INTRODUCCIÓN A LA ESTABILIDAD FINANCIERA

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Contents

Chapter 1

La importancia en la medición del riesgo sistémico

1.1 El mapa de riesgos

1.1.1 Aplicación para una serie

El caso de las remesas en El Salvador.

Para conocer mejor esta metodología por favor revisar Ortiz (2019)

```r
library("zoo")
library("xts")
library("dplyr")
library("ggplot2")
library("ggrepel")
library("ggthemes")
REMESAS <- as.xts(read.zoo("REMESAS.csv", index.column = 1, sep = ";",
    header = TRUE, format = "%d/%m/%Y"))
SV <- data.frame(date = index(REMESAS), coredata(REMESAS))
SV <- mutate(SV, SLV_R = SLV/(IPC_SV/100))
SV <- mutate(SV, DIFF = SLV_R - lag(SLV_R, n = 12))
SV <- mutate(SV, G1 = (DIFF/(lag(SLV_R, n = 12))) * 100)
BASE <- data.frame(date = SV$date, coredata(SV$G1))
colnames(BASE) <- c("date", "SV")
inicial <- "2002-01-01"
finalista <- "2021-09-01"
Data <- filter(BASE, date >= "2002-01-01" & date <= "2021-09-01")
```

```r
dates <- Data[, "date"]
LARGO <- length(dates)
missing.color <- "white"
colours1T <- c("forestgreen", "yellow", "red3")
DIR <- -1
VARIABLES <- colnames(Data)
VAR <- Data[, VARIABLES[2]]
VAR.DIR <- VAR * DIR
EMP <- ecdf(VAR.DIR)
QUANT <- EMP(VAR.DIR)
z <- QUANT
zz <- z
assign(paste0(VARIABLES[2], ".s.lim"), max(VAR, na.rm = T) +
    sd(VAR.DIR, na.rm = T)/2)
assign(paste0(VARIABLES[2], ".i.lim"), min(VAR, na.rm = T) -
    sd(VAR.DIR, na.rm = T)/2)
dates.s <- Data$date[1]
dates <- Data$date
for (t in seq_along(dates)[-1]) {
    mean.day <- dates[t - 1] + ((dates[t] - dates[t - 1])/2)
    dates.s <- c(dates.s, mean.day, dates[t])
}
dates.s <- c(dates.s[1] - 45, dates.s, dates.s[length(dates.s)] +
    45)
assign(paste0(VARIABLES[2]), VAR.DIR)
for (t in seq_along(dates)[-length(dates)]) {
    pos <- which(dates[t] == dates.s)
    assign(paste0(VARIABLES[2], ".t.", t), dates.s[pos + c(-1,
        0, 1)])
    if (is.na(zz[t])) {
        assign(paste0(VARIABLES[2], ".c.", t), rgb(matrix(col2rgb(missing.color),
            1, 3)/255))
    } else {
        assign(paste0(VARIABLES[2], ".c.", t), rgb(colorRamp(colours1T)(z[t])/255))
    }
}
DATOS <- select(Data, date, SV)
DATOS$date <- as.Date(DATOS$date)
DATOS$MAX <- zz
DATOS$INICIO <- as.Date(DATOS$date) - 46
DATOS$FINAL <- as.Date(DATOS$date) + 46
for (t in seq_along(dates)[c(-LARGO)]) {
    DATOS$COLOR[t] <- get(paste0(VARIABLES[2], ".c.", t))
}
DATOS$COLOR[LARGO] <- get(paste0(VARIABLES[2], ".c.", LARGO -
```
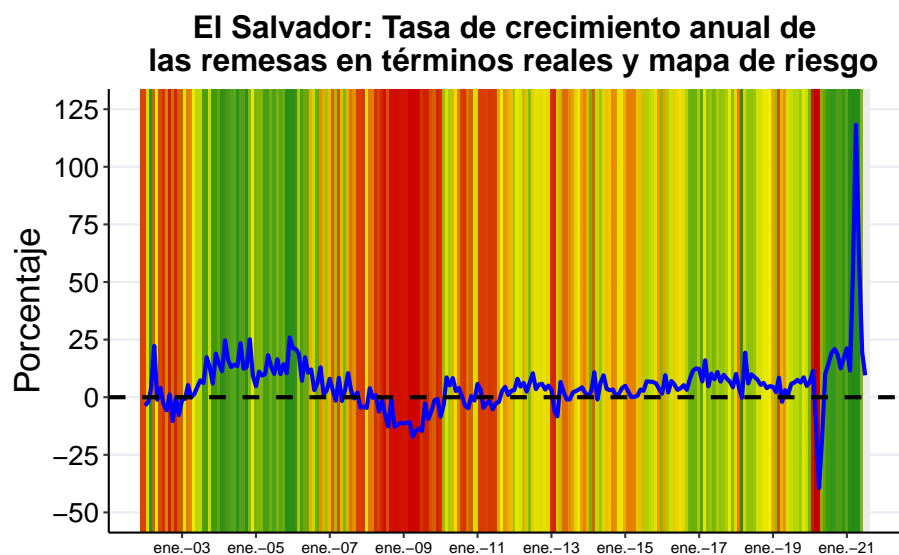
```
    1))
P_2 <- paste0("+geom_rect(data = DATOS,aes(xmin =as.Date('",
    DATOS$INICIO[1], "'), xmax =as.Date('", DATOS$FINAL[1], "'),ymin = -Inf, ymax = Inf),fill ='"
    DATOS$COLOR[1], "',alpha = 0.05, color='transparent')")
for (j in 2:LARGO) {
    P_2 <- paste0(P_2, "+geom_rect(data = DATOS,aes(xmin =as.Date('",
        DATOS$INICIO[j], "'), xmax =as.Date('", DATOS$FINAL[j],
        "'),ymin = -Inf, ymax = Inf),fill ='", DATOS$COLOR[j],
        "',alpha = 0.05, color='transparent')")
}

P_1 <- "ggplot(data = DATOS, aes(x = date, y=SV))+labs(y='', x='')"
P <- paste0(P_1, P_2)
PS <- eval(parse(text = P))
PS <- PS + geom_line(size = 1, color = "blue") + labs(y = "Porcentaje",
    x = "", title = "El Salvador: Tasa de crecimiento anual de \n las remesas en términos reales
    caption = "Fuente: Elaboración propia con base en Banco Central de Reserva de El Salvador.")
    geom_hline(aes(yintercept = 0), color = "black", size = 1,
        linetype = "dashed")
PS <- PS + theme_classic() + theme(axis.line.x = element_line(colour = "black",
    size = 0.5), axis.line.y.left = element_line(colour = "black",
    size = 0.5), axis.line.y.right = element_blank(), axis.text.x = element_text(color = "black",
    size = 8), axis.text.y = element_text(color = "black", size = 14),
    axis.title.x = element_text(color = "black", size = 18),
    axis.title.y = element_text(color = "black", size = 18),
    plot.title = element_text(size = 16, hjust = 0.5, face = "bold"),
    plot.caption = element_text(size = 12, hjust = 0), panel.grid.major = element_line(size = 0.5
        linetype = "solid", colour = "#EAEAF2"))
PS <- PS + scale_x_date(date_breaks = "24 month", date_labels = "%b-%y") +
    scale_y_continuous(breaks = seq(-50, 125, by = 25), limits = c(-50,
        125)) + coord_cartesian(xlim = as.Date(c("2002-01-01",
    "2021-09-15")))
```

```
ggsave(filename="SIVAR.jpg",
        plot = PS,
        #device = cairo_pdf,
        width = 297,
        height = 210,
        units = "mm")
PS
```

El Salvador: Tasa de crecimiento anual de las remesas en términos reales y mapa de riesgo

Fuente: Elaboración propia con base en Banco Central de Reserva de El Salva