

```
##Prep
```

```
rm(list=ls())
```

```
library("rmarkdown")
```

```
library("tinytex")
```

```
library("readxl")
```

```
library("zoo")
```

```
library("ExcelFunctionsR")
```

```
library("runner")
```

```
library("car")
```

```
library("magrittr")
```

```
library("tidyverse")
```

```
library("DescTools")
```

```
library("dplyr")
```

```
library("formatR")
```

```
library("censReg")
```

```
library("survival")
```

```
library("VGAM")
```

```
library("lmtest")
```

```
library("sandwich")
```

```
library("Metrics")
```

```
data <- read_excel("C:/Users/marki/OneDrive/Skole/Master Thesis/After  
Preliminary/Portfolio/Covid-19 dividends/returns_covid/FF_3_BetaSuite.xlsx",  
                  sheet = "Lins_data_total")
```

```
data$industry_dummy <- as.factor(data$Industry)
```

```
data$excess_cash_scaled <-  
(data$excess_cash_2019*(data$assets_2019+data$cash_holdings_2019))/data$assets_2019
```

```
data$insufficient_cash_scaled <- (data$`insufficient  
cash_2019`*(data$assets_2019+data$cash_holdings_2019))/data$assets_2019
```

```
data$abnormal_cash_scaled <- (data$`abnormal  
cash_2019`*(data$assets_2019+data$cash_holdings_2019))/data$assets_2019
```

```
data$sh_score <- log(data$`Shareholders score 2019`)
```

```
data$LT_debt_2019 <- data$LT_debt_2019/data$assets_2019
```

```
data <- subset(data, data$size_2019 >= 19.3369714758265)
```

```
#Winsorize#
```

```
data <- data %>%
```

```
  mutate(insufficient_cash_scaled_win = Winsorize(insufficient_cash_scaled, probs = c(0.01,0.99),  
na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(abnormal_cash_scaled_win = Winsorize(abnormal_cash_scaled, probs = c(0.01,0.99), na.rm  
= TRUE))
```

```
data <- data %>%
```

```
  mutate(sh_score_win = Winsorize(sh_score, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(Abnormal_annual_returns_win = Winsorize(Abnormal_annual_returns, probs = c(0.01,0.99),  
na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(size_2019_win = Winsorize(size_2019, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(LT_debt_2019_win = Winsorize(LT_debt_2019, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(ST_debt_2019_win = Winsorize(ST_debt_2019, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(cash_holdings_2019_win = Winsorize(cash_holdings_2019, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(profitability_2019_win = Winsorize(profitability_2019, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(btm_2019_win = Winsorize(btm_2019, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(momentum_win = Winsorize(momentum, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(Abnormal_Q1_returns_win = Winsorize(Abnormal_Q1_returns, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
  mutate(excess_cash_scaled_win = Winsorize(excess_cash_scaled, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
mutate(Q1_returns_win = Winsorize(Q1_returns, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
mutate(IdioSR_Q1_win = Winsorize(`Idiosyncratic Risk_Q1`, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
mutate(IdioSR_annual_win = Winsorize(`Idiosyncratic Risk_annual`, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data <- data %>%
```

```
mutate(raw_returns_annual_win = Winsorize(Annual_Excess_returns, probs = c(0.01,0.99), na.rm = TRUE))
```

```
data$IdioSR_Q1 <- data$`Idiosyncratic Risk_Q1`
```

```
data$risk_premium_Q1 <- data$b_mkt_Q1*data$`Mrkt-RF_Q1`
```

```
data$BTM_dummy <- ifelse(data$btm_2019_win < 1, 1,0)
```

```
data$ESG_2 <- ifelse(data$ESG_2019 >= quantile(data$ESG_2019, 0.25, na.rm = TRUE) &  
data$ESG_2019 < quantile(data$ESG_2019, 0.50, na.rm = TRUE), 1, 0)
```

```
data$ESG_3 <- ifelse(data$ESG_2019 >= quantile(data$ESG_2019, 0.50, na.rm = TRUE) &  
data$ESG_2019 < quantile(data$ESG_2019, 0.75, na.rm = TRUE), 1, 0)
```

```
data$ESG_4 <- ifelse(data$ESG_2019 >= quantile(data$ESG_2019, 0.75, na.rm = TRUE), 1, 0)
```

```
data$log_environmental <- log(data$`Environmental Pillar score 2019`)
```

```
data$log_environmental[is.infinite(data$log_environmental)] <- NA
```

```
data$log_governance <- log(data$`Governance Pillar score 2019`)
```

```
data$log_social <- log(data$`Social Pillar score 2019`)
```

```
#Excess cash variables were set to zero by mistake in preparations. Undoing by setting zeros to NA to  
not force results #
```

```
data$excess_cash_scaled_win_constrained <- ifelse(data$excess_cash_scaled_win == 0, NA,  
data$excess_cash_scaled_win)
```

```
data$insufficient_cash_scaled_abs_win <- abs(data$insufficient_cash_scaled_win)
```

```
##Regressions in thesis#
```

```
#Table 12#
```

```
##Raw returns on ESG. Table 12 column 1##
```

```
table_12_col_1 <- lm(Q1_returns_win ~ ESG_2019 + size_2019_win + LT_debt_2019_win +  
  ST_debt_2019_win + cash_holdings_2019_win + profitability_2019_win +  
  btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +  
  MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +  
  + risk_premium_Q1 + industry_dummy,  
  data = data)
```

```
summary(table_12_col_1)
```

```
coeftest(table_12_col_1, vcov. = vcovHC(table_12_col_1, type = "HC1")) %>%  
  round(digits = 3)
```

```
##Abnormal returns on ESG. Table 12 column 2##
```

```
table_12_col_2 <- lm(Abnormal_Q1_returns_win ~ ESG_2019 + size_2019_win + LT_debt_2019_win  
+  
  ST_debt_2019_win + cash_holdings_2019_win + profitability_2019_win +  
  btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +  
  MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +  
  + risk_premium_Q1 + industry_dummy,  
  data = data)
```

```
summary(table_12_col_2)

coeftest(table_12_col_2, vcov. = vcovHC(table_12_col_2, type = "HC1")) %>%
  round(digits = 3)
```

#Table 13#

##Raw returns on environmental pillar. Table 13 column 1##

```
table_13_col_1 <- lm(Q1_returns_win ~ log_environmental + cash_holdings_2019_win +
  LT_debt_2019_win +
    size_2019_win + ST_debt_2019_win + profitability_2019_win +
    btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
    MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
    + risk_premium_Q1 + industry_dummy,
  data = data)
```

```
summary(table_13_col_1)

coeftest(table_13_col_1, vcov. = vcovHC(table_13_col_1, type = "HC1")) %>%
  round(digits = 3)
```

##Raw returns on social pillar Table 13 column 2##

```
table_13_col_2 <- lm(Q1_returns_win ~ log_social + cash_holdings_2019_win + LT_debt_2019_win +
  size_2019_win + ST_debt_2019_win + profitability_2019_win +
  btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
  MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
  + risk_premium_Q1 + industry_dummy,
  data = data)
```

```
summary(table_13_col_2)

coeftest(table_13_col_2, vcov. = vcovHC(table_13_col_2, type = "HC1")) %>%
  round(digits = 3)
```

##Raw returns on governance pillar Table 13 column 3##

```
table_13_col_3 <- lm(Q1_returns_win ~ log_governance + cash_holdings_2019_win +
  LT_debt_2019_win +
    size_2019_win + ST_debt_2019_win + profitability_2019_win +
    btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
    MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
    + risk_premium_Q1 + industry_dummy,
  data = data)
```

```
summary(table_13_col_3)

coeftest(table_13_col_3, vcov. = vcovHC(table_13_col_3, type = "HC1")) %>%
  round(digits = 3)
```

##Abnormal returns on environmental pillar. Table 13B column 1##

```
table_13b_col_1 <- lm(Abnormal_Q1_returns_win ~ log_environmental + cash_holdings_2019_win +
  LT_debt_2019_win +
    size_2019_win + ST_debt_2019_win + profitability_2019_win +
    btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
    MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
    + risk_premium_Q1 + industry_dummy,
  data = data)
```

```
summary(table_13b_col_1)

coeftest(table_13b_col_1, vcov. = vcovHC(table_13b_col_1, type = "HC1")) %>%
  round(digits = 3)
```

##Abnormal returns on social pillar Table 13B column 2##

```
table_13b_col_2 <- lm(Abnormal_Q1_returns_win ~ log_social + cash_holdings_2019_win +  
LT_debt_2019_win +
```

```
    size_2019_win + ST_debt_2019_win + profitability_2019_win +  
    btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +  
    MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +  
    + risk_premium_Q1 + industry_dummy,  
data = data)
```

```
summary(table_13b_col_2)
```

```
coeftest(table_13b_col_2, vcov = vcovHC(table_13b_col_2, type = "HC1")) %>%  
  round(digits = 3)
```

##Annormal returns on governance pillar Table 13B column 3##

```
table_13b_col_3 <- lm(Abnormal_Q1_returns_win ~ log_governance + cash_holdings_2019_win +  
LT_debt_2019_win +
```

```
    size_2019_win + ST_debt_2019_win + profitability_2019_win +  
    btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +  
    MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +  
    + risk_premium_Q1 + industry_dummy,  
data = data)
```

```
summary(table_13b_col_3)
```

```
coeftest(table_13b_col_3, vcov = vcovHC(table_13b_col_3, type = "HC1")) %>%  
  round(digits = 3)
```

##Excess cash and ESG on raw returns. TABLE 14 COLUMN 1##



```
table_14_col_1 <- lm(Q1_returns_win ~ ESG_2019 + excess_cash_scaled_win_constrained +
size_2019_win +
```

```
LT_debt_2019_win +
```

```
+ ST_debt_2019_win + profitability_2019_win +
```

```
btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
```

```
MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
```

```
+ risk_premium_Q1 + industry_dummy,
```

```
data = data)
```

```
summary(table_14_col_1)
```

```
coeftest(table_14_col_1, vcov. = vcovHC(table_14_col_1, type = "HC1")) %>%
```

```
round(digits = 3)
```

##Insufficient cash and ESG on raw returns. TABLE 14 column 2##

```
table_14_col_2 <- lm(Q1_returns_win ~ ESG_2019 + insufficient_cash_scaled_abs_win +
size_2019_win + LT_debt_2019_win +
```

```
+ ST_debt_2019_win + profitability_2019_win +
```

```
btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
```

```
MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
```

```
+ risk_premium_Q1 + industry_dummy,
```

```
data = data)
```

```
summary(table_14_col_2)
```

```
coeftest(table_14_col_2, vcov. = vcovHC(table_14_col_2, type = "HC1")) %>%
```

```
round(digits = 3)
```

##Excess cash and ESG on abnormal returns. Table 14 column 3.##

```

table_14_col_3 <- lm(Abnormal_Q1_returns_win ~ ESG_2019 +
excess_cash_scaled_win_constrained + size_2019_win +

    LT_debt_2019_win +

    + ST_debt_2019_win + profitability_2019_win +

    btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +

    MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +

    + risk_premium_Q1 + industry_dummy,

data = data)

```

```

summary(table_14_col_3)

coeftest(table_14_col_3, vcov. = vcovHC(table_14_col_3, type = "HC1")) %>%

round(digits = 3)

```

##Insufficient cash and ESG on abnormal returns. Table 14 column 4.##

```

table_14_col_4 <- lm(Abnormal_Q1_returns_win ~ ESG_2019 + insufficient_cash_scaled_abs_win +
size_2019_win + LT_debt_2019_win +

    ST_debt_2019_win + profitability_2019_win +

    btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +

    MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +

    + risk_premium_Q1 + industry_dummy,

data = data)

```

```

summary(table_14_col_4)

coeftest(table_14_col_4, vcov. = vcovHC(table_14_col_4, type = "HC1")) %>%

round(digits = 3)

```

##Excess cash and quartiles of ESG on raw returns. Table 15 column 1.##

```

table_15_col_1 <- lm(Q1_returns_win ~ ESG_2 + ESG_3 + ESG_4 +
excess_cash_scaled_win_constrained + LT_debt_2019_win +
size_2019_win +
ST_debt_2019_win + profitability_2019_win +
btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
+ risk_premium_Q1 + industry_dummy,
data = data)

```

```

summary(table_15_col_1)
coeftest(table_15_col_1, vcov. = vcovHC(table_15_col_1, type = "HC1")) %>%
round(digits = 3)

```

##Insufficient cash and quartiles of ESG on raw returns. Table 15 column 2.##

```

table_15_col_2 <- lm(Q1_returns_win ~ ESG_2 + ESG_3 + ESG_4 + insufficient_cash_scaled_abs_win
+ size_2019_win + LT_debt_2019_win +
ST_debt_2019_win + profitability_2019_win +
btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
+ risk_premium_Q1 + industry_dummy,
data = data)

```

```

summary(table_15_col_2)
coeftest(table_15_col_2, vcov. = vcovHC(table_15_col_2, type = "HC1")) %>%
round(digits = 3)

```

##Excess cash and quartiles of ESG on abnormal returns. Table 15 column 3.##

```
table_15_col_3 <- lm(Abnormal_Q1_returns_win ~ ESG_2 + ESG_3 + ESG_4 +  
excess_cash_scaled_win_constrained + LT_debt_2019_win +  
size_2019_win + ST_debt_2019_win + profitability_2019_win +  
btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +  
MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +  
+ risk_premium_Q1 + industry_dummy,  
data = data)
```

```
summary(table_15_col_3)
```

```
coeftest(table_15_col_3, vcov. = vcovHC(table_15_col_3, type = "HC1")) %>%  
round(digits = 3)
```

##Insufficient cash and quartiles of ESG on abnormal returns. Table 15 column 4.##

```
table_15_col_4 <- lm(Abnormal_Q1_returns_win ~ ESG_2 + ESG_3 + ESG_4 +  
insufficient_cash_scaled_abs_win + size_2019_win + LT_debt_2019_win +  
ST_debt_2019_win + profitability_2019_win +  
btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +  
MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +  
+ risk_premium_Q1 + industry_dummy,  
data = data)
```

```
summary(table_15_col_4)
```

```
coeftest(table_15_col_4, vcov. = vcovHC(table_15_col_4, type = "HC1")) %>%  
round(digits = 3)
```

#Table 16#

#ESG and excess cash plus interaction on raw returns. Table 16, column 1#

```
data$ESG_excess_cash <- data$ESG_2019*data$excess_cash_scaled
data$ESG_insufficient_cash <- data$ESG_2019*data$insufficient_cash_scaled

table_16_col_1 <- lm(Q1_returns_win ~ ESG_2019 + excess_cash_scaled_win_constrained +
  ESG_excess_cash +
  + size_2019_win + LT_debt_2019_win +
  ST_debt_2019_win + profitability_2019_win +
  btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
  MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
  + risk_premium_Q1 + industry_dummy,
  data = data)

summary(table_16_col_1)
coeftest(table_16_col_1, vcov. = vcovHC(table_16_col_1, type = "HC1")) %>%
  round(digits = 3)
```

#ESG and insufficient cash plus interaction on raw returns. Table 16, column 2#

```
table_16_col_2 <- lm(Q1_returns_win ~ ESG_2019 + insufficient_cash_scaled_abs_win +
  ESG_insufficient_cash +
  + size_2019_win + LT_debt_2019_win +
  ST_debt_2019_win + profitability_2019_win +
  btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
  MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
  + risk_premium_Q1 + industry_dummy,
  data = data)

summary(table_16_col_2)
```

```
coeftest(table_16_col_2, vcov. = vcovHC(table_16_col_2, type = "HC1")) %>%
  round(digits = 3)
```

#ESG and excess cash plus interaction on abnormal returns. Table 16, column 3#

```
table_16_col_3 <- lm(Abnormal_Q1_returns_win ~ ESG_2019 + excess_cash_scaled_win_constrained
+
  ESG_excess_cash +
  + size_2019_win + LT_debt_2019_win +
  ST_debt_2019_win + profitability_2019_win +
  btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
  MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
  + risk_premium_Q1 + industry_dummy,
  data = data)
```

```
summary(table_16_col_3)
```

```
coeftest(table_16_col_3, vcov. = vcovHC(table_16_col_3, type = "HC1")) %>%
  round(digits = 3)
```

#ESG and insufficient cash plus interaction on abnormal returns. Table 16, column 4#

```
table_16_col_4 <- lm(Q1_returns_win ~ ESG_2019 + insufficient_cash_scaled_abs_win +
  ESG_insufficient_cash +
  + size_2019_win + LT_debt_2019_win +
  ST_debt_2019_win + profitability_2019_win +
  btm_2019_win + BTM_dummy + momentum_win + IdioSR_Q1_win +
  MOM_loading_Q1 + SMB_loading_Q1 + HML_loading_Q1 +
  + risk_premium_Q1 + industry_dummy,
  data = data)
```

```
summary(table_16_col_4)
coeftest(table_16_col_4, vcov. = vcovHC(table_16_col_4, type = "HC1")) %>%
  round(digits = 3)
```