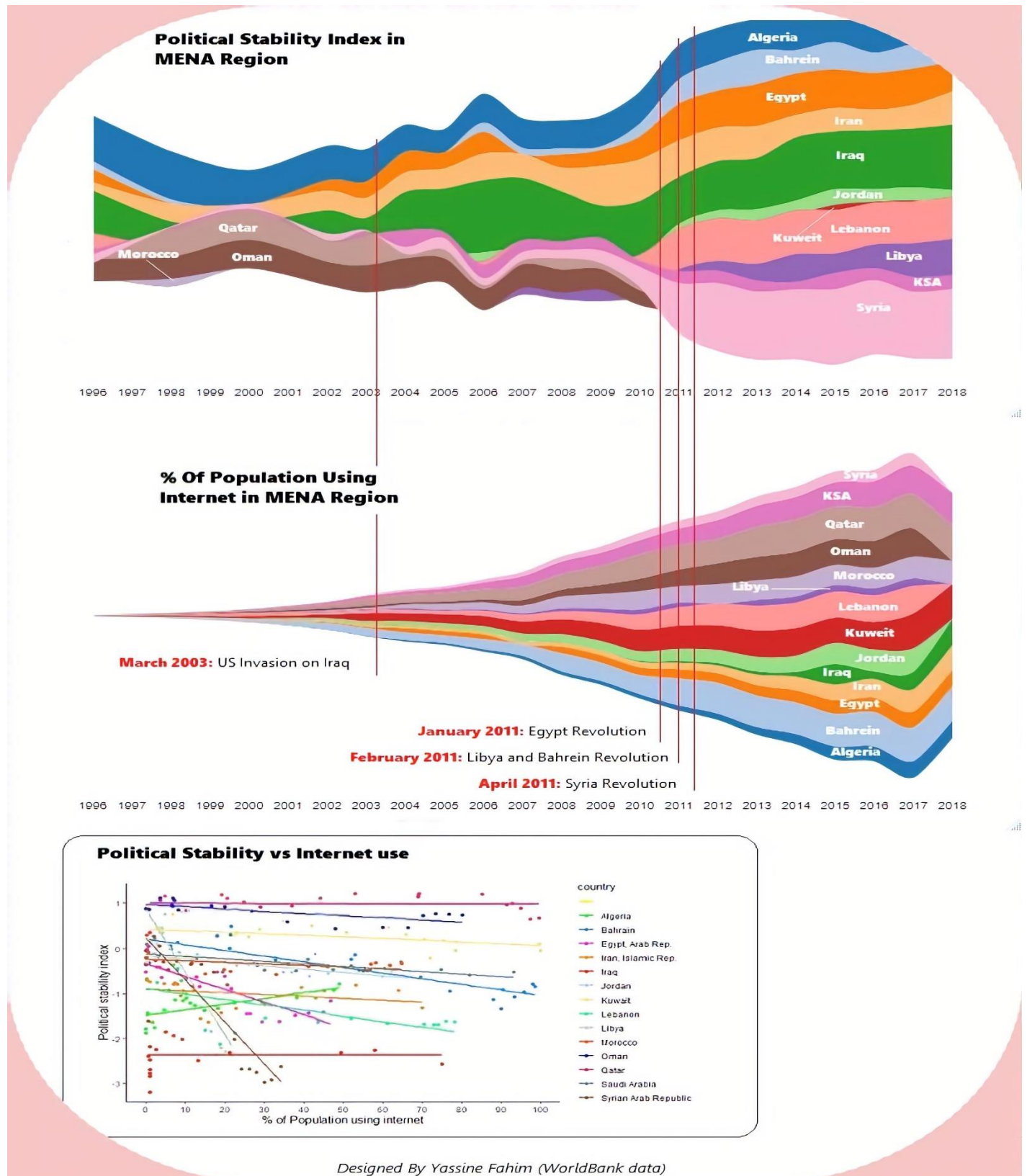


# The Political stability in the MENA region relationship with Percentage of population using Internet: A negative correlation?

Since the beginning of the 21<sup>st</sup> century, the MENA region witnessed many events that affected the political stability of many countries. In parallel, the percentage of people using internet is significantly increasing in all countries since the starting of the century.

## Visualization



The illustration above consists of two streamgraphs and one scatter plot. The plots were performed using RStudio. In this report, I included only a jpeg version, so it lacks other interactive features that help to better understand the data. The streamgraphs represent data about the percentage of the population using internet and the political stability index in several countries in the MENA region from 1996 to 2018. The data was retrieved from the official website of the World Bank database.

According to the World Bank meta-data, the political stability index or the political instability and/or politically motivated violence index is an estimate that represents the likelihood of a country to be politically stable or unstable. The values are ranging from approximately -3 to 3, (-3 strongly unstable and 3 strongly stable). The percentage of population using internet is simply the number of internet users over the total population of a country.

The first plot is a streamgraph that represents the political stability index of several countries in the MENA region. The width of the stream is the magnitude at a specific time, and the length is the period. The width can be positive or negative. Similarly, the second plot represents the percentage of people using internet in the same countries at a specific time (years).

The streamgraphs are accompanied by vertical lines (red lines) that attest of some major events in the political arena of the MENA region. In 2011, the three red lines show the revolutions that occurred in Egypt, Libya, Bahrein, and Syria, or what is best known by the Arab spring. Also, first redline represents the invasion of the US in Iraq in March 2003. These events had a major impact on the political stability index of the respective countries as the width of the streams increased. In parallel, the internet users' streams of all countries are enlarging with time which indicates an increasing trend in all countries. Both trends of political stability index and percentage of people using internet can be further analyzed.

## **A negative correlation?**

The third plot is a scatter plot that represents the relationship between political stability index and percentage of population using internet of all the selected countries within the same period (1996 to 2018). The scatter plot consists of the trendlines of different countries (political stability index in the y-axis and percentage of people using internet in the x-axis). For most of the countries, we can say that there's almost no correlation between the two variables as the trendline is horizontal. However, countries such as Egypt, Syria, Bahrein, and Libya, show a strong or moderate negative relationship between the two variables as the trendlines have a negative slope. For these countries, whenever the percentage of population using internet increases over time, the political stability decreases.

## RStudio code:

```
rm(list=ls()) #Clears the global environment

setwd("C:/Users/hp/OneDrive - Al Akhawayn University in Ifrane/Desktop/QUANTITATIVE
MTHDS/FINAL") #setting the working directory

set.seed(1995) #set seed

#Loading the packages

library(tidyverse)

library(scales)

library(ggthemes)

library(ggthemes)

library(ggthemes)

library(streamgraph)

#Loading data

internet_pol <- read.csv('internet_political_stab.csv')

internet <- read.csv('internet.csv')

pol_stab <- read.csv('political_stability.csv')

colnames(internet_pol) <- c("year","country","int_use","pol_stab")

colnames(internet) <- c("year","country","int_use")

colnames(pol_stab) <- c("year","country","pol_stab","pos_pol_stab")

stream_internet <- streamgraph(internet, key = "country", date = "year", value =
"int_use", interactive = TRUE)%>%

  sg_axis_x(tick_interval=1,tick_units="year")%>%

  sg_fill_tableau(palette = "tableau20")%>%

  sg_legend(TRUE, label = "country")

print(stream_internet)

stream_politic <- streamgraph(pol_stab, key = "country", value = "pol_stab", date =
"year",interactive = TRUE)%>%

  sg_axis_x(tick_interval=1, tick_units= "year")%>%

  sg_fill_tableau(palette = "tableau20")%>%

  sg_legend(TRUE, label = "country")

print(stream_politic)

plot <- ggplot(internet_pol, aes(x = int_use, y = pol_stab))

plot <- plot + aes(colour = country)+

  geom_point()+

  geom_smooth( se = F,method = lm)+

  xlab("% of Population using internet")+

  ylab("Political stability index")+

  theme_classic()+

  scale_x_continuous(breaks = seq(0, 100, 10))+

  scale_colour_stata(scheme = "slrcolor")+
```

```
theme(axis.title=element_text(size=12))  
print(plot)
```