Final_VAR

Contents

Dummy

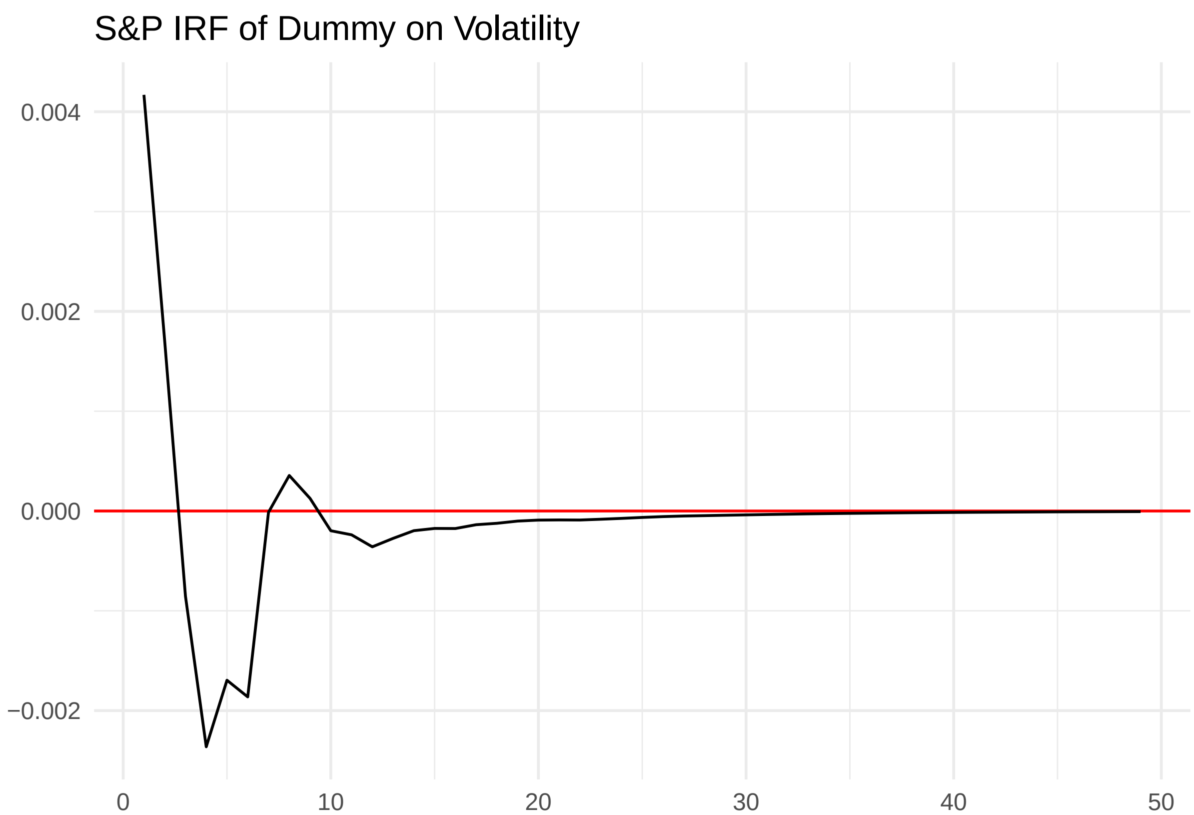
```r
y = cbind(Vdata$dummy, Vdata$SPY_vol)
colnames(y)[1:2] <- c("dummy", "vol")
est.VAR <- VAR(y,p=6)

#extract results
mod_vol = est.VAR$varresult$vol
f = formula(mod_vol)
d = model.frame(mod_vol)
lm_clean = lm(f, data= d)

#apply Newey-West
nw_vcov = NeweyWest(lm_clean, lag=6)
nw_se = sqrt(diag(nw_vcov))

#t-stats
coef = coef(lm_clean)
t_stat = coef/nw_se

#recalculate p-values
robust = 2*(1-pt(abs(t_stat), df = df.residual(lm_clean)))
```

```r
#Recreate a Robust Omega Matrix
U = residuals(est.VAR)
T = nrow(U)
L = 6 #number of lag
Omega = matrix(0, ncol(U), ncol(U))
for(l in 0:L) {
  weight = 1 - l/(L+1)
  Gamma_l_ = t(U[(l+1):T, , drop=FALSE]) %*% U[1:(T-l), , drop=FALSE] /T
  if (l == 0){
    Omega = Omega + Gamma_l_
  } else {
    Omega = Omega + weight*(Gamma_l_ + t(Gamma_l_))
  }
}


#make the B matrix
loss <- function(param){
  #Define the restriction
  B <- matrix(c(param[1], param[2], 0, param[3]), ncol = 2)

  #Make BB' approximatively equal to omega
  X <- Omega - B %*% t(B)

  #loss function
  loss <- sum(X^2)
  return(loss)
}

res.opt <- optim(c(1, 0, 1), loss, method = "BFGS")
```

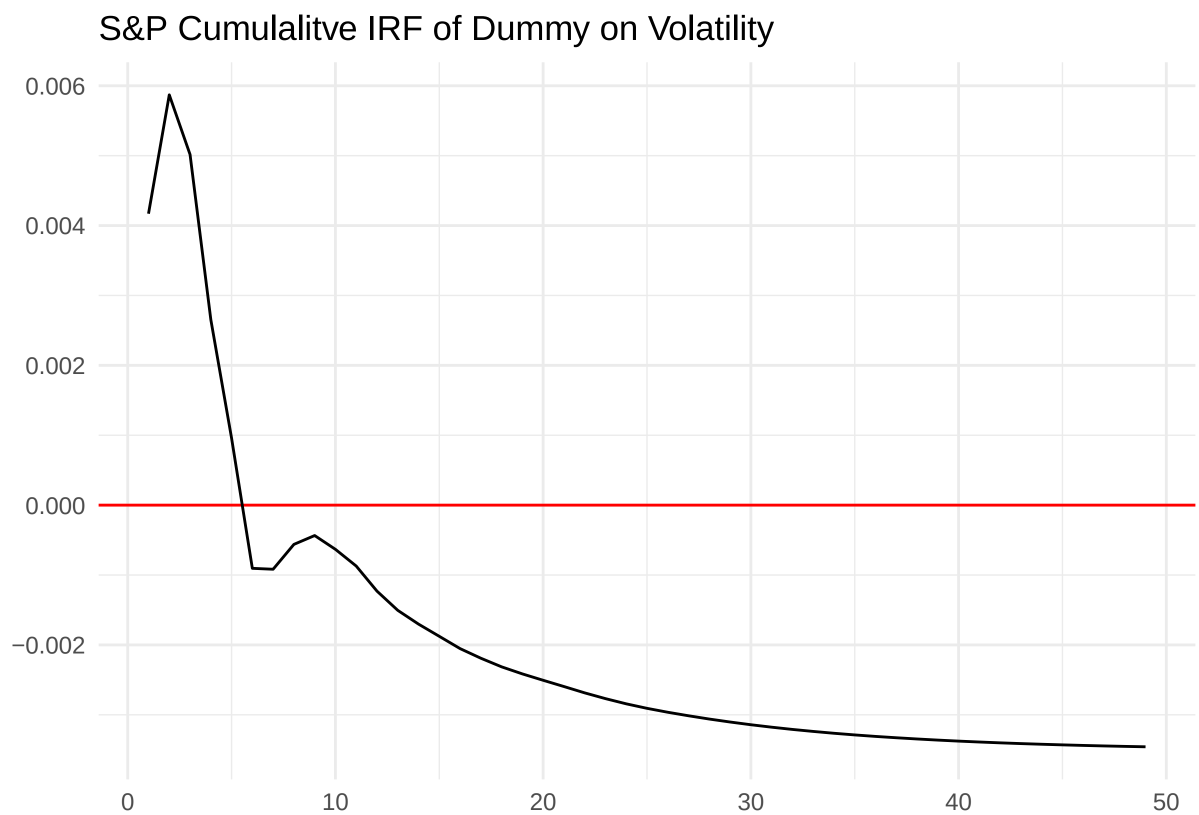
```r
B.hat <- matrix(c(res.opt$par[1], res.opt$par[2], 0, res.opt$par[3]), ncol = 2)

print(cbind(Omega,B.hat %*% t(B.hat)))
```

```
##             dummy         vol
## dummy 10.24415441 0.013344869 10.24415377 0.013344867
## vol    0.01334487 0.005298555  0.01334487 0.005297573
```

```r
nb.sim = 7*7
#get back the coefficient of est.VAR
phi <- Acoef(est.VAR)
PHI = make.PHI(phi)

#take the constant
constant <- sapply(est.VAR$varresult, function(eq) coef(eq)["const"])
c=as.matrix(constant)

#Simulate the IRF
p <- length(phi)
n <- dim(phi[[1]])[1]


Y <- simul.VAR(c=c, Phi = phi, B = B.hat, nb.sim ,y0.star=rep(0, n*p),
                  indic.IRF = 1, u.shock = c(1,0))



Yd = data.frame(
  period = 1:nrow(Y),
  response = Y[,2])

ggplot(Yd,aes(x=period, y=response)) +
  geom_hline(yintercept = 0, color="red") +
  geom_line() +
  theme_light() +
  ggtitle("S&P IRF of Dummy on Volatility")+
  ylab("")+
  xlab("") +
  theme_minimal()
```




```r
ggplot(Yd,aes(x=period, y=cumsum(response))) +
  geom_hline(yintercept = 0, color="red") +
  geom_line() +
  theme_light() +
  ggtitle("S&P Cumulalitve IRF of Dummy on Volatility") +
  ylab("")+
  xlab("") +
  theme_minimal()
```



N

```
y2 = cbind(Vdata$N, Vdata$SPY_vol)
colnames(y2)[1:2] <- c("N", "vol")
est.VAR2 <- VAR(y2,p=6)

#extract results
mod_vol2 = est.VAR2$varresult$vol
f2 = formula(mod_vol2)
d2 = model.frame(mod_vol2)
lm_clean2 = lm(f2, data= d2)

#apply Newey-West
nw_vcov2 = NeweyWest(lm_clean2, lag=6)
nw_se2 = sqrt(diag(nw_vcov2))

#t-stats
coef2 = coef(lm_clean2)
t_stat2 = coef2/nw_se2

#recalculate p-values
robust2 = 2*(1-pt(abs(t_stat2), df = df.residual(lm_clean2)))
```

Tariff

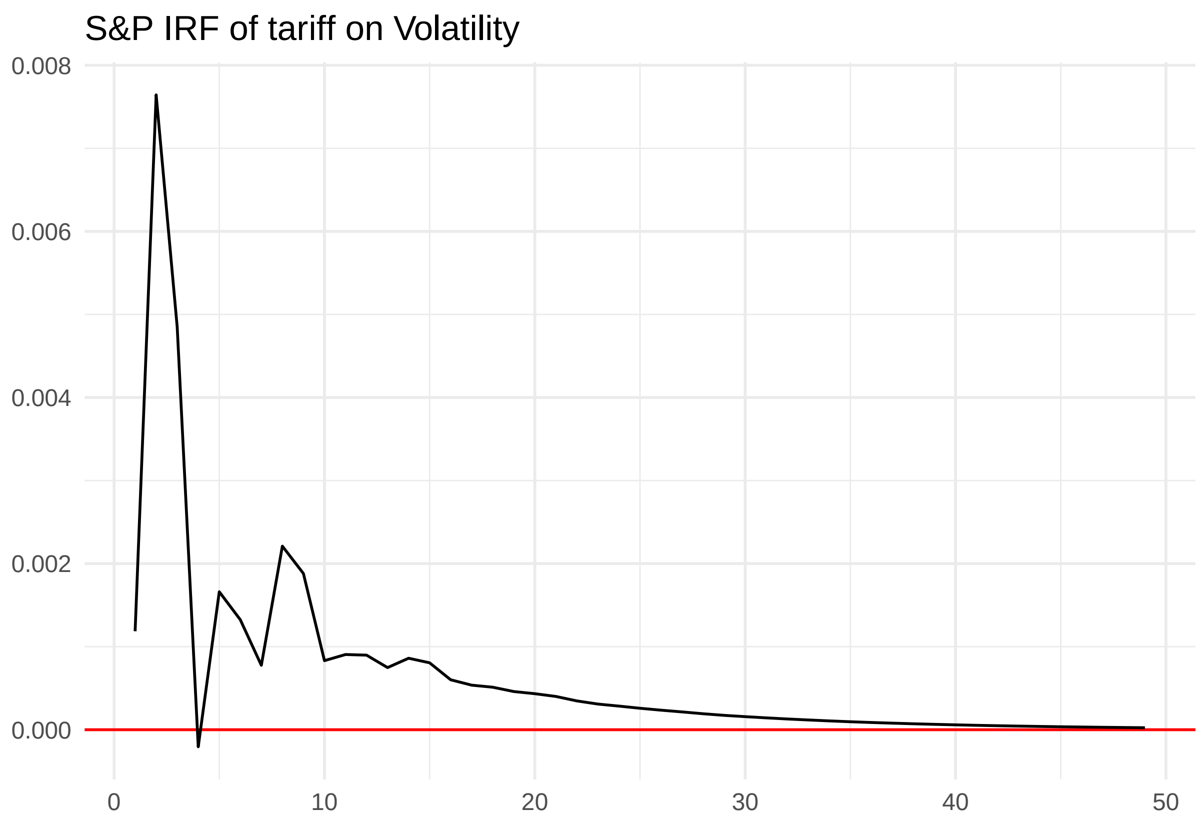
```
y3 = cbind(Vdata$tariff, Vdata$SPY_vol)
colnames(y3)[1:2] <- c("tariff", "vol")
est.VAR3 <- VAR(y3,p=6)

#extract results
mod_vol3 = est.VAR3$varresult$vol
f3 = formula(mod_vol3)
d3 = model.frame(mod_vol3)
lm_clean3 = lm(f3, data= d3)

#apply Newey-West
nw_vcov3 = NeweyWest(lm_clean3, lag=6)
nw_se3 = sqrt(diag(nw_vcov3))

#t-stats
coef3 = coef(lm_clean3)
t_stat3 = coef3/nw_se3

#recalculate p-values
robust3 = 2*(1-pt(abs(t_stat3), df = df.residual(lm_clean3)))
```

```
#Recreate a Robust Omega Matrix
U3 = residuals(est.VAR3)
T3 = nrow(U3)
Omega3 = matrix(0, ncol(U3), ncol(U3))
for(l in 0:L) {
  weight = 1 - l/(L+1)
  Gamma_l_3 = t(U3[(l+1):T3, , drop=FALSE]) %*% U3[1:(T3-l), , drop=FALSE] /T3
  if (l == 0){
    Omega3 = Omega3 + Gamma_l_3
  } else {
    Omega3 = Omega3 + weight*(Gamma_l_3 + t(Gamma_l_3))
  }
}


#make the B matrix
loss3 <- function(param3){
  #Define the restriction
  B3 <- matrix(c(param3[1], param3[2], 0, param3[3]), ncol = 2)

  #Make BB' approximatively equal to omega
  X3 <- Omega3 - B3 %*% t(B3)

  #loss function
  loss3 <- sum(X3^2)
  return(loss3)
}

res.opt3 <- optim(c(1, 0, 1), loss3, method = "BFGS")
B.hat3 <- matrix(c(res.opt3$par[1], res.opt3$par[2], 0, res.opt3$par[3]), ncol = 2)
```

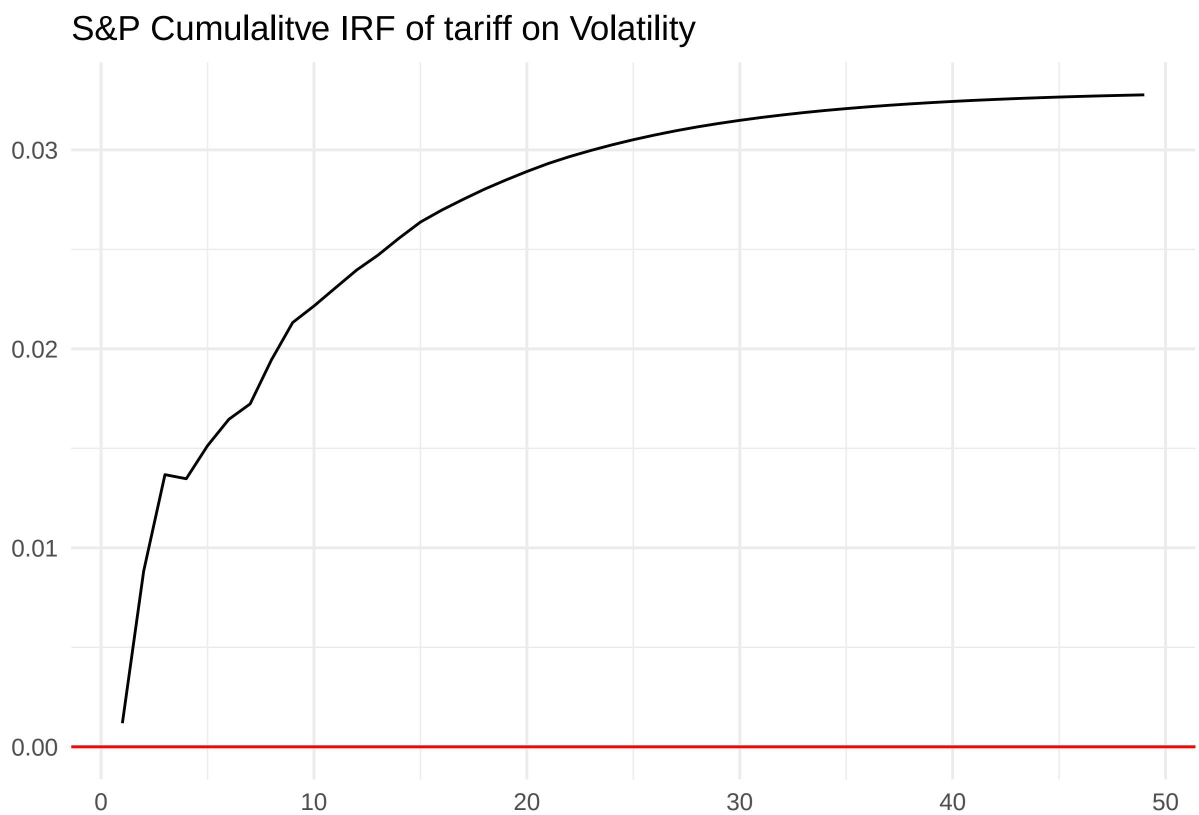
```r
print(cbind(Omega3,B.hat3 %*% t(B.hat3)))
```

```
##             tariff         vol
## tariff 0.134764758 0.000435451 0.1347638768 0.0004352228
## vol    0.000435451 0.005234325 0.0004352228 0.0052341984
```

```r
#get back the coefficient of est.VAR
phi3 <- Acoef(est.VAR3)
PHI3 = make.PHI(phi3)

#take the constant
constant3 <- sapply(est.VAR3$varresult, function(eq) coef(eq)["const"])
c3=as.matrix(constant3)

#Simulate the IRF
p3 <- length(phi3)
n3 <- dim(phi3[[1]])[1]

Y3 <- simul.VAR(c=c3, Phi = phi3, B = B.hat3, nb.sim ,y0.star=rep(0, n3*p3),
                  indic.IRF = 1, u.shock = c(1,0))


#Plot the IRF
Yd3 = data.frame(
  period = 1:nrow(Y3),
  response = Y3[,2])

ggplot(Yd3,aes(x=period, y=response)) +
  geom_hline(yintercept = 0, color="red") +
  geom_line() +
  theme_light() +
  ggtitle("S&P IRF of tariff on Volatility") +
  ylab("")+
  xlab("") +
  theme_minimal()
```




```r
ggplot(Yd3,aes(x=period, y=cumsum(response))) +
  geom_hline(yintercept = 0, color="red") +
  geom_line() +
  theme_light() +
  ggtitle("S&P Cumulalitve IRF of tariff on Volatility") +
  ylab("")+
  xlab("") +
  theme_minimal()
```



Trade

```
y4 = cbind(Vdata$trade, Vdata$SPY_vol)
colnames(y4)[1:2] <- c("trade", "vol")
est.VAR4 <- VAR(y4,p=6)

#extract results
mod_vol4 = est.VAR4$varresult$vol
f4 = formula(mod_vol4)
d4 = model.frame(mod_vol4)
lm_clean4 = lm(f4, data= d4)

#apply Newey-West
nw_vcov4 = NeweyWest(lm_clean4, lag=6)
nw_se4 = sqrt(diag(nw_vcov4))

#t-stats
coef4 = coef(lm_clean4)
t_stat4 = coef4/nw_se4

#recalculate p-values
robust4 = 2*(1-pt(abs(t_stat4), df = df.residual(lm_clean4)))
```

China

```
ychina = cbind(Vdata$china, Vdata$SPY_vol)
colnames(ychina)[1:2] <- c("china", "vol")
est.VARchina <- VAR(ychina,p=6)

#extract results
mod_volchina = est.VARchina$varresult$vol
fchina = formula(mod_volchina)
dchina = model.frame(mod_volchina)
lm_cleanchina = lm(fchina, data= dchina)

#apply Newey-West
nw_vcovchina = NeweyWest(lm_cleanchina, lag=6)
nw_sechina = sqrt(diag(nw_vcovchina))

#t-stats
coefchina = coef(lm_cleanchina)
t_statchina = coefchina/nw_sechina

#recalculate p-values
robustchina = 2*(1-pt(abs(t_statchina), df = df.residual(lm_cleanchina)))
```

```
dt_t = d %>%
    rename(X.l1 = dummy.l1,
    X.l2 = dummy.l2,
    X.l3 = dummy.l3,
    X.l4 = dummy.l4,
    X.l5 = dummy.l5,
    X.l6 = dummy.l6)


f_t <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model <- lm(f_t, data = dt_t)

dt_t2 = d2 %>%
    rename(X.l1 = N.l1,
    X.l2 = N.l2,
    X.l3 = N.l3,
    X.l4 = N.l4,
    X.l5 = N.l5,
    X.l6 = N.l6)




f_t2 <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model2 <- lm(f_t2, data = dt_t2)


dt_t3 = d3 %>%
    rename(X.l1 = tariff.l1,
```

```r
    X.l2 = tariff.l2,
    X.l3 = tariff.l3,
    X.l4 = tariff.l4,
    X.l5 = tariff.l5,
    X.l6 = tariff.l6)



f_t3 <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model3 <- lm(f_t3, data = dt_t3)


dt_t4 = d4 %>%
    rename(X.l1 = trade.l1,
    X.l2 = trade.l2,
    X.l3 = trade.l3,
    X.l4 = trade.l4,
    X.l5 = trade.l5,
    X.l6 = trade.l6)



f_t4 <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model4 <- lm(f_t4, data = dt_t4)

dt_tchina = dchina %>%
    rename(X.l1 = china.l1,
    X.l2 = china.l2,
    X.l3 = china.l3,
    X.l4 = china.l4,
    X.l5 = china.l5,
    X.l6 = china.l6)



f_tchina <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
modelchina <- lm(f_tchina, data = dt_tchina)


nw_se_t <- sqrt(diag(sandwich::NeweyWest(model, lag = 6, prewhite = FALSE)))
nw_se2_t <- sqrt(diag(sandwich::NeweyWest(model2, lag = 6, prewhite = FALSE)))
nw_se3_t <- sqrt(diag(sandwich::NeweyWest(model3, lag = 6, prewhite = FALSE)))
nw_se4_t <- sqrt(diag(sandwich::NeweyWest(model4, lag = 6, prewhite = FALSE)))
nw_sechina_t <- sqrt(diag(sandwich::NeweyWest(modelchina, lag = 6, prewhite = FALSE)))


robust_t <- 2 * (1-pt(abs(coef(model) / nw_se_t), df = df.residual(model)))
robust2_t <- 2 * (1-pt(abs(coef(model2) / nw_se2_t), df = df.residual(model2)))
robust3_t <- 2 * (1-pt(abs(coef(model3) / nw_se3_t), df = df.residual(model3)))
robust4_t <- 2 * (1-pt(abs(coef(model4) / nw_se4_t), df = df.residual(model4)))
```

```r
robustchina_t <- 2 * (1-pt(abs(coef(modelchina) / nw_sechina_t), df = df.residual(modelchina)))



nw_se_t       <- nw_se_t[names(coef(model))]
robust_t      <- robust_t[names(coef(model))]
nw_se2_t      <- nw_se2_t[names(coef(model2))]
robust2_t     <- robust2_t[names(coef(model2))]
nw_se3_t      <- nw_se3_t[names(coef(model3))]
robust3_t     <- robust3_t[names(coef(model3))]
nw_se4_t      <- nw_se4_t[names(coef(model4))]
robust4_t     <- robust4_t[names(coef(model4))]
nw_sechina_t  <- nw_sechina_t[names(coef(modelchina))]
robustchina_t <- robustchina_t[names(coef(modelchina))]




# Créer la liste des modèles
models_list <- list(model, model2, model3, model4, modelchina)

# Créer la liste des SE robustes
robust_ses <- list(nw_se_t, nw_se2_t, nw_se3_t, nw_se4_t, nw_sechina_t)

# Créer la liste des p-values
robust_pvals <- list(robust_t, robust2_t, robust3_t, robust4_t, robustchina_t)

# Nom des variables (affichées dans le tableau)
custom_names <- list(
  "vol.l1" = "$AHV_{t-1}$",
  "vol.l2" = "$AHV_{t-2}$",
  "vol.l3" = "$AHV_{t-3}$",
  "vol.l4" = "$AHV_{t-4}$",
  "vol.l5" = "$AHV_{t-5}$",
  "vol.l6" = "$AHV_{t-6}$",
  "X.l1" = "$X_{t-1}$",
  "X.l2" = "$X_{t-2}$",
  "X.l3" = "$X_{t-3}$",
  "X.l4" = "$X_{t-4}$",
  "X.l5" = "$X_{t-5}$",
  "X.l6" = "$X_{t-6}$",
  "const" = "Constant"
)

# Générer le tableau
table_texreg <- texreg(
  l = models_list,
  override.se = robust_ses,
  custom.coef.map = custom_names,
  override.pvalues = robust_pvals,
  custom.model.names = c("TweetDummy", "TweetCount", "Tariff", "Trade", "China"),
  caption = "VAR Models of Average Hourly Volatility",
  label = "tab:VAR_Second_Term",
```

Table 1: VAR Models of Average Hourly Volatility

	TweetDummy	TweetCount	Tariff	Trade	China
AHV_{t-1}	0.344511***	0.345011***	0.342081***	0.346107***	0.344512***
	(0.103329)	(0.103473)	(0.100397)	(0.103007)	(0.102386)
AHV_{t-2}	0.023714	0.023575	0.027464	0.022949	0.024149
	(0.047239)	(0.047379)	(0.042571)	(0.047267)	(0.046561)
AHV_{t-3}	0.082941***	0.082525***	0.075380***	0.081148***	0.081646***
	(0.010963)	(0.011004)	(0.013612)	(0.011336)	(0.011026)
AHV_{t-4}	0.096948	0.096739	0.088777	0.095797	0.094919
	(0.065612)	(0.065614)	(0.068856)	(0.064948)	(0.066347)
AHV_{t-5}	0.022887	0.022593	0.026049*	0.023502	0.022961
	(0.012328)	(0.012316)	(0.011859)	(0.012242)	(0.012546)
AHV_{t-6}	0.164034**	0.164442**	0.167546**	0.165323**	0.166695**
	(0.061085)	(0.061129)	(0.060128)	(0.061328)	(0.061192)
X_{t-1}	0.000083	0.000045	0.019718	0.003399	0.006729
	(0.000231)	(0.000040)	(0.019004)	(0.004067)	(0.006313)
X_{t-2}	−0.000473***	−0.000116***	0.005269	0.005600	0.002778
	(0.000087)	(0.000024)	(0.004162)	(0.005050)	(0.003938)
X_{t-3}	−0.000804***	−0.000213***	−0.007797	−0.003904*	−0.004652*
	(0.000093)	(0.000028)	(0.005041)	(0.001717)	(0.001998)
X_{t-4}	−0.000546***	−0.000147***	0.002275	0.000725	−0.002442*
	(0.000101)	(0.000023)	(0.002654)	(0.003504)	(0.001044)
X_{t-5}	−0.000579***	−0.000119**	−0.001145	−0.002363	−0.000607
	(0.000146)	(0.000041)	(0.002728)	(0.001717)	(0.000993)
X_{t-6}	−0.000099	0.000000	−0.002750	−0.001543	0.000596
	(0.000117)	(0.000033)	(0.002441)	(0.001170)	(0.000973)
Constant	0.008726***	0.007587***	0.005770***	0.005939***	0.005857**
	(0.001825)	(0.001707)	(0.001695)	(0.001706)	(0.001806)
Shock (IRF)	0.004171	0.003061	0.001189	0.000215	0.001937
R^2	0.325745	0.325324	0.331931	0.325134	0.326344
Adj. R^2	0.325306	0.324885	0.331496	0.324695	0.325905
Num. obs.	19965	19965	19965	19965	19965

This table displays VAR regression with only two variables : AHV and the X regressor. The column names represent the X variable for the selected mod

```r
  caption.above = TRUE,
  digits = 6,
  custom.gof.rows = list("Shock (IRF)" = c(0.0041713, 0.003061, 0.001189, 0.000215, 0.001937)),
  custom.note = "This table displays VAR regression with only two variables :
  AHV and the X regressor. The column names represent the X variable for the selected model."
)



# Afficher dans le Viewer
table_texreg
```

```r
# First and Second Mandate

#first term
```

```
Vdata_f = filter(data,between(timestamp, as.Date('2017-01-20'), as.Date('2021-01-20')))

#second term
Vdata_s = filter(data,between(timestamp, as.Date('2025-01-20'), as.Date('2025-05-07')))
```

First Term

Dummy

```
y_f_d = cbind(Vdata_f$dummy, Vdata_f$SPY_vol)
colnames(y_f_d)[1:2] <- c("dummy", "vol")
est.VAR_f_d <- VAR(y_f_d,p=6)

#extract results
mod_vol_f_d = est.VAR_f_d$varresult$vol
f_f_d = formula(mod_vol_f_d)
d_f_d = model.frame(mod_vol_f_d)
lm_clean_f_d = lm(f_f_d, data= d_f_d)

#apply Newey-West
nw_vcov_f_d = NeweyWest(lm_clean_f_d, lag=6)
nw_se_f_d = sqrt(diag(nw_vcov_f_d))

#t-stats
coef_f_d = coef(lm_clean_f_d)
t_stat_f_d = coef_f_d/nw_se_f_d

#recalculate p-values
robust_f_d = 2*(1-pt(abs(t_stat_f_d), df = df.residual(lm_clean_f_d)))
```

N

```
y_f_n = cbind(Vdata_f$N, Vdata_f$SPY_vol)
colnames(y_f_n)[1:2] <- c("N", "vol")
est.VAR_f_n <- VAR(y_f_n,p=6)

#extract results
mod_vol_f_n = est.VAR_f_n$varresult$vol
f_f_n = formula(mod_vol_f_n)
d_f_n = model.frame(mod_vol_f_n)
lm_clean_f_n = lm(f_f_n, data= d_f_n)

#apply Newey-West
nw_vcov_f_n = NeweyWest(lm_clean_f_n, lag=6)
nw_se_f_n = sqrt(diag(nw_vcov_f_n))

#t-stats
coef_f_n = coef(lm_clean_f_n)
t_stat_f_n = coef_f_n/nw_se_f_n
```

```r
#recalculate p-values
robust_f_n = 2*(1-pt(abs(t_stat_f_n), df = df.residual(lm_clean_f_n)))
```

Tariff

```r
y_f_ta = cbind(Vdata_f$tariff, Vdata_f$SPY_vol)
colnames(y_f_ta)[1:2] <- c("tariff", "vol")
est.VAR_f_ta <- VAR(y_f_ta,p=6)

#extract results
mod_vol_f_ta = est.VAR_f_ta$varresult$vol
f_f_ta = formula(mod_vol_f_ta)
d_f_ta = model.frame(mod_vol_f_ta)
lm_clean_f_ta = lm(f_f_ta, data= d_f_ta)

#apply Newey-West
nw_vcov_f_ta = NeweyWest(lm_clean_f_ta, lag=6)
nw_se_f_ta = sqrt(diag(nw_vcov_f_ta))

#t-stats
coef_f_ta = coef(lm_clean_f_ta)
t_stat_f_ta = coef_f_ta/nw_se_f_ta

#recalculate p-values
robust_f_ta = 2*(1-pt(abs(t_stat_f_ta), df = df.residual(lm_clean_f_ta)))
```

Trade

```r
y_f_tr = cbind(Vdata_f$trade, Vdata_f$SPY_vol)
colnames(y_f_tr)[1:2] <- c("trade", "vol")
est.VAR_f_tr <- VAR(y_f_tr,p=6)

#extract results
mod_vol_f_tr = est.VAR_f_tr$varresult$vol
f_f_tr = formula(mod_vol_f_tr)
d_f_tr = model.frame(mod_vol_f_tr)
lm_clean_f_tr = lm(f_f_tr, data= d_f_tr)

#apply Newey-West
nw_vcov_f_tr = NeweyWest(lm_clean_f_tr, lag=6)
nw_se_f_tr = sqrt(diag(nw_vcov_f_tr))

#t-stats
coef_f_tr = coef(lm_clean_f_tr)
t_stat_f_tr = coef_f_tr/nw_se_f_tr

#recalculate p-values
robust_f_tr = 2*(1-pt(abs(t_stat_f_tr), df = df.residual(lm_clean_f_tr)))
```

China

```
y_f_ch = cbind(Vdata_f$china, Vdata_f$SPY_vol)
colnames(y_f_ch)[1:2] <- c("china", "vol")
est.VAR_f_ch <- VAR(y_f_ch,p=6)

#extract results
mod_vol_f_ch = est.VAR_f_ch$varresult$vol
f_f_ch = formula(mod_vol_f_ch)
d_f_ch = model.frame(mod_vol_f_ch)
lm_clean_f_ch = lm(f_f_ch, data= d_f_ch)

#apply Newey-West
nw_vcov_f_ch = NeweyWest(lm_clean_f_ch, lag=6)
nw_se_f_ch = sqrt(diag(nw_vcov_f_ch))

#t-stats
coef_f_ch = coef(lm_clean_f_ch)
t_stat_f_ch = coef_f_ch/nw_se_f_ch

#recalculate p-values
robust_f_ch = 2*(1-pt(abs(t_stat_f_ch), df = df.residual(lm_clean_f_ch)))
```

Second Mandate

Dummy

```
y_s_d = cbind(Vdata_s$dummy, Vdata_s$SPY_vol)
colnames(y_s_d)[1:2] <- c("dummy", "vol")
est.VAR_s_d <- VAR(y_s_d,p=6)

#extract results
mod_vol_s_d = est.VAR_s_d$varresult$vol
f_s_d = formula(mod_vol_s_d)
d_s_d = model.frame(mod_vol_s_d)
lm_clean_s_d = lm(f_s_d, data= d_s_d)

#apply Newey-West
nw_vcov_s_d = NeweyWest(lm_clean_s_d, lag=6)
nw_se_s_d = sqrt(diag(nw_vcov_s_d))

#t-stats
coef_s_d = coef(lm_clean_s_d)
t_stat_s_d = coef_s_d/nw_se_s_d

#recalculate p-values
robust_s_d = 2*(1-pt(abs(t_stat_s_d), df = df.residual(lm_clean_s_d)))
```

N

```
y_s_n = cbind(Vdata_s$N, Vdata_s$SPY_vol)
colnames(y_s_n)[1:2] <- c("N", "vol")
est.VAR_s_n <- VAR(y_s_n,p=6)

#extract results
mod_vol_s_n = est.VAR_s_n$varresult$vol
f_s_n = formula(mod_vol_s_n)
d_s_n = model.frame(mod_vol_s_n)
lm_clean_s_n = lm(f_s_n, data= d_s_n)

#apply Newey-West
nw_vcov_s_n = NeweyWest(lm_clean_s_n, lag=6)
nw_se_s_n = sqrt(diag(nw_vcov_s_n))

#t-stats
coef_s_n = coef(lm_clean_s_n)
t_stat_s_n = coef_s_n/nw_se_s_n

#recalculate p-values
robust_s_n = 2*(1-pt(abs(t_stat_s_n), df = df.residual(lm_clean_s_n)))
```

Tariff

```
y_s_ta = cbind(Vdata_s$tariff, Vdata_s$SPY_vol)
colnames(y_s_ta)[1:2] <- c("tariff", "vol")
est.VAR_s_ta <- VAR(y_s_ta,p=6)

#extract results
mod_vol_s_ta = est.VAR_s_ta$varresult$vol
f_s_ta = formula(mod_vol_s_ta)
d_s_ta = model.frame(mod_vol_s_ta)
lm_clean_s_ta = lm(f_s_ta, data= d_s_ta)

#apply Newey-West
nw_vcov_s_ta = NeweyWest(lm_clean_s_ta, lag=6)
nw_se_s_ta = sqrt(diag(nw_vcov_s_ta))

#t-stats
coef_s_ta = coef(lm_clean_s_ta)
t_stat_s_ta = coef_s_ta/nw_se_s_ta

#recalculate p-values
robust_s_ta = 2*(1-pt(abs(t_stat_s_ta), df = df.residual(lm_clean_s_ta)))
```

Trade

```r
y_s_tr = cbind(Vdata_s$trade, Vdata_s$SPY_vol)
colnames(y_s_tr)[1:2] <- c("trade", "vol")
est.VAR_s_tr <- VAR(y_s_tr,p=6)

#extract results
mod_vol_s_tr = est.VAR_s_tr$varresult$vol
f_s_tr = formula(mod_vol_s_tr)
d_s_tr = model.frame(mod_vol_s_tr)
lm_clean_s_tr = lm(f_s_tr, data= d_s_tr)

#apply Newey-West
nw_vcov_s_tr = NeweyWest(lm_clean_s_tr, lag=6)
nw_se_s_tr = sqrt(diag(nw_vcov_s_tr))

#t-stats
coef_s_tr = coef(lm_clean_s_tr)
t_stat_s_tr = coef_s_tr/nw_se_s_tr

#recalculate p-values
robust_s_tr = 2*(1-pt(abs(t_stat_s_tr), df = df.residual(lm_clean_s_tr)))
```

China

```r
y_s_ch = cbind(Vdata_s$china, Vdata_s$SPY_vol)
colnames(y_s_ch)[1:2] <- c("china", "vol")
est.VAR_s_ch <- VAR(y_s_ch,p=6)

#extract results
mod_vol_s_ch = est.VAR_s_ch$varresult$vol
f_s_ch = formula(mod_vol_s_ch)
d_s_ch = model.frame(mod_vol_s_ch)
lm_clean_s_ch = lm(f_s_ch, data= d_s_ch)

#apply Newey-West
nw_vcov_s_ch = NeweyWest(lm_clean_s_ch, lag=6)
nw_se_s_ch = sqrt(diag(nw_vcov_s_ch))

#t-stats
coef_s_ch = coef(lm_clean_s_ch)
t_stat_s_ch = coef_s_ch/nw_se_s_ch

#recalculate p-values
robust_s_ch = 2*(1-pt(abs(t_stat_s_ch), df = df.residual(lm_clean_s_ch)))
```

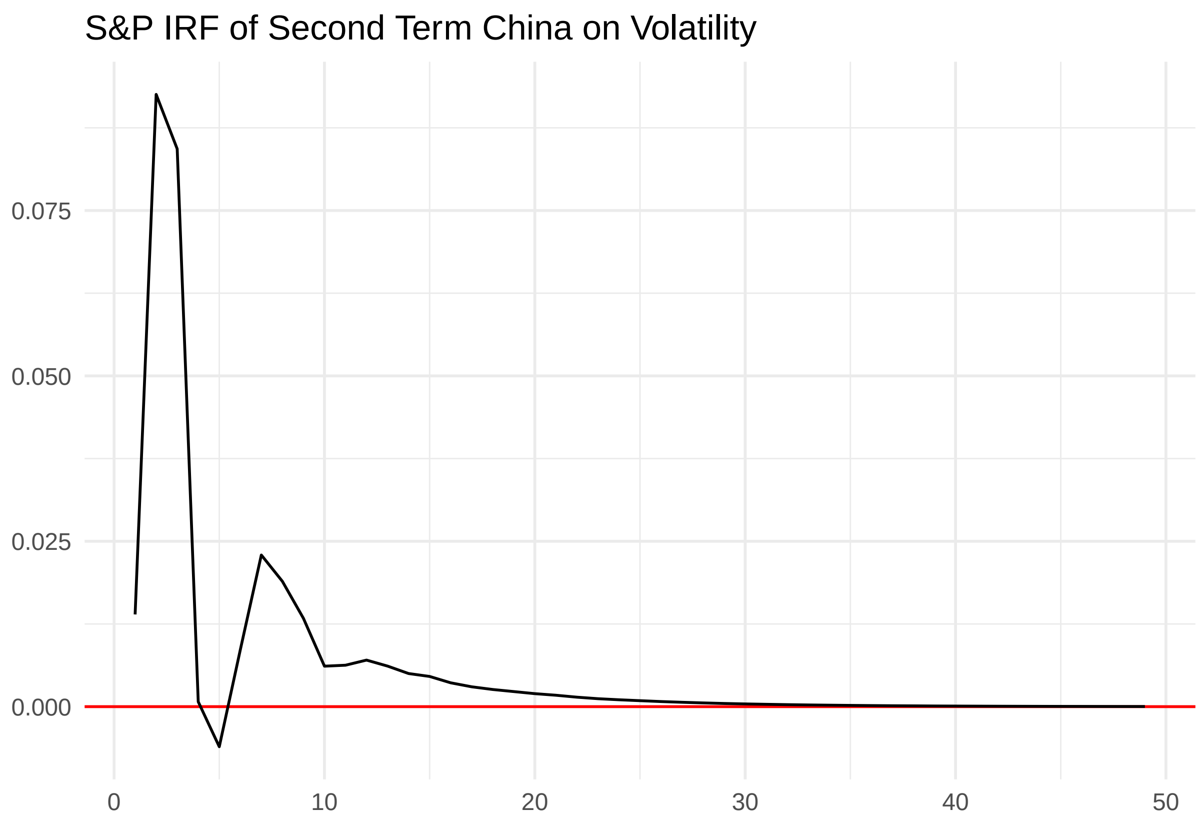
```r
#Construct the Robust Omega Matrix
U_s_ch = residuals(est.VAR_s_ch)
T_s_ch = nrow(U_s_ch)
Omega_s_ch = matrix(0, ncol(U_s_ch), ncol(U_s_ch))
for(l in 0:L) {
  weight = 1 - l/(L+1)
  Gamma_l__s_ch = t(U_s_ch[(l+1):T_s_ch, , drop=FALSE]) %*% U_s_ch[1:(T_s_ch-l), , drop=FALSE] /T_s_ch
```

```r
  if (l == 0){
    Omega_s_ch = Omega_s_ch + Gamma_l__s_ch
  } else {
    Omega_s_ch = Omega_s_ch + weight*(Gamma_l__s_ch + t(Gamma_l__s_ch))
  }
}


#make the B matrix
loss_s_ch <- function(param_s_ch){
  #Define the restriction
  B_s_ch <- matrix(c(param_s_ch[1], param_s_ch[2], 0, param_s_ch[3]), ncol = 2)

  #Make BB' approximatively equal to omega
  X_s_ch <- Omega_s_ch - B_s_ch %*% t(B_s_ch)

  #loss function
  loss_s_ch <- sum(X_s_ch^2)
  return(loss_s_ch)
}

res.opt_s_ch <- optim(c(1, 0, 1), loss_s_ch, method = "BFGS")
B.hat_s_ch <- matrix(c(res.opt_s_ch$par[1], res.opt_s_ch$par[2], 0, res.opt_s_ch$par[3]), ncol = 2)

print(cbind(Omega_s_ch,B.hat_s_ch %*% t(B.hat_s_ch)))
```

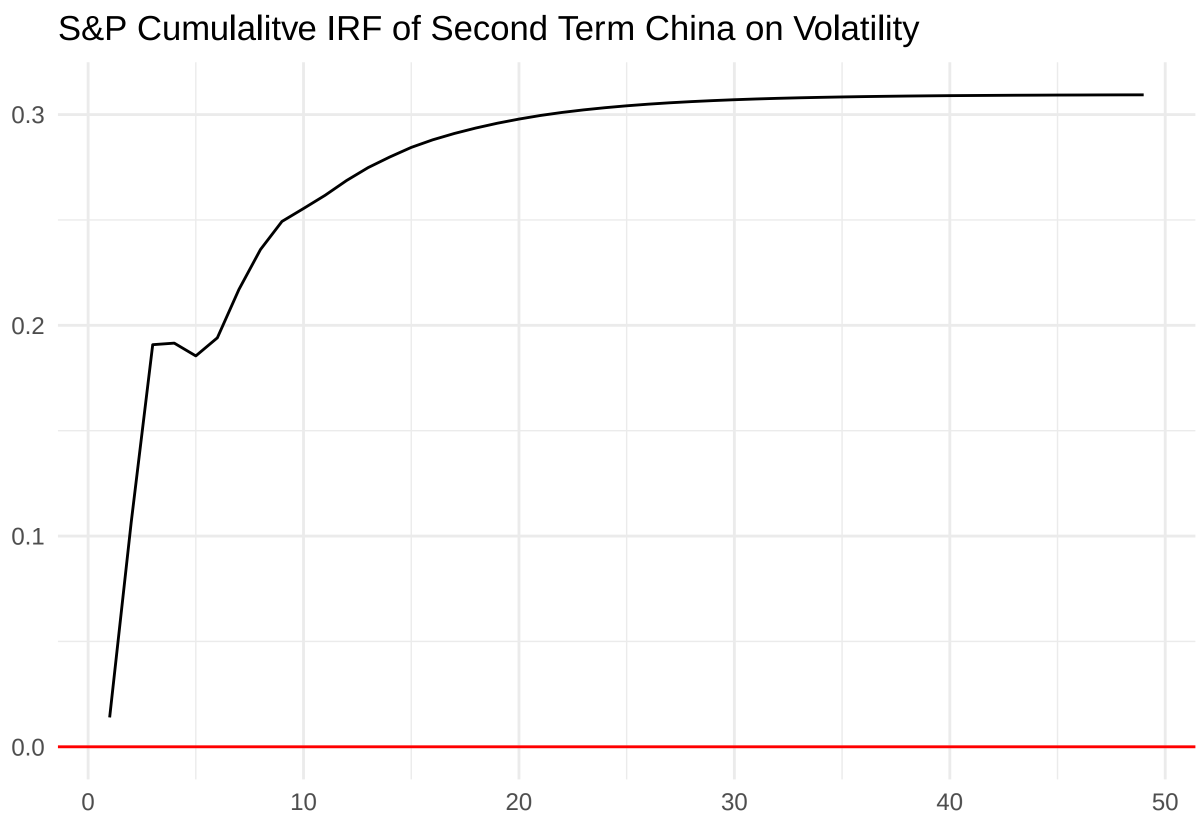
```
##             china         vol
## china 0.329464896 0.008000125 0.329463896 0.008000109
## vol   0.008000125 0.174249314 0.008000109 0.174248338
```

```r
#get back the coefficient of est.VAR
phi_s_ch <- Acoef(est.VAR_s_ch)
PHI_s_ch = make.PHI(phi_s_ch)

#take the constant
constant_s_ch <- sapply(est.VAR_s_ch$varresult, function(eq) coef(eq)["const"])
c_s_ch=as.matrix(constant_s_ch)

#Simulate the IRF
p_s_ch <- length(phi_s_ch)
n_s_ch <- dim(phi_s_ch[[1]])[1]

Y_s_ch <- simul.VAR(c=c_s_ch, Phi = phi_s_ch, B = B.hat_s_ch, nb.sim ,y0.star=rep(0, n_s_ch*p_s_ch),
                  indic.IRF = 1, u.shock = c(1,0))


#Plot the IRF
Yd_s_ch = data.frame(
  period = 1:nrow(Y_s_ch),
  response = Y_s_ch[,2])

ggplot(Yd_s_ch,aes(x=period, y=response)) +
  geom_hline(yintercept = 0, color="red") +
```

```r
  geom_line() +
  theme_light() +
  ggtitle("S&P IRF of Second Term China on Volatility") +
  ylab("")+
  xlab("") +
  theme_minimal()
```




```r
ggplot(Yd_s_ch,aes(x=period, y=cumsum(response))) +
  geom_hline(yintercept = 0, color="red") +
  geom_line() +
  theme_light() +
  ggtitle("S&P Cumulalitve IRF of Second Term China on Volatility") +
  ylab("")+
  xlab("") +
  theme_minimal()
```



Tables Terms

```
#first

d_f_d_t = d_f_d %>%
    rename(X.l1 = dummy.l1,
    X.l2 = dummy.l2,
    X.l3 = dummy.l3,
    X.l4 = dummy.l4,
    X.l5 = dummy.l5,
    X.l6 = dummy.l6)

f_t_f_d <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model_f_d <- lm(f_t_f_d, data = d_f_d_t)

d_f_n_t = d_f_n %>%
    rename(X.l1 = N.l1,
    X.l2 = N.l2,
    X.l3 = N.l3,
    X.l4 = N.l4,
    X.l5 = N.l5,
    X.l6 = N.l6)
```

```r
f_t_f_n <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model_f_n <- lm(f_t_f_n, data = d_f_n_t)

d_f_ta_t = d_f_ta %>%
    rename(X.l1 = tariff.l1,
    X.l2 = tariff.l2,
    X.l3 = tariff.l3,
    X.l4 = tariff.l4,
    X.l5 = tariff.l5,
    X.l6 = tariff.l6)

f_t_f_ta <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model_f_ta <- lm(f_t_f_ta, data = d_f_ta_t)


d_f_tr_t = d_f_tr %>%
    rename(X.l1 = trade.l1,
    X.l2 = trade.l2,
    X.l3 = trade.l3,
    X.l4 = trade.l4,
    X.l5 = trade.l5,
    X.l6 = trade.l6)

f_t_f_tr <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model_f_tr <- lm(f_t_f_tr, data = d_f_tr_t)


d_f_ch_t = d_f_ch %>%
    rename(X.l1 = china.l1,
    X.l2 = china.l2,
    X.l3 = china.l3,
    X.l4 = china.l4,
    X.l5 = china.l5,
    X.l6 = china.l6)

f_t_f_ch <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model_f_ch <- lm(f_t_f_ch, data = d_f_ch_t)




nw_se_f_d_t <- sqrt(diag(sandwich::NeweyWest(model_f_d, lag = 6, prewhite = FALSE)))
nw_se_f_n_t <- sqrt(diag(sandwich::NeweyWest(model_f_n, lag = 6, prewhite = FALSE)))
nw_se_f_ta_t <- sqrt(diag(sandwich::NeweyWest(model_f_ta, lag = 6, prewhite = FALSE)))
nw_se_f_tr_t <- sqrt(diag(sandwich::NeweyWest(model_f_tr, lag = 6, prewhite = FALSE)))
nw_se_f_china_t <- sqrt(diag(sandwich::NeweyWest(model_f_ch, lag = 6, prewhite = FALSE)))


robust_f_d_t <- 2 * (1-pt(abs(coef(model_f_d) / nw_se_f_d_t), df = df.residual(model_f_d)))
```

```r
robust_f_n_t <- 2 * (1-pt(abs(coef(model_f_n) / nw_se_f_n_t), df = df.residual(model_f_n)))
robust_f_ta_t <- 2 * (1-pt(abs(coef(model_f_ta) / nw_se_f_ta_t), df = df.residual(model_f_ta)))
robust_f_tr_t <- 2 * (1-pt(abs(coef(model_f_tr) / nw_se_f_tr_t), df = df.residual(model_f_tr)))
robust_f_ch_t <- 2 * (1-pt(abs(coef(model_f_ch) / nw_se_f_china_t), df = df.residual(model_f_ch)))


nw_se_f_d_t <- nw_se_f_d_t[names(coef(model_f_d))]
robust_f_d_t <- robust_f_d_t[names(coef(model_f_d))]


# Listes modèles, SE robustes et p-values robustes pour first
models_list_f <- list(model_f_d, model_f_n, model_f_ta, model_f_tr, model_f_ch)
robust_ses_f <- list(nw_se_f_d_t, nw_se_f_n_t, nw_se_f_ta_t, nw_se_f_tr_t, nw_se_f_china_t)
robust_pvals_f <- list(robust_f_d_t, robust_f_n_t, robust_f_ta_t, robust_f_tr_t, robust_f_ch_t)

# Noms personnalisés des coefficients
custom_names <- list(
  "vol.l1" = "$AHV_{t-1}$",
  "vol.l2" = "$AHV_{t-2}$",
  "vol.l3" = "$AHV_{t-3}$",
  "vol.l4" = "$AHV_{t-4}$",
  "vol.l5" = "$AHV_{t-5}$",
  "vol.l6" = "$AHV_{t-6}$",
  "X.l1" = "$X_{t-1}$",
  "X.l2" = "$X_{t-2}$",
  "X.l3" = "$X_{t-3}$",
  "X.l4" = "$X_{t-4}$",
  "X.l5" = "$X_{t-5}$",
  "X.l6" = "$X_{t-6}$",
  "const" = "Constant"
)

# Générer tableau texreg pour first
table_texreg_f <- texreg(
  l = models_list_f,
  override.se = robust_ses_f,
  override.pvalues = robust_pvals_f,
  custom.model.names = c("TweetDummy", "TweetCount", "Tariff", "Trade", "China"),
  custom.coef.map = custom_names,
  caption = "First-Term VAR Models of Average Hourly Volatility",
  label = "tab:VAR_First_Term",
  caption.above = TRUE,
  digits = 6,
  custom.gof.rows = list("Shock (IRF)" = c(0.002919, 0.002236, 0.000484, 0.000702, 0.000904)),
  star.cutoffs = c(0.001, 0.01, 0.05),
  custom.note = "This table displays VAR regression with only two variables : AHV and the X regressor. 
)

# Afficher le tableau
table_texreg_f
```

Table 2: First-Term VAR Models of Average Hourly Volatility

	TweetDummy	TweetCount	Tariff	Trade	China
AHV_{t-1}	0.541944***	0.542426***	0.543570***	0.543958***	0.543471***
	(0.080972)	(0.080477)	(0.079273)	(0.079048)	(0.079428)
AHV_{t-2}	−0.113920**	−0.113855**	−0.115106**	−0.115566**	−0.115002**
	(0.040758)	(0.040843)	(0.041031)	(0.040968)	(0.040995)
AHV_{t-3}	0.058050	0.057592	0.053635	0.053636	0.054382
	(0.030414)	(0.030474)	(0.030529)	(0.030534)	(0.030495)
AHV_{t-4}	0.188383	0.187417	0.184183	0.184102	0.184610
	(0.118235)	(0.117967)	(0.117238)	(0.117118)	(0.117369)
AHV_{t-5}	−0.088758	−0.089704	−0.091496	−0.091655	−0.091848
	(0.079651)	(0.079584)	(0.079702)	(0.079683)	(0.079634)
AHV_{t-6}	0.336662***	0.337701***	0.343373***	0.343466***	0.343184***
	(0.048176)	(0.048104)	(0.047473)	(0.047512)	(0.047665)
X_{t-1}	−0.000478***	−0.000163**	−0.000454	−0.001838**	−0.000352
	(0.000140)	(0.000057)	(0.000353)	(0.000702)	(0.000385)
X_{t-2}	−0.000184**	−0.000063*	−0.000289	0.000221	−0.000048
	(0.000070)	(0.000030)	(0.000271)	(0.000513)	(0.000233)
X_{t-3}	−0.000693***	−0.000263***	−0.001007***	−0.000949**	−0.001412***
	(0.000153)	(0.000062)	(0.000267)	(0.000308)	(0.000359)
X_{t-4}	−0.000564***	−0.000208***	−0.000274	−0.000612	−0.000202
	(0.000159)	(0.000062)	(0.000392)	(0.000411)	(0.000452)
X_{t-5}	−0.000435***	−0.000125**	−0.000468	−0.000605	−0.000057
	(0.000118)	(0.000046)	(0.000274)	(0.000361)	(0.000354)
X_{t-6}	0.000118	0.000099*	0.000240	−0.000121	0.000275
	(0.000122)	(0.000049)	(0.000344)	(0.000395)	(0.000371)
Constant	0.004020***	0.003079***	0.001510***	0.001657***	0.001593***
	(0.000661)	(0.000520)	(0.000353)	(0.000371)	(0.000343)
Shock (IRF)	0.002919	0.002236	0.000484	0.000702	0.000904
R^2	0.687909	0.687236	0.685341	0.685489	0.685533
Adj. R^2	0.687331	0.686657	0.684758	0.684907	0.684951
Num. obs.	7036	7036	7036	7036	7036

This table displays VAR regression with only two variables : AHV and the X regressor. The column names represent the X variable for the selected mod

```r
#Second

d_s_d_t = d_s_d %>%
    rename(X.l1 = dummy.l1,
    X.l2 = dummy.l2,
    X.l3 = dummy.l3,
    X.l4 = dummy.l4,
    X.l5 = dummy.l5,
    X.l6 = dummy.l6)

f_t_s_d <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model_s_d <- lm(f_t_s_d, data = d_s_d_t)


d_s_n_t = d_s_n %>%
    rename(X.l1 = N.l1,
    X.l2 = N.l2,
    X.l3 = N.l3,
    X.l4 = N.l4,
    X.l5 = N.l5,
    X.l6 = N.l6)

f_t_s_n <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model_s_n <- lm(f_t_s_n, data = d_s_n_t)


d_s_ta_t = d_s_ta %>%
    rename(X.l1 = tariff.l1,
    X.l2 = tariff.l2,
    X.l3 = tariff.l3,
    X.l4 = tariff.l4,
    X.l5 = tariff.l5,
    X.l6 = tariff.l6)

f_t_s_ta <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model_s_ta <- lm(f_t_s_ta, data = d_s_ta_t)


d_s_tr_t = d_s_tr %>%
    rename(X.l1 = trade.l1,
    X.l2 = trade.l2,
    X.l3 = trade.l3,
    X.l4 = trade.l4,
    X.l5 = trade.l5,
    X.l6 = trade.l6)


f_t_s_tr <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model_s_tr <- lm(f_t_s_tr, data = d_s_tr_t)
```

```r
d_s_ch_t = d_s_ch %>%
    rename(X.l1 = china.l1,
    X.l2 = china.l2,
    X.l3 = china.l3,
    X.l4 = china.l4,
    X.l5 = china.l5,
    X.l6 = china.l6)

f_t_s_ch <- as.formula("y ~ -1 + vol.l1 + vol.l2 + vol.l3 + vol.l4 + vol.l5 + vol.l6 +
                         X.l1 + X.l2 + X.l3 + X.l4 + X.l5 + X.l6 + const")
model_s_ch <- lm(f_t_s_ch, data = d_s_ch_t)


nw_se_s_d_t <- sqrt(diag(sandwich::NeweyWest(model_s_d, lag = 6, prewhite = FALSE)))
nw_se_s_n_t <- sqrt(diag(sandwich::NeweyWest(model_s_n, lag = 6, prewhite = FALSE)))
nw_se_s_ta_t <- sqrt(diag(sandwich::NeweyWest(model_s_ta, lag = 6, prewhite = FALSE)))
nw_se_s_tr_t <- sqrt(diag(sandwich::NeweyWest(model_s_tr, lag = 6, prewhite = FALSE)))
nw_se_s_china_t <- sqrt(diag(sandwich::NeweyWest(model_s_ch, lag = 6, prewhite = FALSE)))


robust_s_d_t <- 2 * (1-pt(abs(coef(model_s_d) / nw_se_s_d_t), df = df.residual(model_s_d)))
robust_s_n_t <- 2 * (1-pt(abs(coef(model_s_n) / nw_se_s_n_t), df = df.residual(model_s_n)))
robust_s_ta_t <- 2 * (1-pt(abs(coef(model_s_ta) / nw_se_s_ta_t), df = df.residual(model_s_ta)))
robust_s_tr_t <- 2 * (1-pt(abs(coef(model_s_tr) / nw_se_s_tr_t), df = df.residual(model_s_tr)))
robust_s_ch_t <- 2 * (1-pt(abs(coef(model_s_ch) / nw_se_s_china_t), df = df.residual(model_s_ch)))

nw_se_s_d_t <- nw_se_s_d_t[names(coef(model_s_d))]
robust_s_d_t <- robust_s_d_t[names(coef(model_s_d))]

# Listes modèles, SE robustes et p-values robustes pour second
models_list_s <- list(model_s_d, model_s_n, model_s_ta, model_s_tr, model_s_ch)
robust_ses_s <- list(nw_se_s_d_t, nw_se_s_n_t, nw_se_s_ta_t, nw_se_s_tr_t, nw_se_s_china_t)
robust_pvals_s <- list(robust_s_d_t, robust_s_n_t, robust_s_ta_t, robust_s_tr_t, robust_s_ch_t)

# Générer tableau texreg pour second
table_texreg_s <- texreg(
  l = models_list_s,
  override.se = robust_ses_s,
  override.pvalues = robust_pvals_s,
  custom.model.names = c("TweetDummy", "TweetCount", "Tariff", "Trade", "China"),
  custom.coef.map = custom_names,
  caption = "Second-Term VAR Models of Average Hourly Volatility",
  label = "tab:VAR_Second_Term",
  caption.above = TRUE,
  digits = 6,
  custom.gof.rows = list("Shock (IRF)" = c(0.016739, 0.015714, 0.011582, -0.004131, 0.015569)),
  star.cutoffs = c(0.05, 0.01, 0.001),
  custom.note = "This table displays VAR regression with only two variables : AHV and the X regressor. 
)
```

Table 3: Second-Term VAR Models of Average Hourly Volatility

	TweetDummy	TweetCount	Tariff	Trade	China
AHV_{t-1}	0.299398^{**}	0.299350^{**}	0.294752^{**}	0.301160^{**}	0.274419^{***}
	(0.112417)	(0.114098)	(0.108853)	(0.111015)	(0.081386)
AHV_{t-2}	0.015406	0.013567	0.020667	0.011769	0.031670
	(0.045643)	(0.046702)	(0.039243)	(0.045795)	(0.031719)
AHV_{t-3}	0.076169^{***}	0.076851^{***}	0.068749^{***}	0.072284^{***}	0.052697
	(0.010099)	(0.010266)	(0.016672)	(0.015313)	(0.033941)
AHV_{t-4}	0.084229	0.085108	0.074401	0.080544	0.035573
	(0.073259)	(0.073217)	(0.080381)	(0.069965)	(0.107841)
AHV_{t-5}	0.013424	0.010406	0.015342	0.017631	0.005467
	(0.009477)	(0.009620)	(0.009167)	(0.011320)	(0.031442)
AHV_{t-6}	0.126612^{*}	0.126324^{*}	0.132056^{*}	0.124277^{*}	0.150909^{*}
	(0.058486)	(0.057687)	(0.057043)	(0.057466)	(0.059264)
X_{t-1}	0.006569	0.000947	0.027028	0.020463	0.154584
	(0.010877)	(0.001389)	(0.029078)	(0.031549)	(0.140076)
X_{t-2}	-0.003222^{**}	-0.000736	0.008588	0.047163	0.099315
	(0.001221)	(0.000535)	(0.007247)	(0.041734)	(0.097425)
X_{t-3}	-0.005538^{**}	-0.001637^{*}	-0.010306	-0.026631	-0.047690
	(0.001707)	(0.000726)	(0.007507)	(0.021408)	(0.028342)
X_{t-4}	0.002474	0.000136	0.002002	0.019925	-0.020669
	(0.005119)	(0.000924)	(0.003272)	(0.031241)	(0.013733)
X_{t-5}	-0.008527^{*}	-0.001651	-0.002649	-0.012965	-0.004470
	(0.004029)	(0.001070)	(0.004407)	(0.014516)	(0.020539)
X_{t-6}	-0.003594	-0.000627	-0.004279	-0.011100	0.008027
	(0.003213)	(0.000745)	(0.003857)	(0.010029)	(0.024100)
Constant	0.072524^{**}	0.068423^{***}	0.049265^{**}	0.052127^{***}	0.044027^{*}
	(0.023894)	(0.020607)	(0.015173)	(0.013712)	(0.018061)
Shock (IRF)	0.016739	0.015714	0.011582	-0.004131	0.015569
R^2	0.244117	0.240788	0.251263	0.244406	0.285165
Adj. R^2	0.224424	0.221009	0.231757	0.224721	0.266543
Num. obs.	512	512	512	512	512

This table displays VAR regression with only two variables : AHV and the X regressor. The column names represent the X variable for the selected mod

```
# Afficher le tableau
table_texreg_s
```