

The COVID-19 economic impact in Real Time and High Definition

Cotec - Big Data for Social Good

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Traditional data sometimes could not answer relevant questions and other times it could not have a fast answer to them



Geopolitical events



Political events and social reaction

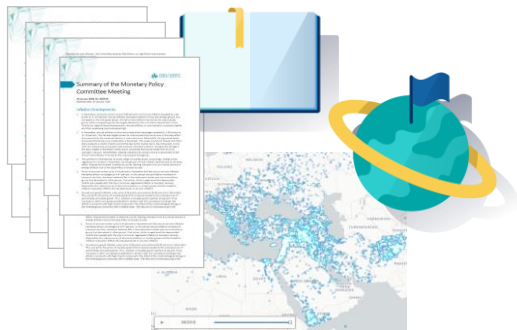


Natural disasters and epidemics



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

The use of Big Data at BBVA Research: from text to network analysis using data in real time and high definition



Text as Data

(Macroeconomics, Politics, Geopolitics, society,...)



National Accounts in “Real Time” & “High Definition”

(Macroeconomic & Sectorial analysis)



Structural Analysis in Real Time

(Bank transactions interconnectedness, Network analysis,...)

We process and analyze millions of aggregated and anonymized bank transactions to replicate economic indicators in real time



Individual to firm transactions



Firm to firm transactions



Firm to individual transactions

Reassuring data management process



Data
Ingestion



Data
Quality



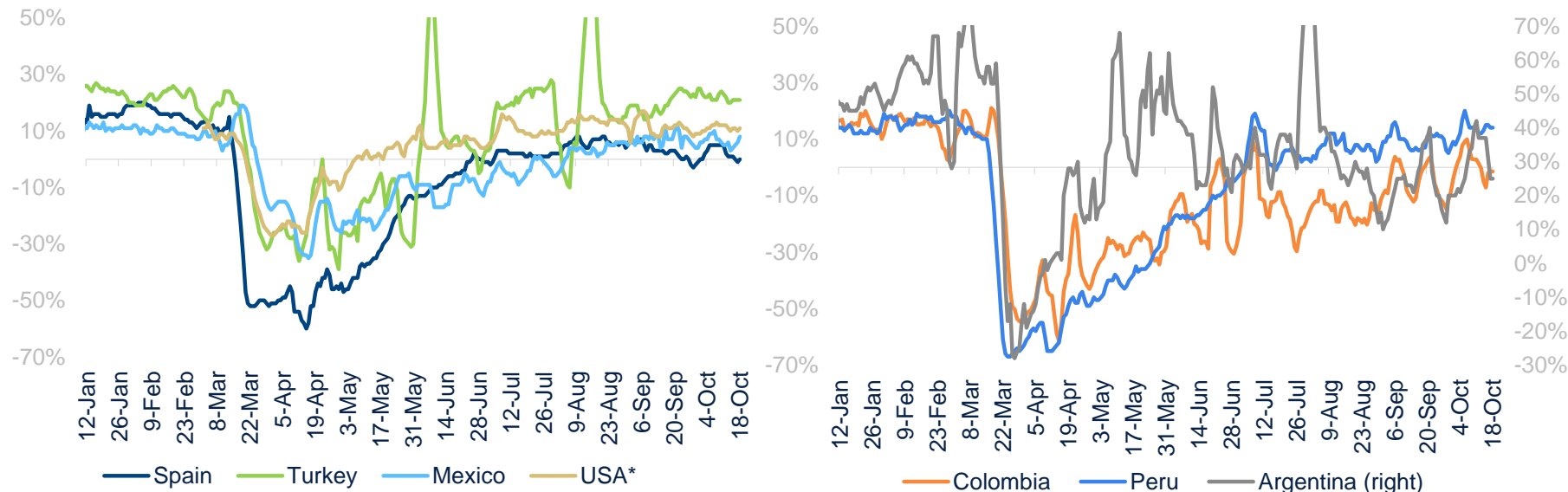
Data
Representativity

Our developed consumption indicators help us to monitor the Covid-19 crisis in all countries where we have data



BBVA RESEARCH BIG DATA CONSUMPTION INDICES

(Total consumption by card, % YoY, 7D cumulative)



Daily indicators are provided on our website with weekly updates

See [Carvalho et al \(2020\)](#) for further detail

Source: BBVA Research. * Proxied by USA Sunbelt

Spending at BBVA POS by BBVA and non-BBVA customers plus spending by BBVA customers at non-BBVA POS. This data considers final expenditures, so not intermediate consumption is included. Therefore, the correspondence with national accounts household consumption is not fully equivalent. More detail about the data could be found in the following [link](#).

The time advantage on consumption evolution can be important... especially in emerging countries

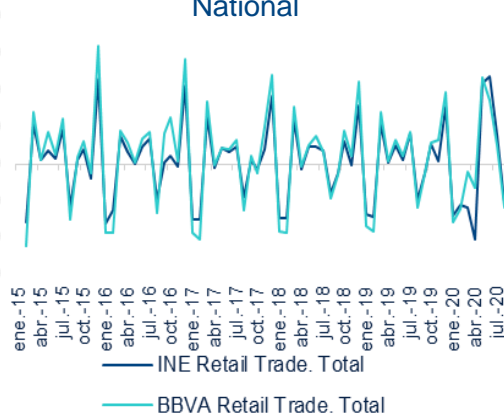


BBVA Big Data Consumption Index Spain VS Official data: the retail sales index (monthly growth rates)

National

By distribution class

By region



Spain

Gas Station

Single Retail Store

Small Chain Store

Large Chain Store

Department Store

Andalusia

Aragon

Asturias

Valencia

Extremadura

Galicia

Balearic Island

Canary Island

Cantabria

Madrid

Region of Murcia

Navarre

Castile and Leon

Castile-La Mancha

Catalonia

Basque Country

Rioja

Spain

Source: BBVA Research

Publication calendar for consumption according to the National Institutes of Statistics by country

See [Bodas et al \(2019\)](#) for further detail





It is not just the “high frequency”... but the “High Definition” component too, which leads Big Data to have “High Potential”

High frequency consumption indicators

By sector

Health, Transport,
Restaurants,
Entertainment,
Hotels, Food,...

By geography

Regions, cities and
even postal codes

Online / Offline

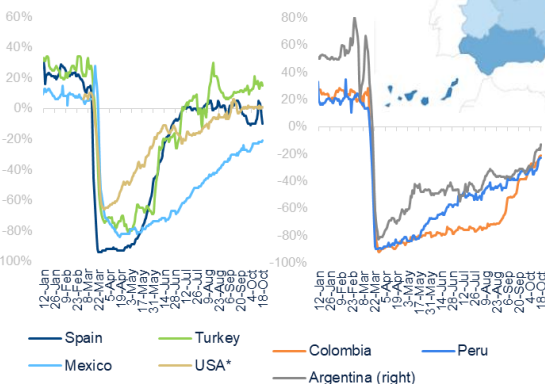
Performance of online vs
face-to-face purchases

Card purchase / ATM withdrawal

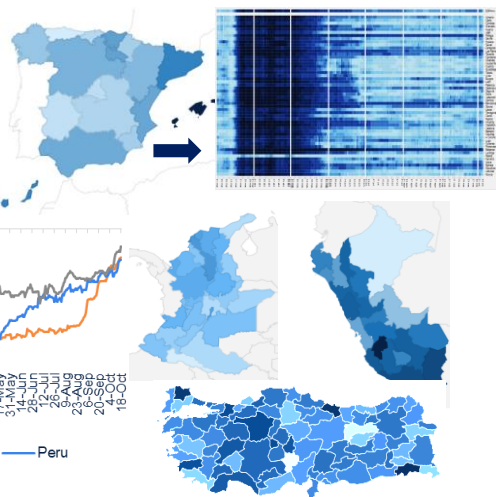
Spain

Colombia

Consumption in restaurants



Consumption by region



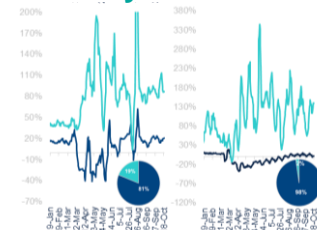
Spain

USA



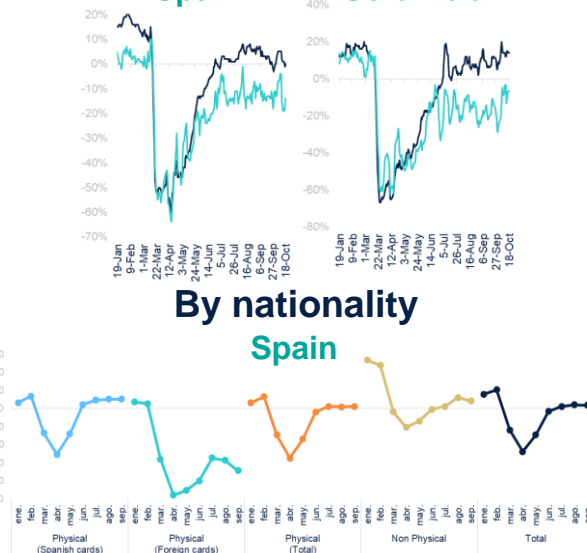
Turkey

Mexico



By nationality

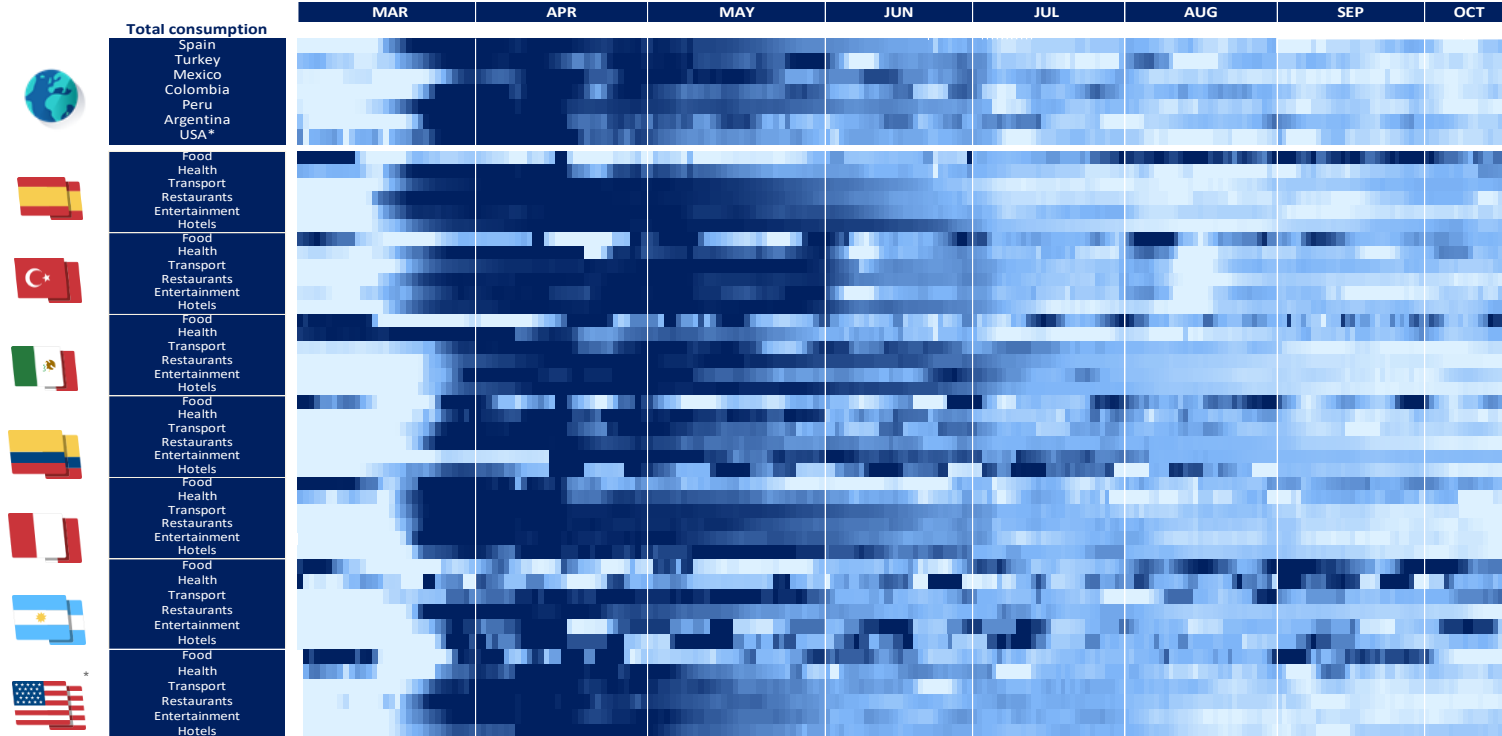
Spain



Consumption Diffusion Heat Map: consumption dynamics over time, across countries and sectors



BBVA RESEARCH BIG DATA CONSUMPTION HEAT MAP (YoY, 7D cumulative)



*Proxied by USA Sunbelt. Source: BBVA Research.

Lower Growth Higher Growth

Series are coloured according to the history of each series since March 20 until the end of the series. The darker blue represents the lower 90% percentile and the lighter one represents the upper 10% percentile.

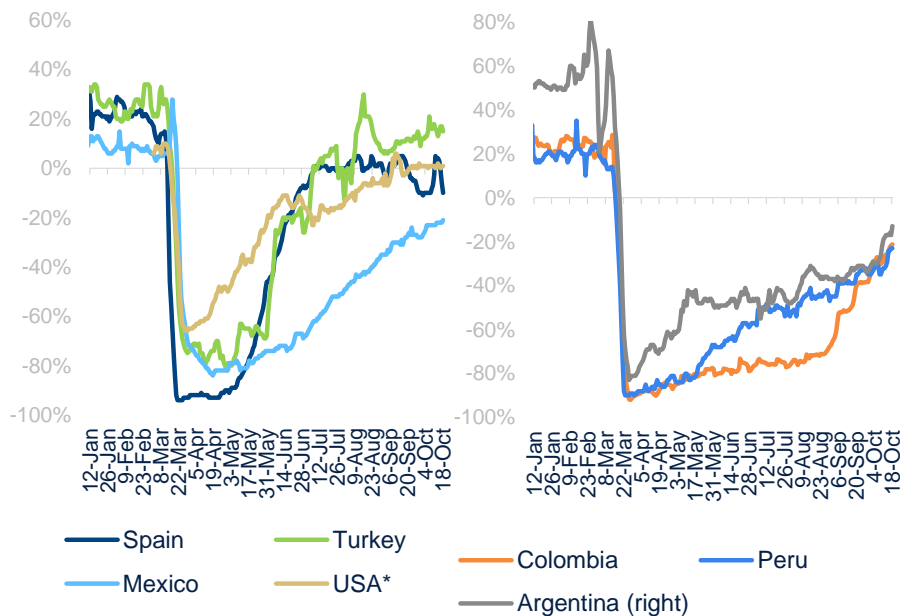
The recovery is uneven across sectors and countries. Restaurants and entertainment expenditure continued stagnant in Latam countries

BBVA RESEARCH BIG DATA CONSUMPTION INDICES

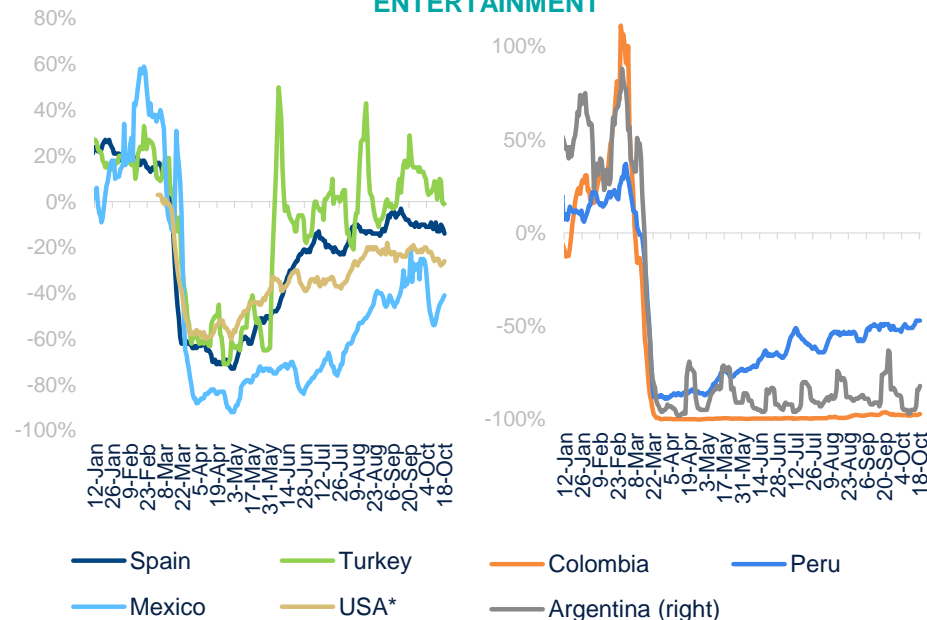
(Consumption by card, % YoY, 7D cumulative)



RESTAURANTS



ENTERTAINMENT



Source: BBVA Research. * USA = Proxied by USA Sunbelt

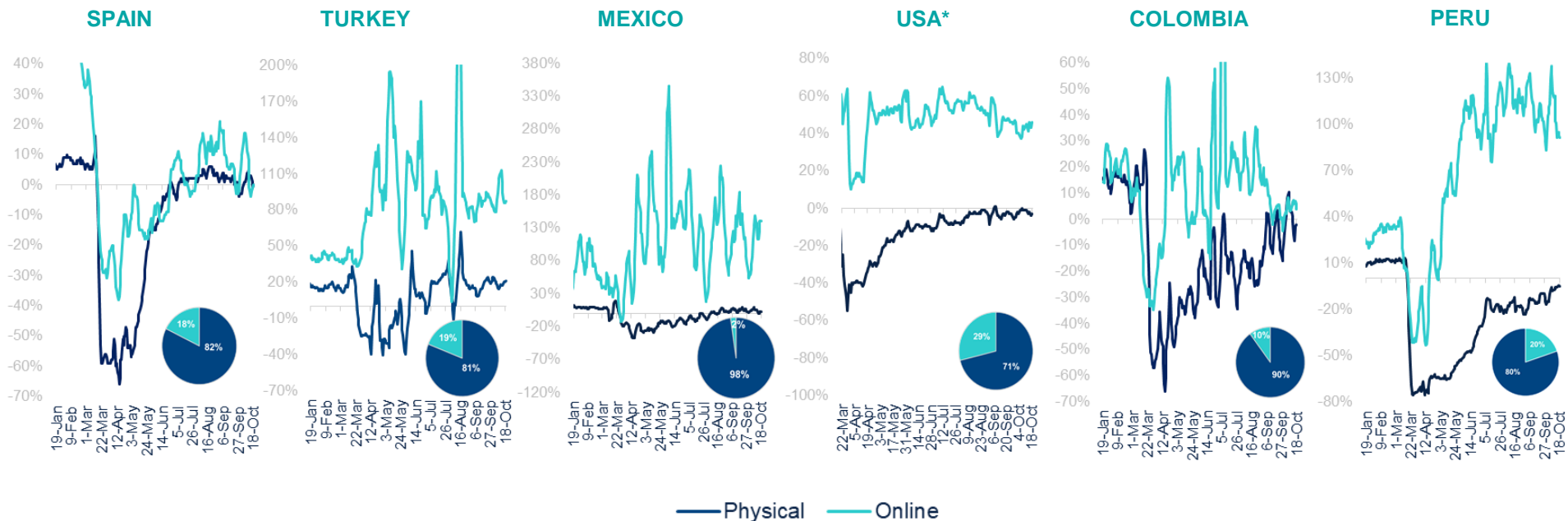
Technology matters: the gap between e-commerce growth and physical purchases remained. Online sales are increasing in all the countries



Individual to firm transactions

BBVA RESEARCH BIG DATA CONSUMPTION INDICES: PHYSICAL VS ONLINE

(Total consumption by Point of Sales. % YoY, 7D cumulative. Pie chart reflects the proportion of online and physical purchases in 2019)



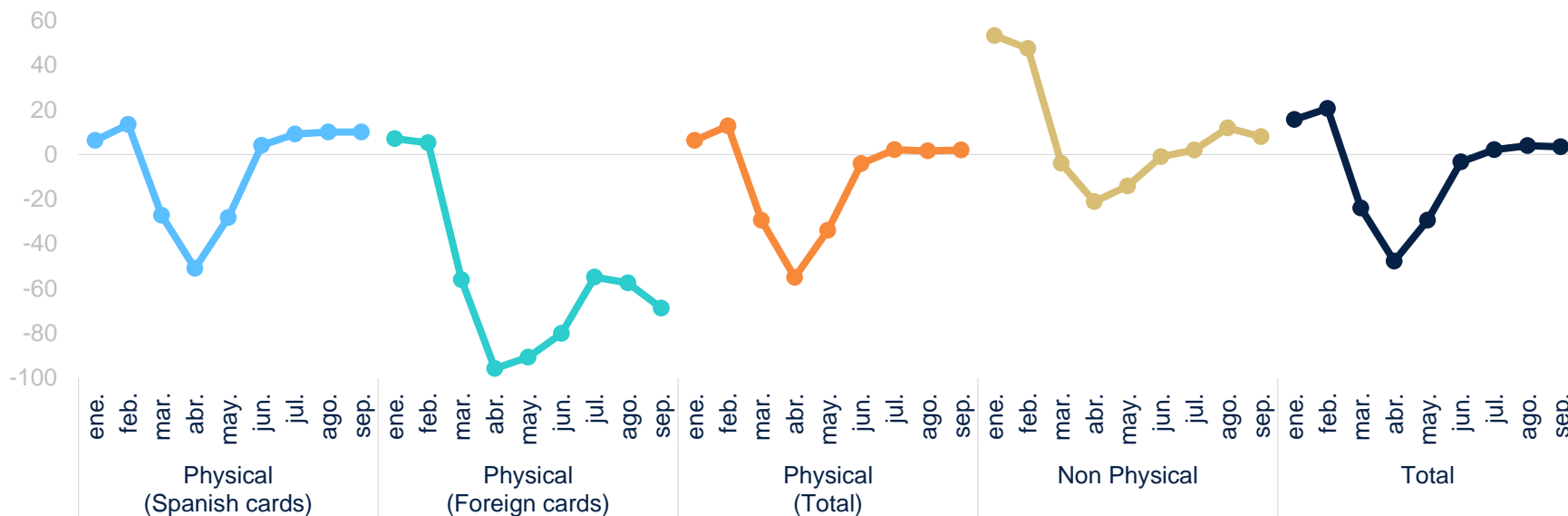
Source: BBVA Research. * USA = Proxied by USA Sunbelt.

Spain. Card spending increased by 3.5% yoy in September driven by the sustained growth of purchases with Spanish cards, which offset the reduction in transactions by foreign cards



YEARLY CHANGE OF AVERAGE EXPENDITURE BY NATIONALITY AND POS TYPE

(YoY %)



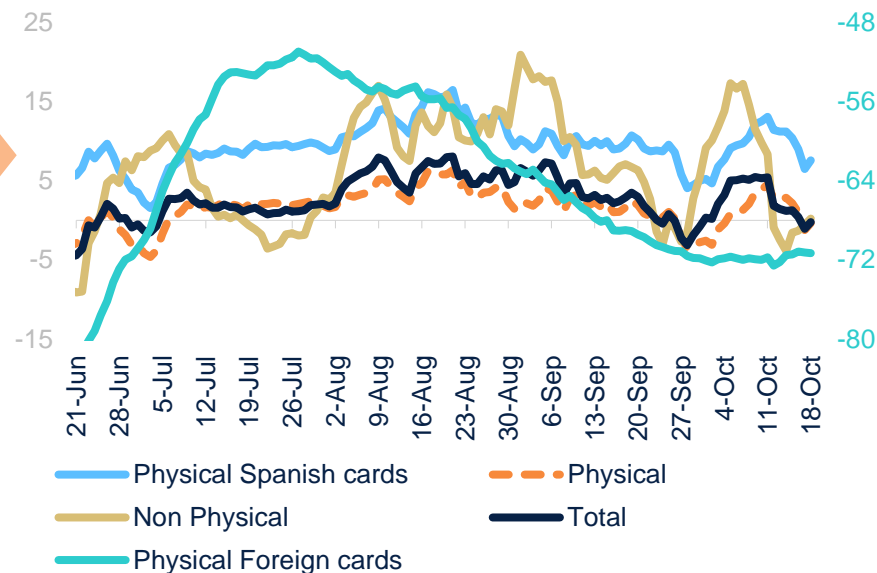
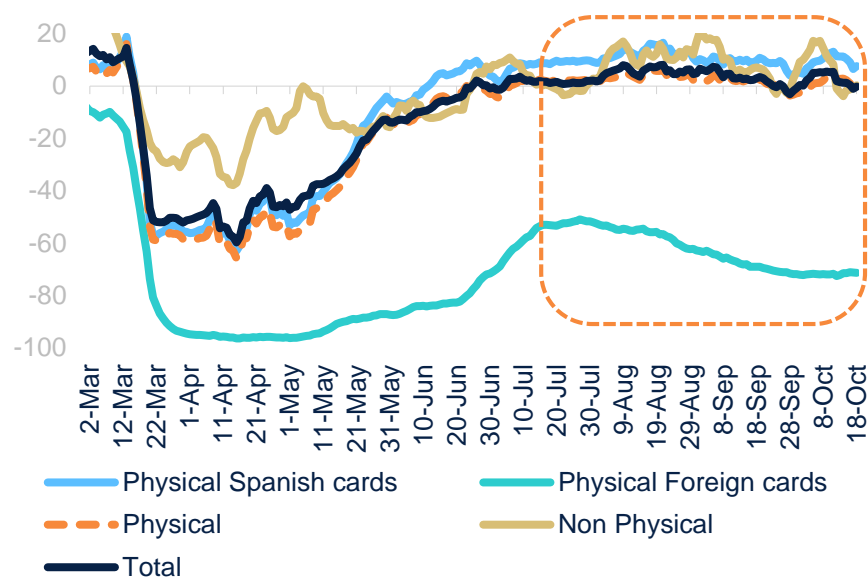
Non physical data includes online purchases, as well as purchases done by call, mobile phone using apps, by postal code or online suscriptions Fuente: BBVA Research a partir de BBVA

Source: BBVA Research

Spain. Daily data help us to closely monitor the crisis and the impact on consumption of mobility restrictions measures over time



SPAIN: TOTAL AVERAGE WEEKLY EXPENDITURE BY NATIONALITY AND POS TYPE (% YoY, 7D cumulative)

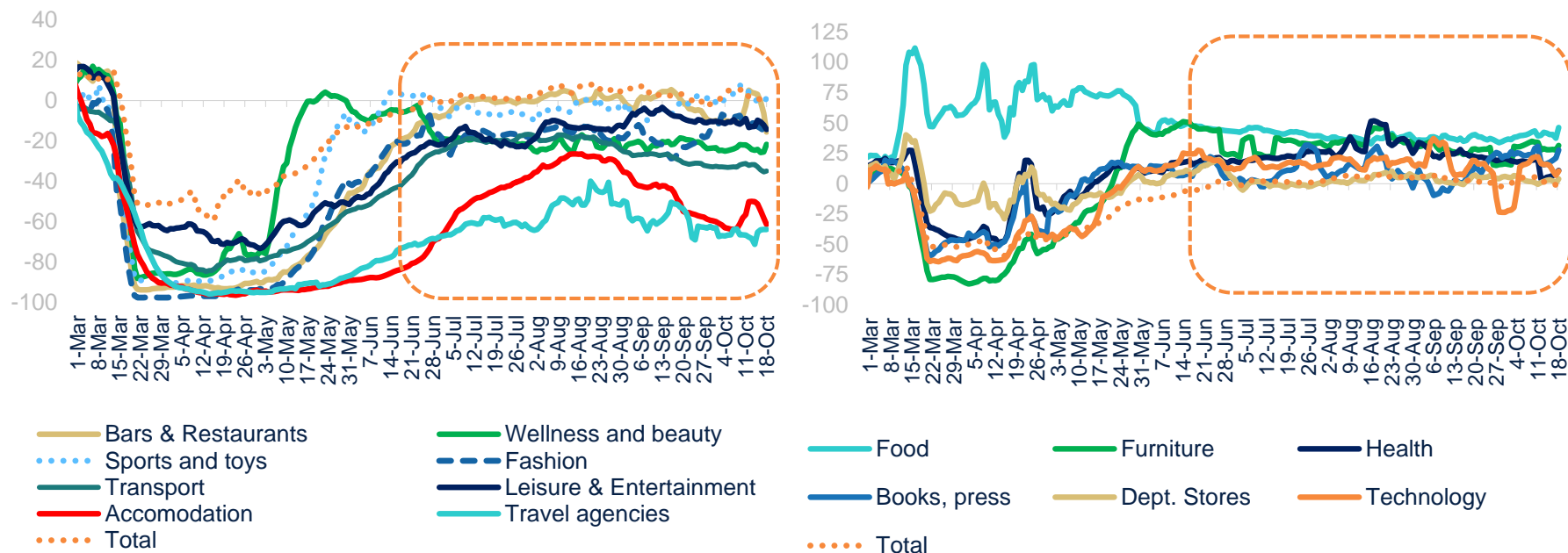


Non physical data includes online purchases, as well as purchases done by call, mobile phone using apps, by postal code or online suscriptions.
Source: BBVA Research

Spain. Tourism related sectors are the most affected ones, while sectors like food, health or furnitures are growing more than last year



SPAIN: TOTAL AVERAGE WEEKLY EXPENDITURE BY SECTOR (% YoY, 7D cumulative)



Spain. The impact of the new Covid-19 outbreak in consumption is quite different from the one observed in March/April

SPAIN: TOTAL AVERAGE WEEKLY EXPENDITURE BY PROVINCE*

(Considering national and foreign cards and physical and online purchases . % YoY, 7D cumulative)



12 – 18 OCT
EXPENDITURE (% YOY)

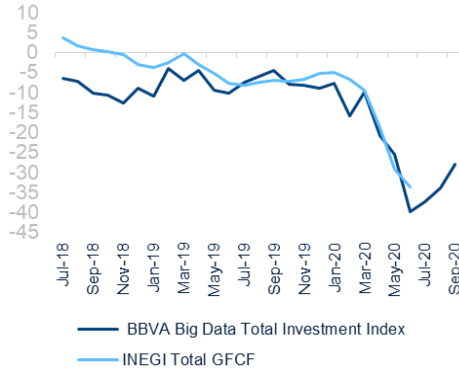


We have also developed Big Data Investment indices in real time to monitor economic activity

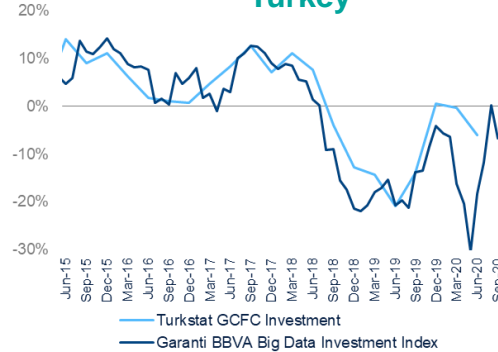


Investment : BBVA Big Data Investment Indices and Official Data (GFCF) (yoy)

Mexico

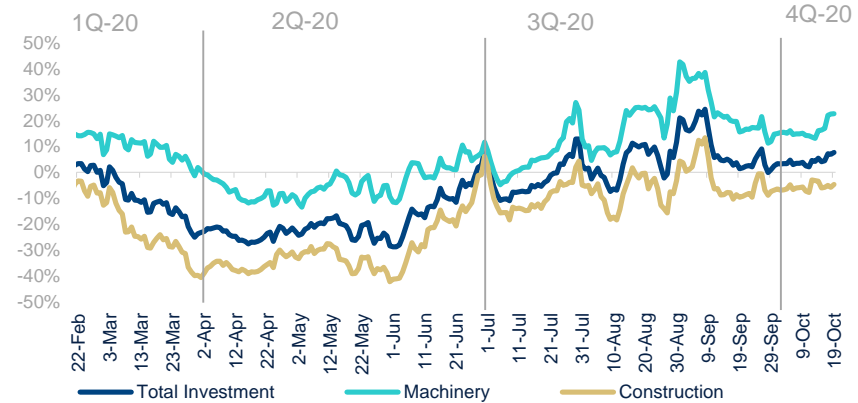


Turkey



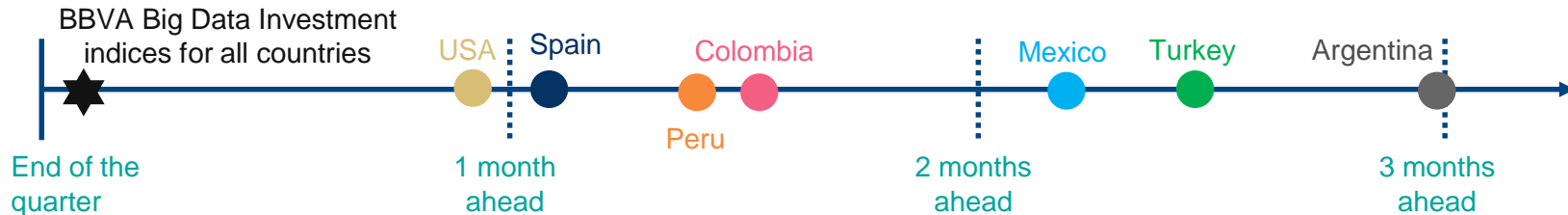
Source: BBVA Research

Turkey: Daily BBVA Big Data Investment index (28 daily average, yoy)



Publication calendar for investment according to the National Institutes of Statistics by country

See [Barlas et al \(2020\)](#) for further detail

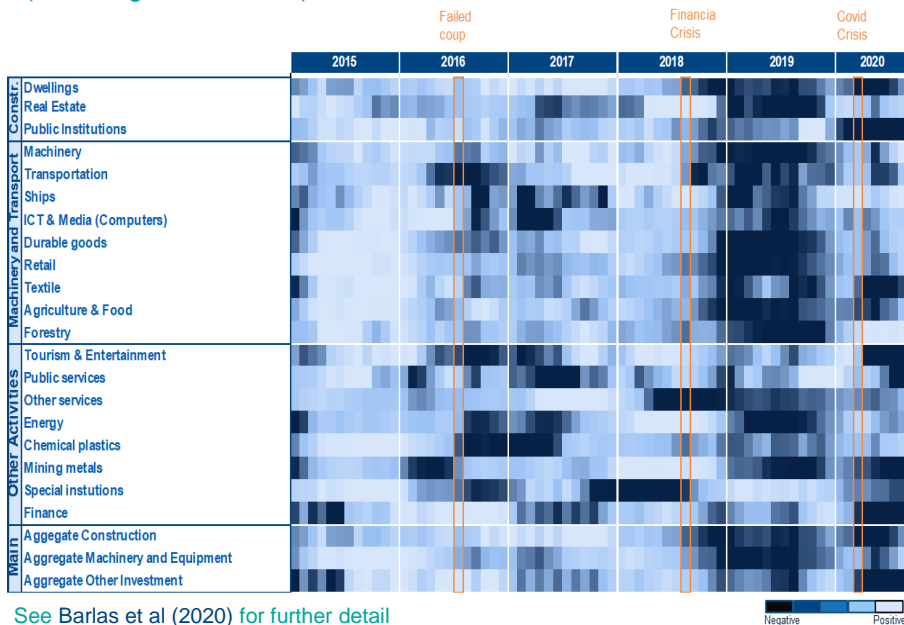


Our Big data investment indicators have “High Definition” too.. This could be key to track investment by economic sectors and regions



TURKEY:GB-BBVA BIG DATA INVESTMENT HEAT MAP

(3mm avg YoY nominal)

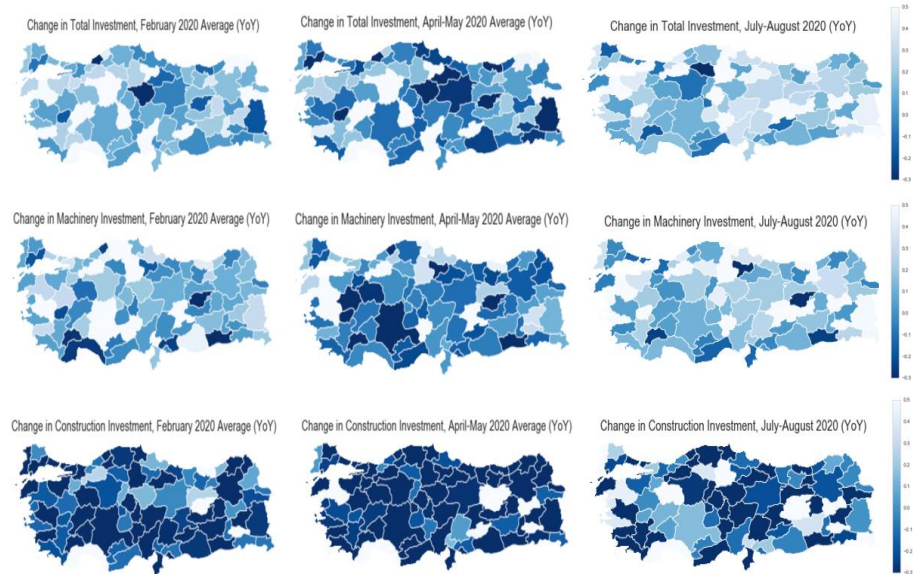


See [Barlas et al \(2020\)](#) for further detail

22 Sectors

TURKEY:GB-BBVA BIG DATA INVESTMENTS GEO-MAPS

(Change in YoY investment before, during and after the lockdowns by Covid)



*White stands for YoY rates >50% nominal & Dark Blue <-30% nominal declines

Source:BBVA Research

81 Provinces

You can find us at:



www.bbvarresearch.com



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@BBVAResearch
@TomasaRodrigo

Thank you!

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