4 1.2840 0.5250 0.0383  
## 5 0.4156 0.1519 0.0000  
## 6 0.5885 0.3688 0.0717  
## 7 0.7028 0.4094 0.0183  
## 8 0.2804 0.1518 0.0023  
## 9 2.2385 2.0659 1.2527  
## 10 2.5996 2.1077 1.4312  
## 11 2.1280 1.4044 0.7751  
## 12 1.0232 0.1811 0.0548  
## 13 2.8986 1.5480 1.3952  
## 14 0.7913 0.0239 0.0239  
## 15 0.6133 0.6133 0.0443  
## 16 0.5646 0.3134 0.0148  
## 17 0.5867 0.4604 0.0000  
## 18 1.9100 1.8652 1.8118  
## 19 0.8804 0.2809 0.1683  
## 20 1.9510 1.0344 0.8775  
## 21 1.6209 1.2738 1.1852  
## 22 1.1683 0.9261 0.6129  
## 23 1.0739 0.4721 0.1521  
## 24 0.8784 0.3105 0.0685  
## 25 4.7505 0.1641 0.1641  
## 26 6.5137 4.9893 3.8298  
## 27 0.6601 0.2979 0.0149  
## 28 0.6761 0.4662 0.0948  
## 29 0.8521 0.4300 0.0651  
## 30 1.6614 0.2008 0.0708  
## 31 2.3194 2.1759 1.3221  
## 32 0.6032 0.1974 0.1723  
## 33 1.0612 0.5979 0.1416  
## 34 1.3432 0.7296 0.1486  
## 35 1.8336 1.2682 0.6129  
## 36 2.3288 2.2164 0.4248  
## 37 1.7498 1.0344 0.3237  
## 38 1.3027 0.6890 0.0738  
## 39 0.5592 0.1973 0.1963  
## 40 2.9646 1.4000 1.1494  
## 41 2.4913 1.2584 0.3896  
## 42 1.2924 1.1966 0.9826  
## 43 0.6564 0.6253 0.0836  
## 44 1.0713 0.5782 0.0000  
## 45 0.9072 0.6905 0.0019  
## 46 1.1276 0.0000 0.0000  
## 47 1.8609 0.8336 0.2910  
## 48 2.6029 1.5462 1.0519  
## 49 1.3895 1.2940 1.0533  
## 50 1.9658 0.9920 0.8337  
## 51 0.5757 0.3132 0.0247  
## 52 0.8047 0.3725 0.1266  
## 53 0.7012 0.4207 0.0826  
## 54 2.0604 1.8711 1.1420  
## 55 0.8037 0.4785 0.0506  
## 56 1.3895 0.4168 0.3739  
## 57 3.4361 1.1473 0.0394  
## 58 1.8060 0.5859 0.1323  
## 59 1.6209 0.1641 0.1290  
## 60 1.2493 0.5973 0.4511  
## 61 0.6164 0.2009 0.0886  
## 62 0.5223 0.4243 0.0000  
## 63 5.6849 5.5617 4.6825  
## 64 1.2143 0.7931 0.1624  
## 65 2.6675 0.8252 0.5856  
## 66 1.6418 1.2828 0.6644  
## 67 1.7617 0.9261 0.4335  
## 68 0.3976 0.2274 0.0588  
## 69 1.8661 0.4168 0.0150  
## 70 1.3500 1.2871 1.0175  
## 71 1.6925 1.2341 1.0112  
## 72 1.0651 0.6618 0.3829  
## 73 1.8217 1.1174 0.6097  
## 74 4.7481 3.1575 3.1455  
## 75 1.3774 0.9613 0.3739  
## 76 2.3133 1.4000 0.8223  
## 77 0.4765 0.3874 0.2436  
## 78 0.1350 0.1148 0.0105  
## 79 1.9510 0.7874 0.0396  
## 80 0.8033 0.6095 0.0114  
## 81 2.9646 0.9456 0.9344  
## 82 1.2258 0.2573 0.1290  
## 83 1.2598 0.8445 0.1496  
## 84 1.1565 1.1309 0.1773  
## 85 2.0144 1.0854 1.0854  
## 86 1.2204 1.0125 0.3692  
## 87 1.9013 1.1735 0.6429  
## 88 1.1122 0.4711 0.1456  
## 89 2.6168 1.1999 0.7264  
## 90 2.9654 0.7205 0.6871  
## 91 1.2780 1.2329 1.1673  
## 92 1.3304 0.5195 0.4852  
## 93 1.7769 0.6000 0.0769  
## 94 0.7462 0.4596 0.0352  
## 95 0.9147 0.4032 0.1918  
## 96 2.6950 1.8367 1.1781  
## 97 0.2399 0.1866 0.0000  
## 98 1.2619 0.6928 0.0000  
## 99 0.5967 0.4100 0.0533  
## 100 0.6689 0.5016 0.0000  
## 101 0.7907 0.2133 0.2133  
## 102 0.4727 0.0337 0.0337  
## 103 1.4825 1.2764 0.8701  
## 104 1.1624 0.6002 0.1287  
## 105 0.6774 0.5635 0.0885  
## 106 0.9355 0.3863 0.0741  
## 107 1.9335 1.3260 0.3457  
## 108 0.8787 0.3757 0.0111  
## 109 0.9771 0.9654 0.8775  
## 110 0.8399 0.3362 0.0377  
## 111 1.9094 0.4785 0.1496  
## 112 1.3558 0.9604 0.7175  
## 113 0.8580 0.4691 0.0828  
## 114 0.8625 0.7199 0.0219  
## 115 0.7817 0.6113 0.5101  
## 116 1.1374 0.6012 0.2625  
## 117 0.8097 0.4029 0.2510  
## 118 0.6761 0.1484 0.1484  
## 119 0.8885 0.4033 0.0208  
## 120 0.9401 0.5616 0.1860  
## 121 1.2078 0.3048 0.0037  
## 122 0.9918 0.6444 0.0492  
## 123 1.6919 0.9955 0.7905  
## 124 1.6192 0.7522 0.3696  
## 125 7.0401 6.7676 6.3703  
## 126 0.5857 0.1003 0.0037  
## 127 0.7809 0.4480 0.0960  
## 128 0.9540 0.6188 0.2563  
## 129 0.7892 0.3465 0.0000  
## 130 2.5996 1.2738 1.0785  
## 131 0.1470 0.0684 0.0052  
## 132 1.2005 0.7386 0.3679  
## 133 0.5931 0.2919 0.1041  
## 134 0.5931 0.2919 0.1041  
## 135 2.3367 1.5004 0.4672  
## 136 1.3218 1.2228 0.6272  
## 137 1.0002 0.9617 0.8066  
## 138 1.3007 1.2716 1.0785  
## 139 3.9135 3.8105 3.3868  
## 140 1.5211 1.3372 1.1353  
## 141 2.5467 2.5467 1.7974  
## 142 0.8353 0.5777 0.0697  
## 143 1.3704 0.2652 0.0191  
## 144 0.2923 0.2646 0.0225  
## 145 0.7783 0.6264 0.5624  
## 146 1.1764 0.3188 0.1913  
## 147 1.9916 1.0423 0.4581  
## 148 1.9094 1.4111 1.1494  
## 149 0.9833 0.3972 0.3888  
## 150 2.1446 2.0027 0.6755  
## 151 0.5086 0.4463 0.1544  
## Ratio\_Fonds\_de\_roulmt\_sur\_ventes ratio\_Fonds\_de\_roulement\_sur\_tot\_actif  
## 1 0.5026 1.680962e-01  
## 2 0.1214 3.282121e-02  
## 3 0.0096 -9.330307e-03  
## 4 0.0485 5.867514e-02  
## 5 -0.2012 -4.511401e-01  
## 6 -0.1127 -3.288970e-02  
## 7 -0.0908 -4.692718e-02  
## 8 -0.3686 -4.304091e-02  
## 9 0.1568 5.192830e-02  
## 10 0.2452 1.358155e-01  
## 11 0.2873 2.487763e-01  
## 12 0.0184 1.180351e-02  
## 13 0.3510 1.016174e-01  
## 14 -0.0377 -8.239993e-03  
## 15 -0.0178 -3.587837e-02  
## 16 -0.1855 -7.077777e-02  
## 17 -0.1200 -7.826440e-02  
## 18 0.2755 3.463656e-02  
## 19 -0.0595 -7.336217e-02  
## 20 0.0647 2.336918e-01  
## 21 0.0647 5.786910e-02  
## 22 -0.0519 3.854746e-02  
## 23 0.0198 7.139305e-03  
## 24 0.0114 -5.715727e-03  
## 25 1.2702 4.518933e-01  
## 26 0.7344 2.059401e-01  
## 27 -0.0747 -3.327700e-02  
## 28 -0.0853 -2.752141e-02  
## 29 0.0195 -7.489515e-03  
## 30 0.2684 1.948889e-01  
## 31 0.1519 4.864299e-02  
## 32 -0.1693 -6.616454e-02  
## 33 -0.1426 6.370586e-03  
## 34 0.0780 6.905864e-02  
## 35 0.1631 1.359761e-01  
## 36 0.0661 1.305502e-01  
## 37 0.1965 3.119330e-01  
## 38 0.0337 2.136477e-02  
## 39 -0.2814 -1.280411e-01  
## 40 -0.0456 2.305640e-02  
## 41 0.1771 1.726762e-01  
## 42 0.0833 1.602996e-02  
## 43 -0.0715 -4.753176e-02  
## 44 0.0614 2.293257e-03  
## 45 -0.0881 -2.889477e-03  
## 46 0.0036 9.971877e-02  
## 47 0.4593 1.751809e-01  
## 48 0.1809 1.995964e-01  
## 49 0.0450 2.419546e-02  
## 50 0.4752 4.606167e-02  
## 51 -0.2892 -1.516841e-02  
## 52 -0.0565 -1.761090e-02  
## 53 -0.0765 -3.363313e-02  
## 54 0.2317 1.479934e-01  
## 55 -0.0740 -1.120742e-02  
## 56 0.0036 -1.890912e-02  
## 57 0.2867 5.136890e-01  
## 58 0.2280 2.726210e-01  
## 59 0.0392 1.511609e-01  
## 60 0.2765 2.541722e-02  
## 61 -0.1476 -2.999775e-02  
## 62 -0.2451 -3.922241e-02  
## 63 1.2264 3.620393e-01  
## 64 0.0316 4.841545e-02  
## 65 0.2152 2.675724e-01  
## 66 0.0829 4.504941e-02  
## 67 0.1835 1.253825e-01  
## 68 -0.5636 -4.708135e-02  
## 69 0.2023 2.212899e-01  
## 70 0.1306 7.257609e-02  
## 71 0.2895 6.088114e-02  
## 72 0.0249 9.117807e-03  
## 73 0.2292 2.864847e-01  
## 74 0.8714 2.581497e-01  
## 75 0.0487 4.110271e-02  
## 76 0.3053 1.273938e-01  
## 77 -0.6721 -5.268605e-02  
## 78 -0.8202 -2.069120e-01  
## 79 0.1536 1.651130e-01  
## 80 -0.0220 -2.138408e-02  
## 81 0.3138 1.332305e-01  
## 82 0.0522 5.736870e-02  
## 83 0.0475 8.592478e-02  
## 84 0.0153 1.426413e-02  
## 85 0.1502 8.704437e-02  
## 86 0.0541 1.563692e-02  
## 87 0.1201 1.124338e-01  
## 88 0.0147 1.902672e-02  
## 89 0.2448 2.345038e-01  
## 90 0.3376 1.208249e-01  
## 91 0.0730 4.260355e-02  
## 92 0.1715 2.631457e-02  
## 93 0.1005 1.051536e-01  
## 94 -0.0406 -5.037015e-02  
## 95 0.0455 -1.137645e-02  
## 96 0.2213 2.024174e-01  
## 97 -0.9912 -7.626363e-02  
## 98 0.0392 2.304900e-02  
## 99 -0.2783 -5.276050e-02  
## 100 -0.0456 -1.777202e-02  
## 101 -0.1038 -8.479784e-03  
## 102 -0.0933 -1.107587e-01  
## 103 0.1185 2.353787e-02  
## 104 0.0102 3.317893e-02  
## 105 -0.0652 -1.417670e-02  
## 106 -0.0444 -5.941876e-03  
## 107 0.1435 6.168375e-02  
## 108 -0.0519 -1.577232e-02  
## 109 -0.0150 -3.319232e-03  
## 110 -0.2320 -1.898952e-02  
## 111 0.1771 2.970044e-01  
## 112 0.1296 7.998726e-02  
## 113 -0.0927 -2.288014e-02  
## 114 -0.0084 -7.146751e-03  
## 115 -0.1086 -3.956283e-02  
## 116 -0.0172 5.343355e-02  
## 117 -0.0153 -5.663257e-02  
## 118 -0.5355 -1.563982e-01  
## 119 0.0257 -3.196100e-02  
## 120 -0.0292 -7.055403e-03  
## 121 0.0720 9.128627e-02  
## 122 0.0106 -1.209456e-03  
## 123 0.1421 5.266879e-02  
## 124 0.1894 4.368488e-02  
## 125 0.9029 1.644673e-01  
## 126 -0.3276 -2.516714e-01  
## 127 -0.0759 -3.215273e-02  
## 128 0.1424 -8.557387e-03  
## 129 -0.0829 -2.606122e-02  
## 130 0.1435 1.051066e-01  
## 131 -0.5655 -2.128792e-01  
## 132 0.1398 2.355911e-02  
## 133 -0.4926 -5.286113e-02  
## 134 -0.4926 -5.286113e-02  
## 135 0.1378 1.616690e-01  
## 136 0.0317 1.483478e-02  
## 137 0.0264 2.949023e-05  
## 138 0.2048 3.178894e-02  
## 139 0.4553 1.581148e-01  
## 140 0.2631 3.630738e-02  
## 141 0.0487 8.479697e-02  
## 142 -0.0551 -1.168217e-02  
## 143 0.1087 6.640960e-02  
## 144 -0.8243 -5.592140e-02  
## 145 -0.0395 -7.464973e-02  
## 146 0.0414 3.977998e-02  
## 147 0.0812 1.124670e-01  
## 148 0.2818 4.877032e-02  
## 149 -0.0230 -9.554319e-04  
## 150 0.1435 2.301868e-01  
## 151 -0.1354 -7.501488e-02  
## Total\_actif Marge\_opérationnelle Beta\_applique  
## 1 1593.0100 -27.5483 1.2085  
## 2 46799.0000 9.2993 1.0000  
## 3 27759.0000 8.6247 1.0733  
## 4 28939.0000 12.3218 1.1021  
## 5 1228.0000 -17.4342 2.3194  
## 6 10911.4700 22.6794 0.5344  
## 7 19794.5000 2.0073 0.9480  
## 8 9566.1780 48.4058 1.0000  
## 9 21703.0000 33.0854 0.5221  
## 10 2093.4650 8.8365 1.3893  
## 11 2097.9730 6.6875 0.8482  
## 12 1989.9170 1.2219 0.9505  
## 13 44392.0000 69.6717 0.3537  
## 14 5914.0830 3.8717 2.0469  
## 15 997.7600 37.5757 1.2637  
## 16 60146.0000 23.3433 0.7245  
## 17 24660.0000 26.8069 0.4252  
## 18 245.7346 31.4745 0.9458  
## 19 24972.0000 -3.1605 1.7643  
## 20 5374.6000 51.7753 0.7601  
## 21 2360.5170 9.0551 1.0000  
## 22 6157.2000 44.4019 0.6997  
## 23 56308.0000 25.9057 0.8368  
## 24 35691.0000 39.2617 0.6682  
## 25 7215.5681 7.1189 1.0000  
## 26 7427.2480 4.9605 1.1317  
## 27 43784.0000 37.4941 1.0863  
## 28 78121.0000 24.2382 1.3270  
## 29 10014.0000 21.9995 0.3537  
## 30 19518.3000 9.9743 0.9966  
## 31 20044.0000 37.7209 0.4718  
## 32 8630.0000 14.4775 0.6281  
## 33 5494.0000 19.2771 1.0000  
## 34 5184.0000 5.1641 0.6822  
## 35 7038.0000 13.4929 1.1166  
## 36 1303.3070 12.3794 2.3266  
## 37 3560.7000 2.5355 1.1021  
## 38 35713.0000 8.0450 1.8109  
## 39 3197.1300 -0.4963 0.8278  
## 40 15576.1950 68.3813 0.7065  
## 41 717.4990 10.4321 0.5813  
## 42 6804.1970 26.8427 0.5782  
## 43 3970.8820 22.9805 1.5610  
## 44 1451.6470 9.9625 1.6060  
## 45 16612.0000 38.0696 1.0000  
## 46 161.4340 6.3673 1.0000  
## 47 1146.3010 -30.9073 0.6446  
## 48 4955.0000 6.4929 0.2955  
## 49 1196.0920 18.4174 1.0000  
## 50 4648.9200 23.6657 0.5057  
## 51 43050.0000 64.7521 1.0000  
## 52 8874.8460 8.8723 0.8656  
## 53 5117.9890 12.3486 1.0000  
## 54 6775.3000 12.5906 1.0000  
## 55 11421.0000 20.9764 1.0000  
## 56 64572.0000 43.9270 1.0000  
## 57 1924.9000 3.9800 1.1541  
## 58 5990.0000 5.4369 1.2499  
## 59 10161.3600 55.8042 0.7601  
## 60 24747.0000 11.6548 1.4612  
## 61 53404.0000 34.5895 0.5025  
## 62 4831.4980 36.9467 1.0000  
## 63 991.9670 25.8550 1.0000  
## 64 1888.9630 8.5901 1.0000  
## 65 1036.3700 4.5986 0.8656  
## 66 12323.8030 -3.7629 1.0000  
## 67 14434.6832 20.6308 1.0000  
## 68 6583.3930 28.6019 1.0000  
## 69 1072.5498 5.0451 1.0000  
## 70 1328.0572 -0.9973 1.0000  
## 71 4455.9610 -23.3359 2.3266  
## 72 33122.0000 -9.9835 1.3205  
## 73 942.8880 5.7617 1.1317  
## 74 3862.1000 -31.7375 0.1894  
## 75 42187.0000 6.3366 1.0076  
## 76 13960.4240 29.7477 0.5829  
## 77 6372.1040 38.5242 0.4701  
## 78 12951.4000 27.7324 1.0693  
## 79 1025.7400 7.9876 0.9458  
## 80 7514.1880 14.9055 1.0651  
## 81 9076.0000 28.3390 0.2955  
## 82 36309.0000 4.7255 0.7065  
## 83 25790.0000 6.0029 1.2842  
## 84 4900.6850 1.0105 1.6060  
## 85 1830.8250 4.7392 1.0076  
## 86 7866.0000 6.0765 1.2514  
## 87 5196.6150 5.7697 1.5894  
## 88 11073.9000 6.1733 0.6281  
## 89 381.9170 -0.8255 0.3537  
## 90 822.6950 -40.8390 0.0733  
## 91 5070.0000 -37.1000 1.0000  
## 92 2158.5000 -1.2528 0.5733  
## 93 1921.0000 -0.9243 1.0280  
## 94 792.6520 8.1770 1.4274  
## 95 10478.6680 49.0483 0.7372  
## 96 6205.0000 17.1466 0.9480  
## 97 14581.0000 31.7130 1.0000  
## 98 5510.0000 19.0210 1.0000  
## 99 31842.0000 21.9768 0.5206  
## 100 2331.3610 13.2860 1.8588  
## 101 48822.0000 14.8895 1.7643  
## 102 216.3080 6.9181 0.9094  
## 103 510.7090 18.5395 1.0000  
## 104 9283.0000 3.6363 0.8784  
## 105 33153.0000 19.9917 1.1436  
## 106 16998.0000 4.5964 0.7245  
## 107 3269.8400 6.1361 2.0148  
## 108 9725.9000 25.4786 1.0000  
## 109 3007.0210 4.8760 1.0000  
## 110 11638.0000 -8.2786 2.3266  
## 111 15188.3260 56.6950 0.5829  
## 112 2229.4300 16.7039 0.9094  
## 113 37019.0000 23.7842 0.7320  
## 114 8437.4000 19.0196 1.1211  
## 115 15646.0000 21.0674 0.7331  
## 116 11644.7240 7.7915 1.4274  
## 117 13499.3000 3.9634 1.0000  
## 118 3971.5800 27.0942 1.3205  
## 119 1292.2000 11.2404 1.0000  
## 120 89435.0000 6.5747 1.2715  
## 121 923.3590 3.0243 1.0505  
## 122 3638.0000 9.2783 0.8981  
## 123 883.9960 -18.6461 2.3194  
## 124 39350.0000 -1.2569 1.2666  
## 125 5921.9510 52.5077 1.0000  
## 126 16005.0000 22.0836 1.1021  
## 127 37975.0000 20.3097 0.7215  
## 128 17295.0000 20.3014 0.7608  
## 129 5778.7000 8.9620 1.0000  
## 130 14552.5420 83.9205 2.0148  
## 131 459.8570 51.0888 0.7372  
## 132 9508.0000 14.2735 0.7877  
## 133 99279.0000 43.6515 1.1173  
## 134 99279.0000 42.7386 1.0000  
## 135 3781.8000 10.1849 0.9170  
## 136 6816.4150 3.0745 1.0000  
## 137 2238.0290 6.6781 2.0148  
## 138 10727.0000 8.7297 0.5782  
## 139 3649.2990 6.4299 1.0000  
## 140 3063.1790 28.6213 1.0000  
## 141 792.4870 48.5919 2.3194  
## 142 5866.1200 13.8369 1.2637  
## 143 4668.0000 -3.2602 0.8656  
## 144 9567.0000 27.8929 1.0000  
## 145 6758.0550 3.2794 0.7204  
## 146 47813.0000 5.9031 0.8040  
## 147 392.7640 6.5664 1.2499  
## 148 798.4980 26.1581 1.0000  
## 149 7117.2000 29.4070 0.1613  
## 150 326.8780 27.2156 0.4252  
## 151 1397.9760 -2.9540 1.8588

matrixx <- matrix(0, ncol(variables\_2019)-2, 6)  
  
rownames(matrixx) <- colnames(variables\_2019[c(-1,-2)])  
colnames(matrixx) <- c("Moyenne", "Ecart\_Type\_en\_%", "Min", "Max", "1er\_quartile", "3eme\_quartile")  
  
  
  
 for(j in 1:nrow(matrixx)){ #19  
 matrixx[j,1] <- round(mean(as.numeric(unlist(variables\_2019[,(j+2)]))), digits = 3)  
 matrixx[j,2] <- round(sqrt(var(variables\_2019[ ,(j+2)])), digits = 1)  
 matrixx[j,3] <- round(min(variables\_2019[ ,(j+2)]), digits = 3)  
 matrixx[j,4] <- round(max(variables\_2019[ ,(j+2)]), digits = 3)  
 matrixx[j,5] <- round(quantile(variables\_2019[ ,(j+2)], 0.25), digits = 3)  
 matrixx[j,6] <- round(quantile(variables\_2019[ ,(j+2)], 0.75), digits = 3)  
 }  
  
  
print(matrixx)

## Moyenne Ecart\_Type\_en\_% Min  
## Marge\_sur\_EBITDA 30.642 23.3 -28.500  
## Marge\_sur\_EBIT 15.150 19.0 -40.839  
## Rendement\_sur\_cap\_prop 2.997 29.6 -185.116  
## Rendement\_sur\_actif 2.040 6.4 -30.638  
## Croissance\_adj\_des\_Bén\_ann 7.606 44.4 -97.660  
## Croissance\_tot\_actif 6.514 10.7 -28.502  
## ratio\_ben\_avt\_impot\_sur\_frais\_int 4.228 11.1 -41.741  
## ratio\_tot\_dette\_sur\_tot\_actif 38.713 20.8 0.000  
## ratio\_tot\_liab\_sur\_tot\_actif 0.767 0.6 0.104  
## ratio\_B\_non\_rep\_sur\_Tot\_actif -0.121 1.7 -20.229  
## ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour 0.740 0.6 -0.400  
## ratio\_actuel 1.475 1.1 0.135  
## Ratio\_de\_liquid\_réduite 0.896 0.9 0.000  
## Ratio\_de\_liquidité 0.519 0.8 0.000  
## Ratio\_Fonds\_de\_roulmt\_sur\_ventes 0.045 0.3 -0.991  
## ratio\_Fonds\_de\_roulement\_sur\_tot\_actif 0.045 0.1 -0.451  
## Total\_actif 14224.165 19157.1 161.434  
## Marge\_opérationnelle 15.796 19.9 -40.839  
## Beta\_applique 1.029 0.5 0.073  
## Max 1er\_quartile 3eme\_quartile  
## Marge\_sur\_EBITDA 90.584 12.236 48.017  
## Marge\_sur\_EBIT 69.672 5.105 25.880  
## Rendement\_sur\_cap\_prop 89.578 0.891 15.606  
## Rendement\_sur\_actif 24.613 0.506 5.054  
## Croissance\_adj\_des\_Bén\_ann 149.604 -12.821 23.320  
## Croissance\_tot\_actif 43.383 1.296 11.294  
## ratio\_ben\_avt\_impot\_sur\_frais\_int 101.500 1.317 4.288  
## ratio\_tot\_dette\_sur\_tot\_actif 113.002 23.974 48.544  
## ratio\_tot\_liab\_sur\_tot\_actif 5.027 0.531 0.774  
## ratio\_B\_non\_rep\_sur\_Tot\_actif 0.737 -0.081 0.192  
## ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour 3.576 0.303 1.011  
## ratio\_actuel 7.040 0.797 1.884  
## Ratio\_de\_liquid\_réduite 6.768 0.392 1.185  
## Ratio\_de\_liquidité 6.370 0.057 0.722  
## Ratio\_Fonds\_de\_roulmt\_sur\_ventes 1.270 -0.062 0.160  
## ratio\_Fonds\_de\_roulement\_sur\_tot\_actif 0.514 -0.020 0.103  
## Total\_actif 99279.000 2193.965 15825.500  
## Marge\_opérationnelle 83.920 5.105 26.483  
## Beta\_applique 2.327 0.737 1.132

# vérification calcul écart type -> les autres peuvent être vérifiés avec summary  
apply(variables\_2019[,c(-1,-2)], 2, sd)

## Marge\_sur\_EBITDA Marge\_sur\_EBIT   
## 2.333309e+01 1.895642e+01   
## Rendement\_sur\_cap\_prop Rendement\_sur\_actif   
## 2.964408e+01 6.374985e+00   
## Croissance\_adj\_des\_Bén\_ann Croissance\_tot\_actif   
## 4.442279e+01 1.070760e+01   
## ratio\_ben\_avt\_impot\_sur\_frais\_int ratio\_tot\_dette\_sur\_tot\_actif   
## 1.111271e+01 2.075879e+01   
## ratio\_tot\_liab\_sur\_tot\_actif ratio\_B\_non\_rep\_sur\_Tot\_actif   
## 6.338094e-01 1.676354e+00   
## ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour ratio\_actuel   
## 6.388266e-01 1.080788e+00   
## Ratio\_de\_liquid\_réduite Ratio\_de\_liquidité   
## 9.286134e-01 8.462513e-01   
## Ratio\_Fonds\_de\_roulmt\_sur\_ventes ratio\_Fonds\_de\_roulement\_sur\_tot\_actif   
## 2.957420e-01 1.220195e-01   
## Total\_actif Marge\_opérationnelle   
## 1.915712e+04 1.989914e+01   
## Beta\_applique   
## 4.538962e-01

str(variables\_2000)

## 'data.frame': 104 obs. of 18 variables:  
## $ binaire\_cote\_credit\_2000 : Factor w/ 2 levels "firm\_inv","firm\_spec": 1 1 1 1 1 2 1 1 1 1 ...  
## $ Cote\_crédit : Factor w/ 7 levels "AAA","AA","A",..: 4 4 4 4 4 5 3 4 3 3 ...  
## $ Marge\_bénéficiaire.nette : num 9.37 14.2 30.38 7.61 3.4 ...  
## $ Marge\_sur\_EBITDA : num 18.8 38.6 67.1 15.4 11 ...  
## $ Marge\_sur\_EBIT : num 13.28 15.84 47.46 10.59 6.94 ...  
## $ Rendement\_sur\_cap\_prop : num 34.39 4.49 7.4 15.54 8.78 ...  
## $ Rendement\_sur\_actif : num 10.78 2.79 4.83 6.49 3.43 ...  
## $ ratio\_ben\_avt\_impot\_sur\_frais\_int : num 5.46 2.04 2.33 4.33 2.88 ...  
## $ ratio\_tot\_dette\_sur\_tot\_actif : num 29.1 25.1 22.6 32.4 38 ...  
## $ ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour : num 0.827 1.317 1.415 0.49 0.233 ...  
## $ ratio\_actuel : num 2.474 1.369 1.127 0.646 1.278 ...  
## $ Ratio\_de\_liquid\_réduite : num 1.528 1.275 1.083 0.541 1.104 ...  
## $ Ratio\_de\_liquidité : num 0.7989 0.7323 0.6013 0.0089 0 ...  
## $ Ratio\_Fonds\_de\_roulmt\_sur\_ventes : num 0.2116 0.0828 0.0212 -0.0563 0.0345 ...  
## $ ratio\_Fonds\_de\_roulement\_sur\_tot\_actif: num 0.29463 0.02093 0.00616 -0.09608 0.04503 ...  
## $ Total\_actif : num 2661 686 329 1109 571 ...  
## $ Marge\_opérationnelle : num 13.28 15.84 47.46 10.59 6.94 ...  
## $ Beta\_applique : num 0.822 0.241 1.045 0.312 0.372 ...

str(variables\_2007)

## 'data.frame': 91 obs. of 18 variables:  
## $ binaire\_cote\_credit\_2007 : Factor w/ 2 levels "firm\_inv","firm\_spec": 1 2 2 1 1 1 1 1 2 2 ...  
## $ Cote\_crédit : Factor w/ 7 levels "AAA","AA","A",..: 4 6 6 4 4 3 3 3 6 5 ...  
## $ Marge\_bénéficiaire.nette : num 6.637 -0.306 4.048 7.471 8.404 ...  
## $ Marge\_sur\_EBITDA : num 13.68 10 9.93 17.89 12.71 ...  
## $ Marge\_sur\_EBIT : num 10.57 2.58 4.67 11.31 9.34 ...  
## $ Rendement\_sur\_cap\_prop : num 14.59 -2.17 19.98 9.41 19.53 ...  
## $ Rendement\_sur\_actif : num 6.288 -0.321 3.64 3.763 9.534 ...  
## $ ratio\_ben\_avt\_impot\_sur\_frais\_int : num 9.55 0.7 2.04 3.14 9.58 ...  
## $ ratio\_tot\_dette\_sur\_tot\_actif : num 21.4 45.3 37.4 32.9 18.8 ...  
## $ ratio\_B\_non\_rep\_sur\_Tot\_actif : num 0.24434 -0.22988 0.02724 -0.00329 0.06668 ...  
## $ ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour : num 0.14 0.299 0.183 0.596 0.196 ...  
## $ ratio\_actuel : num 1.564 1.071 0.837 0.941 1.06 ...  
## $ Ratio\_de\_liquid\_réduite : num 0.529 0.907 0.677 0.701 0.744 ...  
## $ Ratio\_de\_liquidité : num 0.1407 0.7017 0.4216 0.0065 0.0454 ...  
## $ Ratio\_Fonds\_de\_roulmt\_sur\_ventes : num 0.2371 -0.0059 -0.0061 -0.2024 0.0077 ...  
## $ ratio\_Fonds\_de\_roulement\_sur\_tot\_actif: num 0.19818 0.02196 -0.04044 -0.00699 0.01394 ...  
## $ Total\_actif : num 12892 10153 11820 2753 1173 ...  
## $ Marge\_opérationnelle : num 10.57 2.58 4.67 11.31 9.34 ...

str(variables\_2008)

## 'data.frame': 99 obs. of 18 variables:  
## $ binaire\_cote\_credit\_2008 : Factor w/ 2 levels "firm\_inv","firm\_spec": 1 2 2 1 1 1 1 1 2 2 ...  
## $ Cote\_crédit : Factor w/ 7 levels "AAA","AA","A",..: 4 6 6 4 4 3 3 3 5 5 ...  
## $ Marge\_bénéficiaire.nette : num 6.637 -0.306 -9.249 7.471 9.058 ...  
## $ Marge\_sur\_EBITDA : num 13.68 10 5.91 17.89 13.59 ...  
## $ Marge\_sur\_EBIT : num 10.574 2.577 -0.352 11.306 9.878 ...  
## $ Rendement\_sur\_cap\_prop : num 14.59 -2.17 -63.96 9.41 21.21 ...  
## $ Rendement\_sur\_actif : num 6.288 -0.321 -8.842 3.763 9.899 ...  
## $ ratio\_ben\_avt\_impot\_sur\_frais\_int : num 9.546 0.7 -0.138 3.137 6.511 ...  
## $ ratio\_tot\_dette\_sur\_tot\_actif : num 21.4 45.3 47.1 32.9 27.3 ...  
## $ ratio\_B\_non\_rep\_sur\_Tot\_actif : num 0.24434 -0.22988 -0.06186 -0.00329 0.04427 ...  
## $ ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour : num 0.1399 0.2987 -0.0265 0.5964 0.6348 ...  
## $ ratio\_actuel : num 1.564 1.071 0.623 0.941 1.126 ...  
## $ Ratio\_de\_liquid\_réduite : num 0.529 0.907 0.443 0.701 0.738 ...  
## $ Ratio\_de\_liquidité : num 0.1407 0.7017 0.2606 0.0065 0.0566 ...  
## $ Ratio\_Fonds\_de\_roulmt\_sur\_ventes : num 0.2371 -0.0059 -0.0871 -0.2024 0.0158 ...  
## $ ratio\_Fonds\_de\_roulement\_sur\_tot\_actif: num 0.19818 0.02196 -0.12786 -0.00699 0.01911 ...  
## $ Total\_actif : num 12892 10153 11364 2753 2132 ...  
## $ Marge\_opérationnelle : num 10.574 2.577 -0.352 11.306 9.878 ...

str(variables\_2009)

## 'data.frame': 102 obs. of 19 variables:  
## $ binaire\_cote\_credit\_2009 : Factor w/ 2 levels "firm\_inv","firm\_spec": 1 2 2 1 1 1 1 1 2 1 ...  
## $ Cote\_crédit : Factor w/ 7 levels "AAA","AA","A",..: 4 7 7 4 4 3 3 3 5 4 ...  
## $ Marge\_bénéficiaire.nette : num 8.862 -2.196 -0.246 7.247 11.175 ...  
## $ Marge\_sur\_EBITDA : num 17.49 7.81 3.53 14.02 19.35 ...  
## $ Marge\_sur\_EBIT : num 15.03 1.54 -3.24 7.79 13.49 ...  
## $ Rendement\_sur\_cap\_prop : num 23.62 -2.17 -2.17 7.6 14.09 ...  
## $ Rendement\_sur\_actif : num 10.533 -2.578 -0.22 2.94 5.936 ...  
## $ ratio\_ben\_avt\_impot\_sur\_frais\_int : num 14.531 0.566 -0.856 1.892 5.37 ...  
## $ ratio\_tot\_dette\_sur\_tot\_actif : num 18 36.1 43.5 37.6 38.6 ...  
## $ ratio\_tot\_liab\_sur\_tot\_actif : num 0.511 1.328 0.842 0.617 0.601 ...  
## $ ratio\_B\_non\_rep\_sur\_Tot\_actif : num 0.3364 -0.5173 -0.0699 -0.0109 0.0133 ...  
## $ ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour : num 0.379 0.2499 -0.0556 0.3323 0.2139 ...  
## $ ratio\_actuel : num 2.083 1.443 0.883 0.63 0.385 ...  
## $ Ratio\_de\_liquid\_réduite : num 0.972 1.22 0.702 0.426 0.263 ...  
## $ Ratio\_de\_liquidité : num 0.3928 0.9106 0.4687 0.0052 0.0267 ...  
## $ Ratio\_Fonds\_de\_roulmt\_sur\_ventes : num 0.2025 0.0536 -0.0926 -0.0881 -0.1932 ...  
## $ ratio\_Fonds\_de\_roulement\_sur\_tot\_actif: num 0.2823 0.1061 -0.0337 -0.058 -0.2013 ...  
## $ Total\_actif : num 13140 9633 10406 3556 2629 ...  
## $ Marge\_opérationnelle : num 15.03 1.54 -3.24 7.79 13.49 ...

str(variables\_2016)

## 'data.frame': 150 obs. of 19 variables:  
## $ binaire\_cote\_credit\_2016 : Factor w/ 2 levels "firm\_inv","firm\_spec": 2 1 2 1 1 1 1 1 2 2 ...  
## $ Cote\_crédit : Factor w/ 7 levels "AAA","AA","A",..: 6 4 5 3 4 4 3 3 7 5 ...  
## $ Marge\_bénéficiaire.nette : num -161.206 4.399 5.968 0.462 11.945 ...  
## $ Marge\_sur\_EBITDA : num -92.8 12.4 14.9 12.5 39.3 ...  
## $ Marge\_sur\_EBIT : num -115.46 8.7 9.16 6.27 21.39 ...  
## $ Rendement\_sur\_cap\_prop : num -4.466 9.727 142.208 0.614 7.026 ...  
## $ Rendement\_sur\_actif : num -29.213 3.551 6.204 0.258 1.978 ...  
## $ ratio\_ben\_avt\_impot\_sur\_frais\_int : num -3.83 4.21 4.26 4.1 1.78 ...  
## $ ratio\_tot\_dette\_sur\_tot\_actif : num 95 30.1 43.8 29.9 51.8 ...  
## $ ratio\_tot\_liab\_sur\_tot\_actif : num 1.101 0.636 0.919 0.564 0.695 ...  
## $ ratio\_B\_non\_rep\_sur\_Tot\_actif : num -0.3647 0.3321 0.0222 0.1043 -0.0674 ...  
## $ ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour : num 0.372 0.3 0.547 0.239 0.534 ...  
## $ ratio\_actuel : num 1.688 1.258 0.983 1.201 0.9 ...  
## $ Ratio\_de\_liquid\_réduite : num 1.372 0.425 0.833 0.477 0.549 ...  
## $ Ratio\_de\_liquidité : num 0.9406 0.0756 0.6734 0.0904 0.202 ...  
## $ Ratio\_Fonds\_de\_roulmt\_sur\_ventes : num 0.1616 0.1188 0.0075 0.0887 -0.0104 ...  
## $ ratio\_Fonds\_de\_roulement\_sur\_tot\_actif: num 0.07797 0.08306 -0.00509 0.04767 -0.00663 ...  
## $ Total\_actif : num 3732 16963 15114 31948 6133 ...  
## $ Marge\_opérationnelle : num -115.46 8.7 9.16 6.27 21.39 ...

str(variables\_2018)

## 'data.frame': 155 obs. of 22 variables:  
## $ binaire\_cote\_credit\_2018 : Factor w/ 2 levels "firm\_inv","firm\_spec": 2 1 2 1 2 1 1 1 1 2 ...  
## $ Cote\_crédit : Factor w/ 7 levels "AAA","AA","A",..: 6 4 5 3 6 4 4 3 3 6 ...  
## $ Marge\_bénéficiaire.nette : num 273.248 18.196 0.205 0.635 -43.092 ...  
## $ Marge\_sur\_EBITDA : num 16.54 10.22 17.85 12.58 -9.76 ...  
## $ Marge\_sur\_EBIT : num -30.41 2.11 8.31 7.26 -17.43 ...  
## $ Rendement\_sur\_cap\_prop : num -4.47 23.39 1.1 1.22 -24.56 ...  
## $ Rendement\_sur\_actif : num 70.658 11.264 0.187 0.43 -29.405 ...  
## $ Croissance\_adj\_des\_Bén\_ann : num -19.1 132.1 34.7 -25.1 12.7 ...  
## $ Croissance\_tot\_actif : num 60.7 23.3 18.2 18.2 11.1 ...  
## $ ratio\_ben\_avt\_impot\_sur\_frais\_int : num -0.753 0.769 2.812 4.217 2.259 ...  
## $ ratio\_tot\_dette\_sur\_tot\_actif : num 73.7 20.3 45.3 24.1 12.3 ...  
## $ ratio\_tot\_liab\_sur\_tot\_actif : num 0.893 0.463 0.85 0.586 0.615 ...  
## $ ratio\_B\_non\_rep\_sur\_Tot\_actif : num -0.811 0.17 0.11 0.114 1.097 ...  
## $ ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour : num 0.0447 0.2462 0.6113 0.2672 -0.02 ...  
## $ ratio\_actuel : num 2.21 1.399 1.11 1.101 0.416 ...  
## $ Ratio\_de\_liquid\_réduite : num 1.689 0.679 0.97 0.426 0.152 ...  
## $ Ratio\_de\_liquidité : num 1.117 0.278 0.829 0.031 0 ...  
## $ Ratio\_Fonds\_de\_roulmt\_sur\_ventes : num -3.0543 0.117 0.0256 0.0184 -0.2012 ...  
## $ ratio\_Fonds\_de\_roulement\_sur\_tot\_actif: num 0.1328 0.0731 0.0286 0.0223 -0.4511 ...  
## $ Total\_actif : num 1831 45502 21883 26638 1228 ...  
## $ Marge\_opérationnelle : num -30.41 2.11 8.31 7.26 -17.43 ...  
## $ Beta\_applique : num 1.06 1.3 1.11 1.29 1.49 ...

str(variables\_2019)

## 'data.frame': 151 obs. of 21 variables:  
## $ binaire\_cote\_credit\_2019 : Factor w/ 2 levels "firm\_inv","firm\_spec": 2 1 2 1 2 1 1 1 1 2 ...  
## $ Cote\_crédit : Factor w/ 7 levels "AAA","AA","A",..: 6 4 5 3 6 4 4 3 3 7 ...  
## $ Marge\_sur\_EBITDA : num 13.09 18.28 19.01 16.73 -9.76 ...  
## $ Marge\_sur\_EBIT : num -27.55 9.3 8.62 12.32 -17.43 ...  
## $ Rendement\_sur\_cap\_prop : num -185.1 4.2 38.5 17.4 -24.6 ...  
## $ Rendement\_sur\_actif : num -11.45 2.15 5.95 6.43 -29.41 ...  
## $ Croissance\_adj\_des\_Bén\_ann : num -17.6 -2.76 13.17 40.64 -97.66 ...  
## $ Croissance\_tot\_actif : num 21.86 22.29 21.12 -19.08 4.92 ...  
## $ ratio\_ben\_avt\_impot\_sur\_frais\_int : num -1.36 3.36 3.44 10.26 2.36 ...  
## $ ratio\_tot\_dette\_sur\_tot\_actif : num 83.8 23.7 33.3 20.7 12.3 ...  
## $ ratio\_tot\_liab\_sur\_tot\_actif : num 0.991 0.511 0.841 0.571 5.027 ...  
## $ ratio\_B\_non\_rep\_sur\_Tot\_actif : num -1.056 0.152 0.126 0.148 0.476 ...  
## $ ratio\_Flux\_de\_TR\_expl\_sur\_passif\_cour : num 0.357 0.401 0.735 0.51 -0.02 ...  
## $ ratio\_actuel : num 2.326 1.168 0.967 1.284 0.416 ...  
## $ Ratio\_de\_liquid\_réduite : num 1.837 0.462 0.876 0.525 0.152 ...  
## $ Ratio\_de\_liquidité : num 1.2927 0.0735 0.7574 0.0383 0 ...  
## $ Ratio\_Fonds\_de\_roulmt\_sur\_ventes : num 0.5026 0.1214 0.0096 0.0485 -0.2012 ...  
## $ ratio\_Fonds\_de\_roulement\_sur\_tot\_actif: num 0.1681 0.03282 -0.00933 0.05868 -0.45114 ...  
## $ Total\_actif : num 1593 46799 27759 28939 1228 ...  
## $ Marge\_opérationnelle : num -27.55 9.3 8.62 12.32 -17.43 ...  
## $ Beta\_applique : num 1.21 1 1.07 1.1 2.32 ...

# (3) ANALYSE UNIVARIEE ---------------------------------------------------