

# Monitoring social and geopolitical events with Big Data

Boston University Alumni Club of Spain

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Big Data at BBVA Research



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# 01

**Opportunities in the digital era.  
Big Data at BBVA Research**

## Traditional data could not answer some relevant questions...

 **Social awareness and the Arab Spring**

 **Political events and social reaction**

 **Natural disasters and epidemics**

... preventing us to measure their economic impact...  
... in a world with increasing risks and uncertainty



**The use of Big Data and Data science techniques allows us to quantify these trends**

## New framework in the digital era

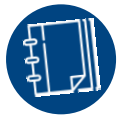
*Novel data-driven computational approaches are needed to exploit the new opportunities in the **new digital era** where data can be used to study the world in real time, both at micro or macro level*



› New data availability



› Combination of historical data with real time data



› Better and faster infrastructure



› Advanced data science techniques and algorithms



› New answers to old questions



› Higher computational abilities to face more data granularity

## ... which needs the development of new competences to take advantage of it



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Making the right questions



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Developing the data management and programming capabilities to work with large-scale datasets



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Deepening the statistical and econometric skills to analyze and deal with high-dimensional data



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Interpreting the results: summarize, describe and analyze the information

# Big Data at BBVA Research

## Our work



- We analyze **geopolitical, political, social and economic issues using large- scale databases and quantitative data-driven methods** rather than just qualitative introspection

## Our datasets



- **Media data** to exploit news intensity, geographic density of events (location intelligence) and emotions across the world (sentiment analysis)
- **BBVA aggregate and anonymized data** from clients digital footprint
- **Data from the web** (Central Banks' reports among others)

## Our results



- We are at the **research frontier in the geopolitical and economic area** contributing to the innovation and increasing our internal and external reach

# 02

## Monitoring geopolitical and social events



## External databases: GDELT

### Global Database on Events Location and Tone

Open database of human society from every corner of the globe dating back to 1979 ...

... including over 300 events around the world and more than 30000 themes...

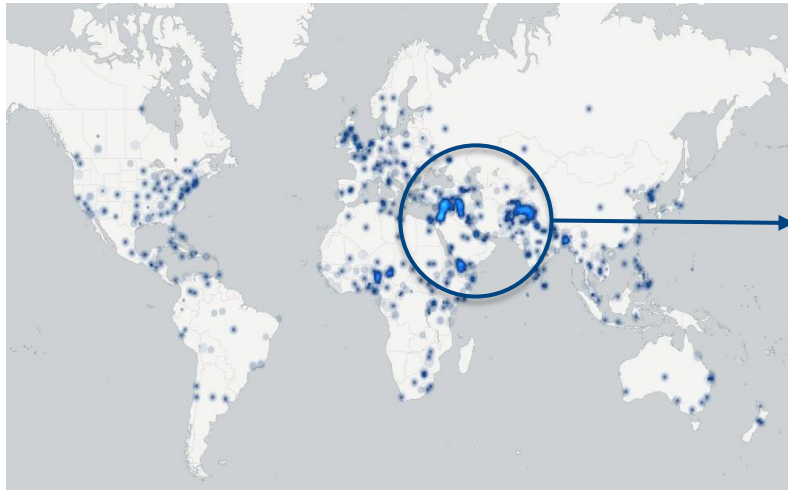
... georeferenced across the entire planet...

...and collecting emotions using some of the most sophisticated algorithms

## Tracking Geopolitics on real time...

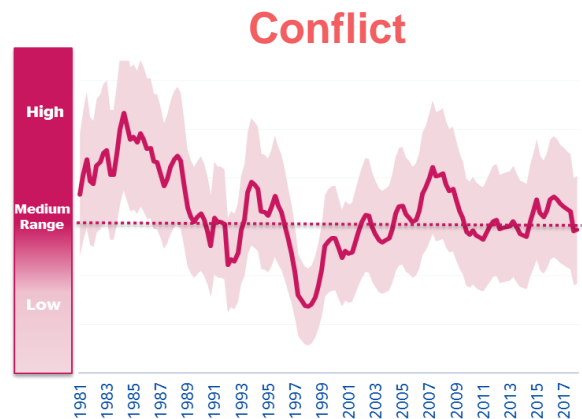
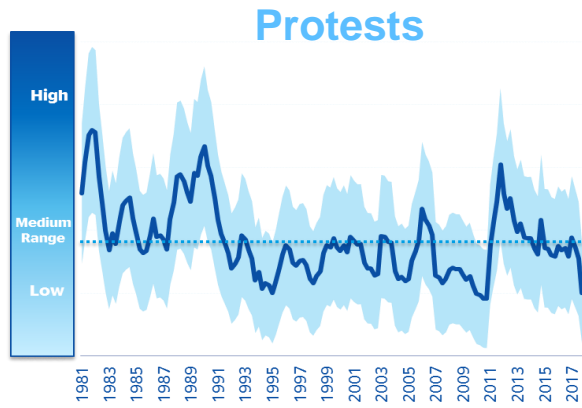
is useful to identify the main hot spots and potential spillovers

### Conflict Intensity Map 2017-18 (Number of conflicts/ Total events)

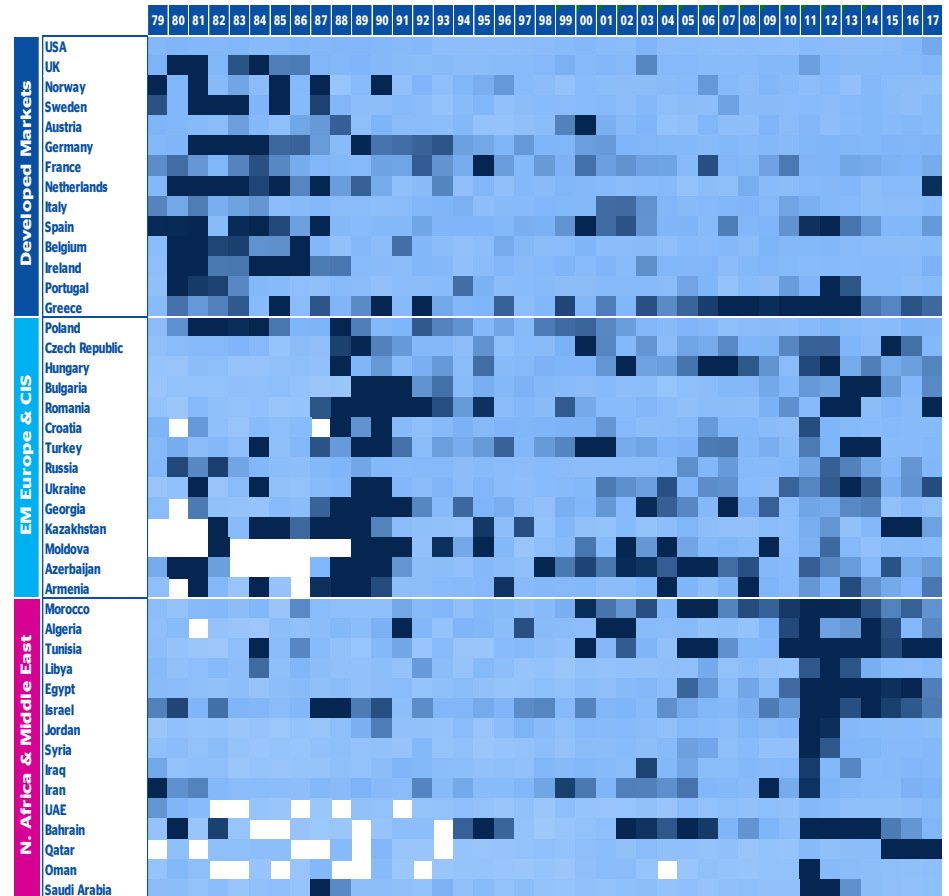


# ... getting the historical perspective, main hot spots and contagion effects

BBVA Research World Protest and Conflict Intensity Index 1979-2018



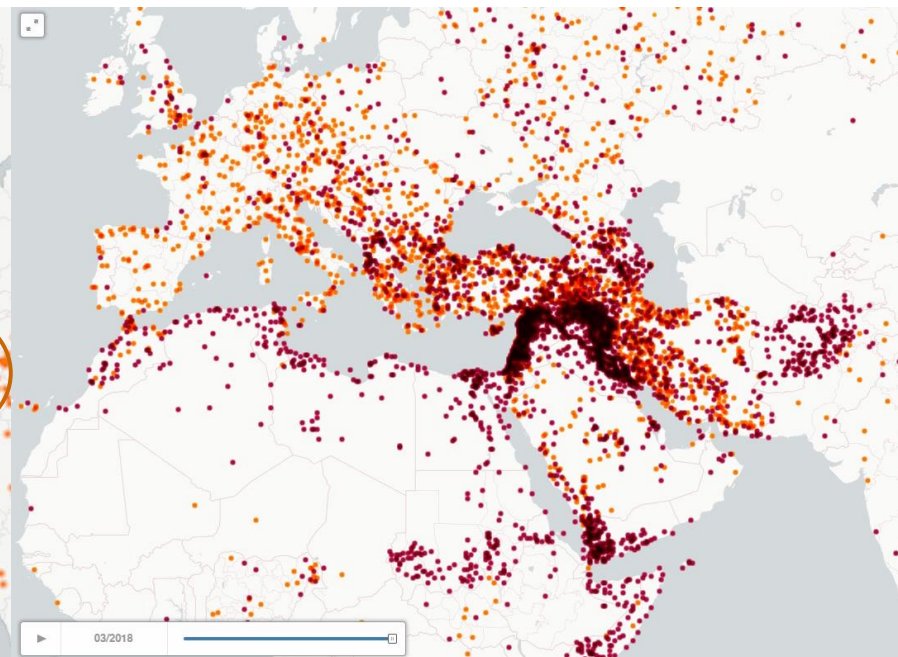
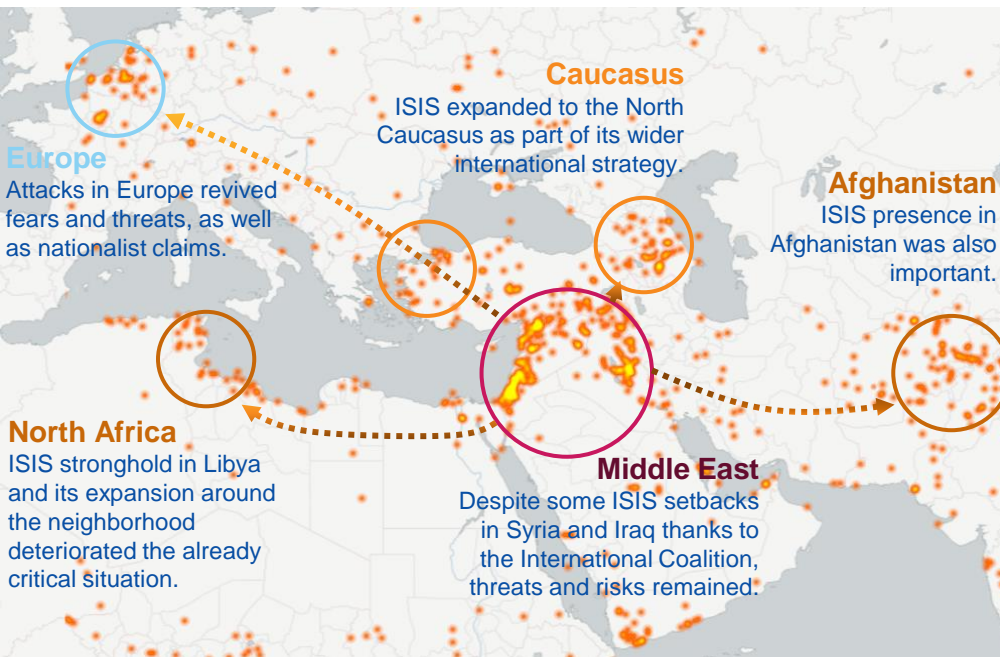
World Protest Intensity Map 1979- 2017



# Instability in the MENA region had an important spill over effect: the refugee crisis

**ISIS presence in the Middle East and the neighborhood in 2016**  
 (Number of news referring to ISIS presence / Total events)

**BBVA Research Refugees Flows Map in 2015-18**  
 (Number of media citations about refugees' inflows –orange- and outflows –red)

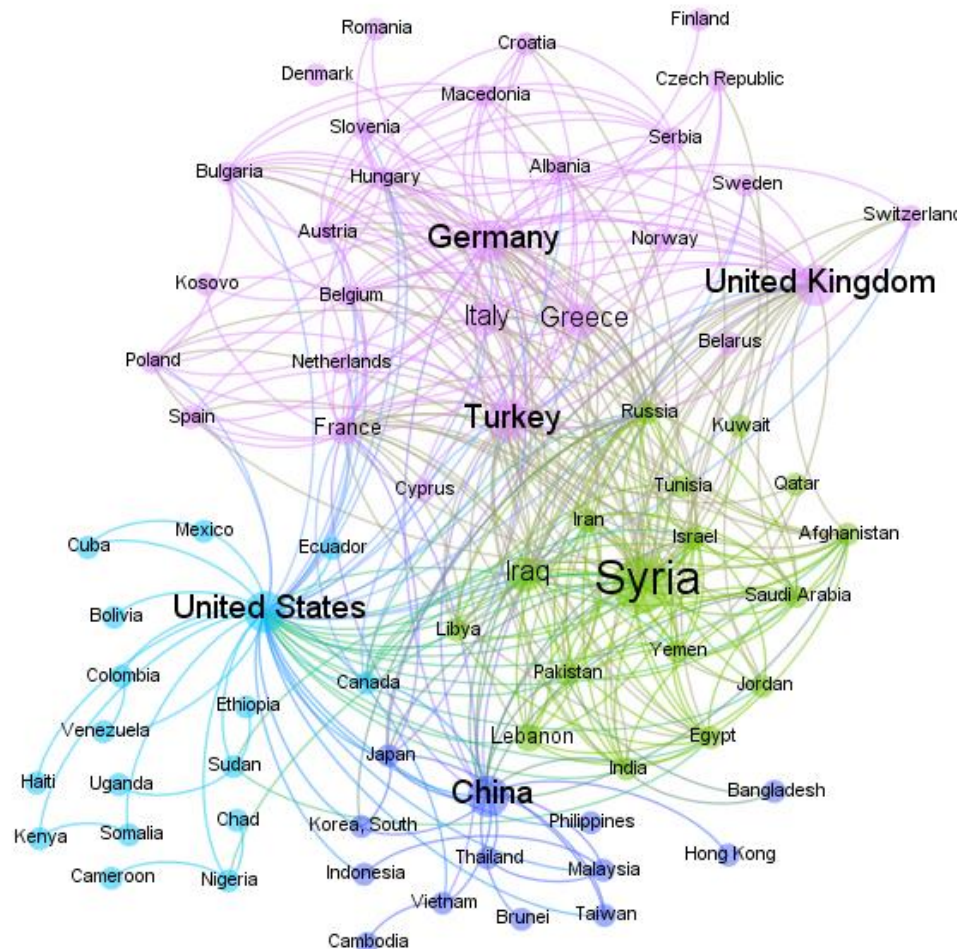


# Understanding the refugees transit corridors through the media and high frequency data

## Country network on refugees: media coverage

(Edges thickness reflect how often each pair of countries were mentioned together. Nodes size show the centrality. Clusters capture the potential transit corridors.

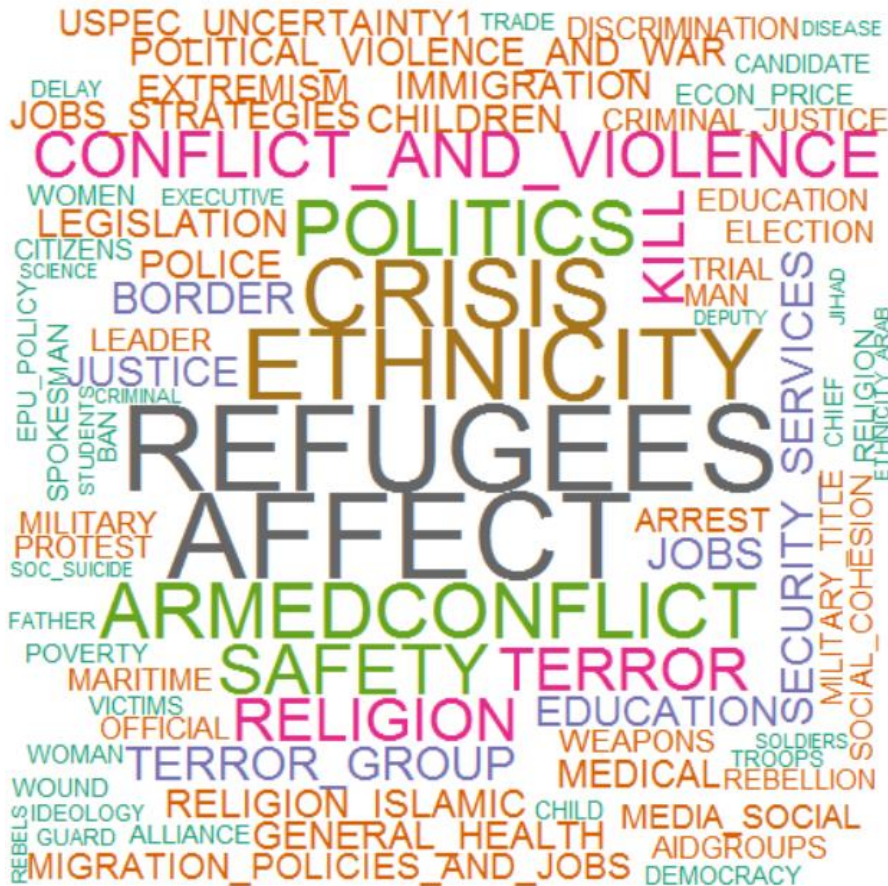
Turkey, Italy and Greece appear as central hubs for refugees crossing the Mediterranean, before they transit to other European countries.



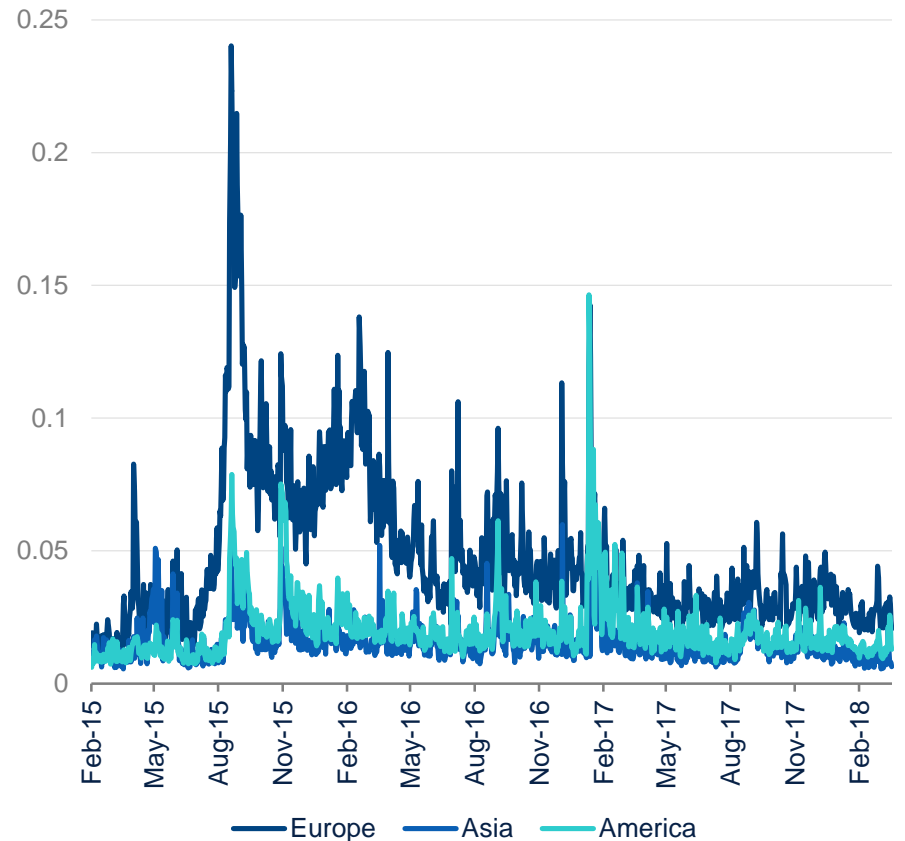
Syria has become the world's largest driver of migration in recent years. The neighboring countries like Iran and Lebanon have also host a significant number of refugees.

# The refugee crisis has awakened interest in the world media, specially in some regions

Refugees in the media: worldcloud of main commented topics together with refugee

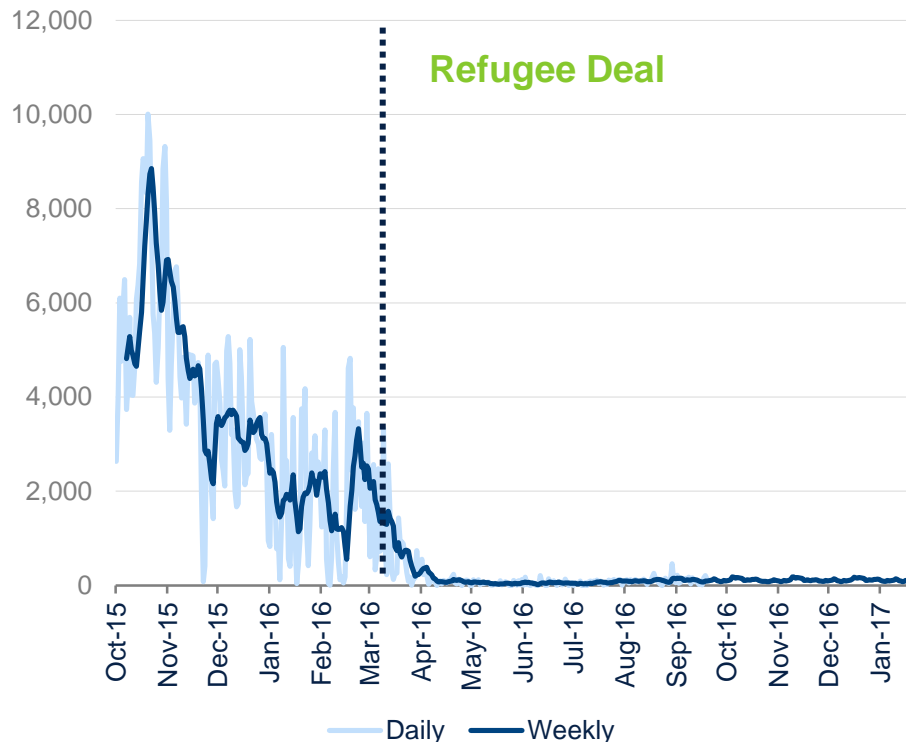


Refugees in the media: media coverage of refugees by region



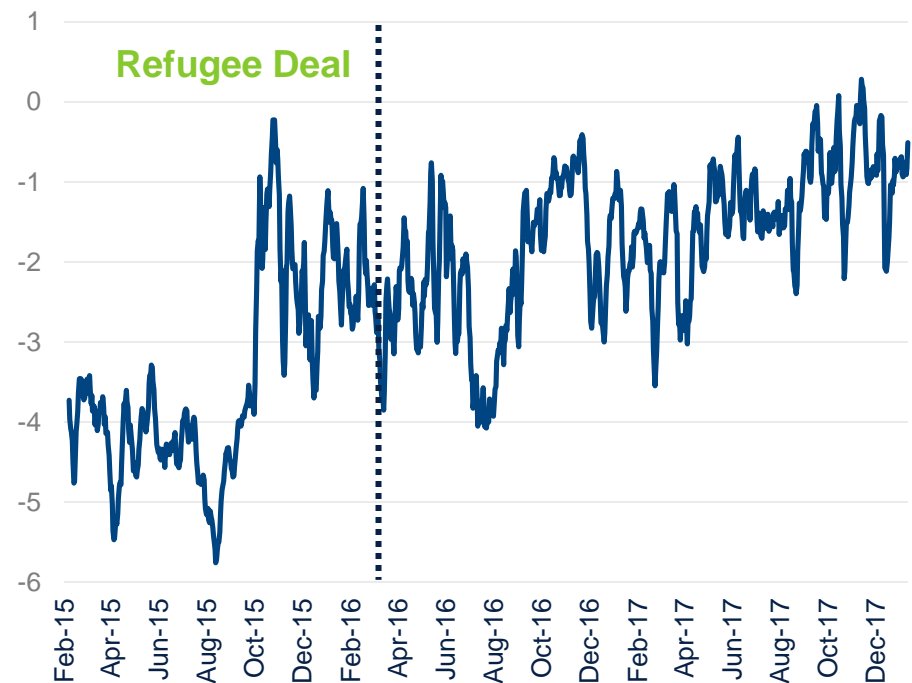
# This situation led to the EU & Turkey deal on refugees to reduce the number of refugees that goes to Europe

**Daily and Weekly Average Refugee Arrivals to Greece**  
(UNHCR estimates)



Source: BBVA Research and UNHCR

**Media sentiment on Turkey – European Union relationship**  
(Lower values indicate a deterioration of Turkey-EU relations)



Source: [www.gdelt.org](http://www.gdelt.org) & BBVA Research

# Economic effects of the refugee inflows in Europe

## MACROECONOMIC IMPACT

### Short term

Increase of aggregate demand

Fiscal expansion

### Medium - Long term

Labour market

GDP

Fiscal sustainability



## POLICY RESPONSE

**High uncertainty and heterogeneous effects** depending on the country



**A comprehensive policy response and a long-term strategy is necessary** to turn into positive the macroeconomic effects in the medium to long term.



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**Thank you!**

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