ANNUAL REPORT 2016

# A long term global view with a focus on MENA

The mediterranean Economies in a changing world

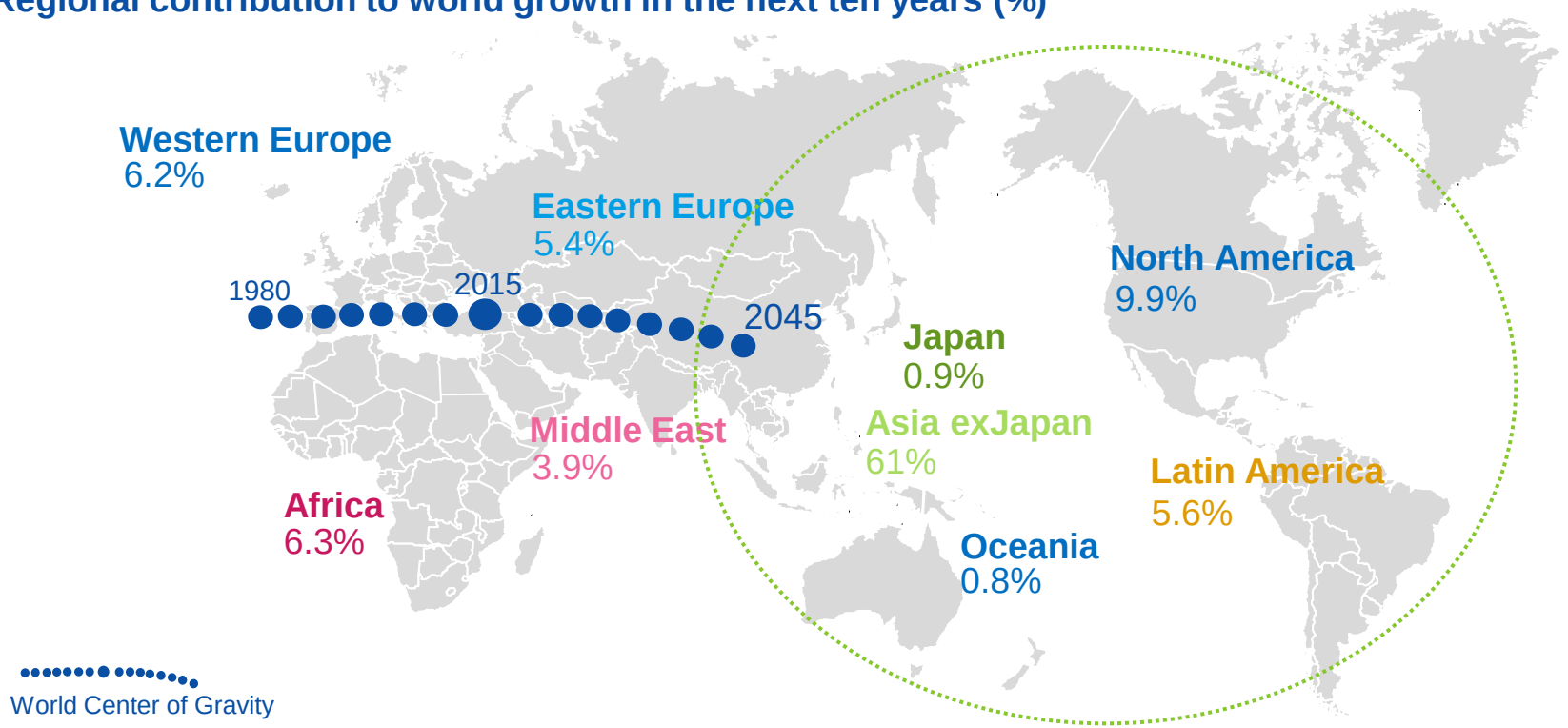
IEMed International conference

BBVA Research

EAGLEs

# The world is changing its economic center of gravity from the Atlantic to the Pacific

**Regional contribution to world growth in the next ten years (%)**




**Growth will be concentrated in the Asia-Pacific region**, (80% in the next ten years)

Source: BBVA Research, IMF and Quah D., 2011, "The Global Economy's Shifting Centre of Gravity".


The role of

# EAGLEs & Nest

in the global economy

# BBVA EAGLEs and Nest 2016 membership

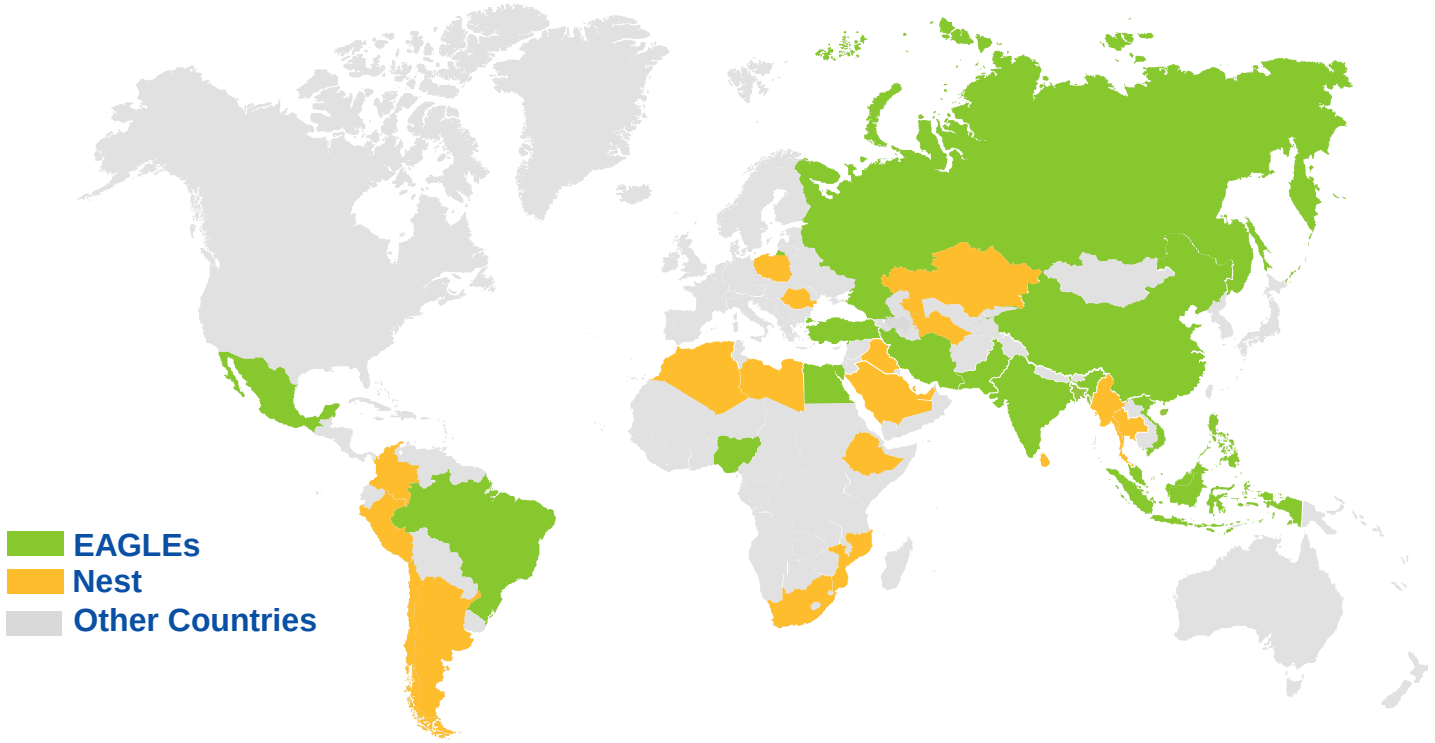
## are defined with respect to DM using growth thresholds

| | |
|---|---|
| EAGLEs (15) | China, India, Indonesia, Mexico, Nigeria, Philippines, **Iran,** Pakistan, Russia, Turkey, **Egypt,** Brazil, Bangladesh,**Malaysia, Vietnam** |
| EAGLEs threshold | G6 average<br>Incremental GDP 2014-24 = USD 475bn |
| Nest (20) | **Saudi Arabia, Iraq**, Poland, Thailand, Colombia, Myanmar, Argentina, **UAE**, **Algeria**, Kazakhstan, Sri Lanka, South Africa, **Libya**, **Peru, Morocco**, **Ethiopia,** Chile, **Romania, Uzbekistan, Mozambique** |
| Nest threshold | Non-G7 DMs >USD100bn<br>Incremental GDP 2014-24 = USD 168bn |
| Rest of emerging economies | Rest of emerging economies |

See the annex for further information about the methodology.

# BBVA EAGLEs and Nest 2016 membership

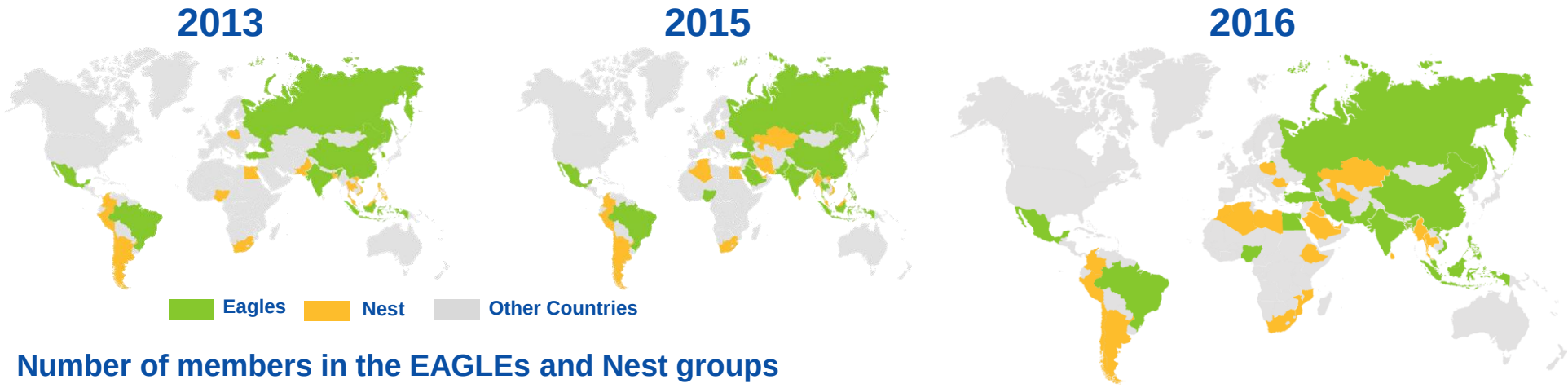
## are balanced across the globe



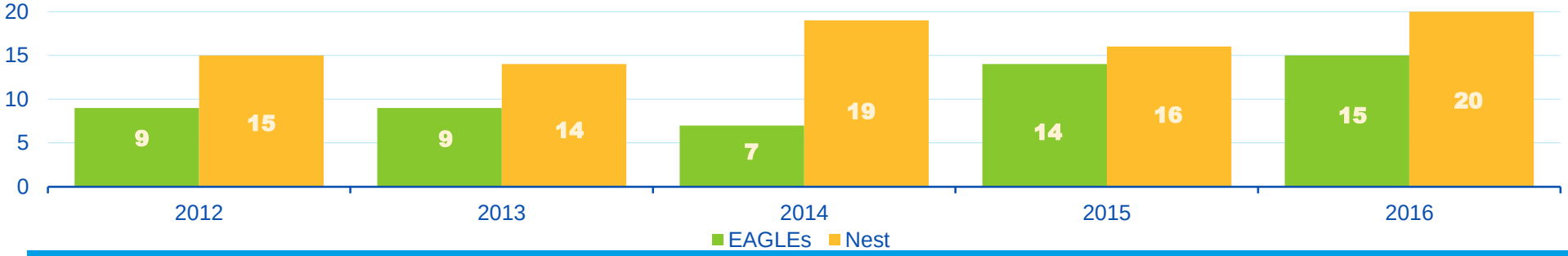

**Emerging markets will account for 80% of global growth in the next tern years**, with **EAGLEs** at **65%**, the **Nest** group **10%** and other emerging countries another 5%.

# BBVA EAGLEs and Nest 2016 membership

## over time




### Number of members in the EAGLEs and Nest groups




**The members of the EAGLEs and the Nest groups have been increasing over time. China and India continue to call the shots**

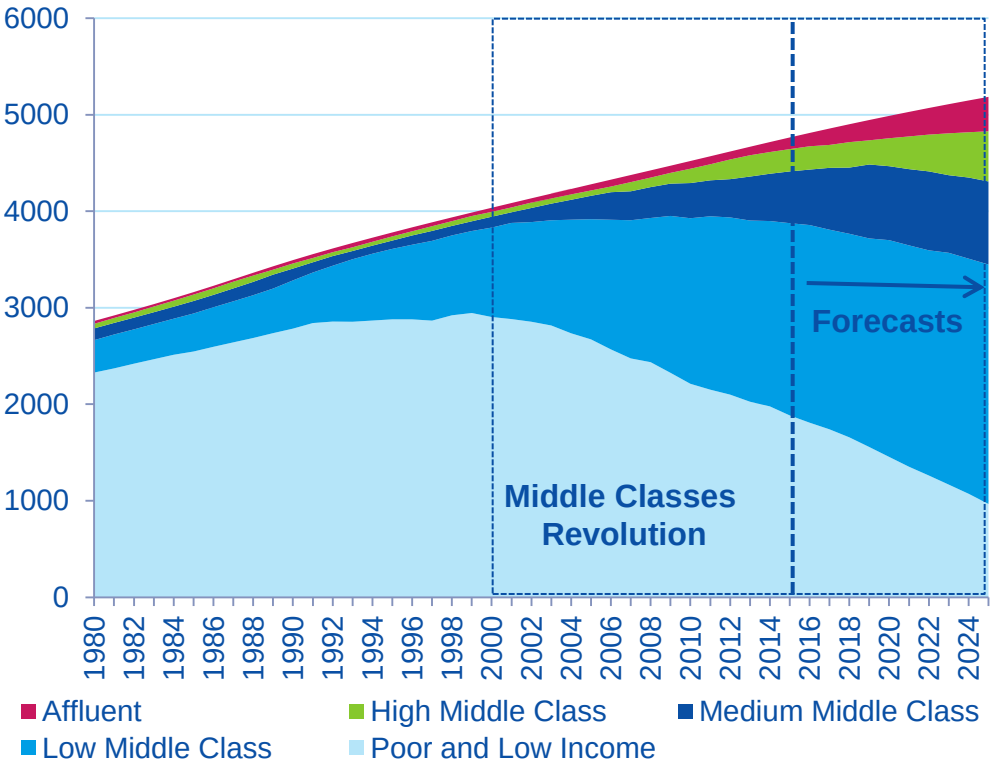

Update of

# Middle Classes

projections

# The Middle Classes Revolution in the emerging world will continue…

**Emerging countries' middle classes (1980-2025)**
(millions)




**The reshaping of global income distribution** started in 2000 in the emerging world. We expect it to continue in a "normal rational world" absent relevant shocks

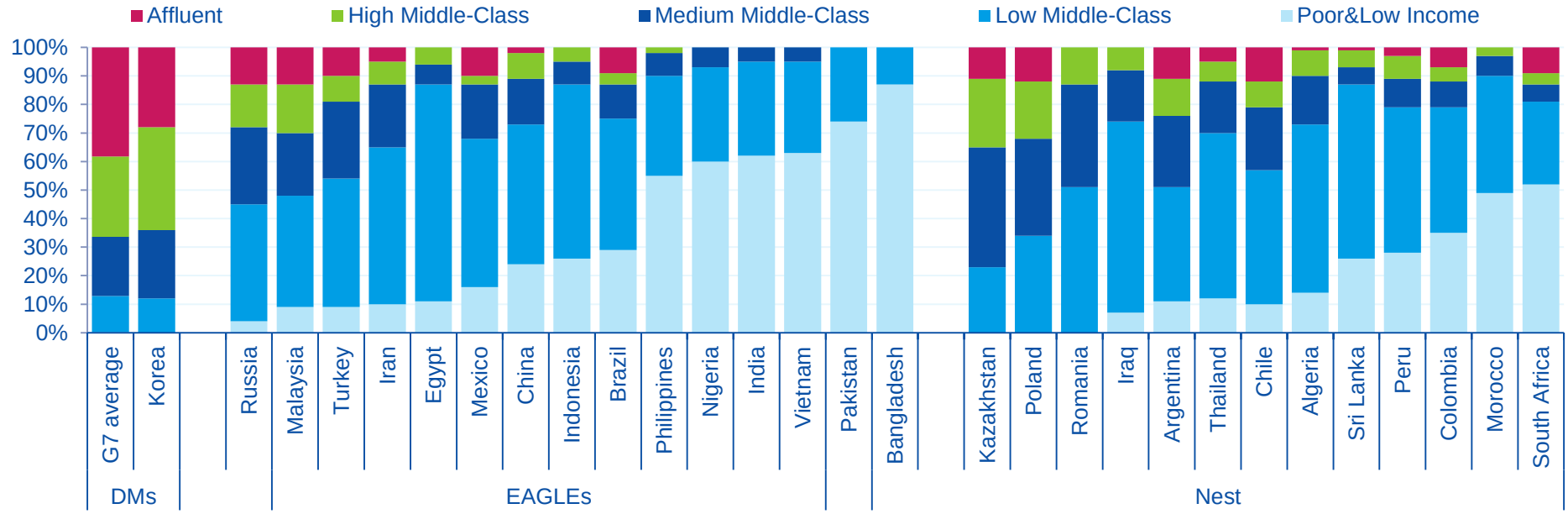
The share of the **wealthier segments** is **on the rise** in **Africa, Latin America and Emerging Europe**

We expect **emerging countries** to increase their **share of the global middle** classes from 60% today to **75% by 2025**

NB: Based on PPP-adjusted 2010 USD; Poor and Low Income (<USD5,000), Low Middle Class (USD5,000-15,000), Medium Middle Class (USD15,000-25,000), High Middle Class (USD25,000-40,000), Affluent (>USD40,000). See the annex for further information about the methodology.
Source: BBVA Research, UN, WB, IMF

# …but with important differences among countries…

**Middle classes distributions by GDP per capita 2015**
(millions of people by country and group)

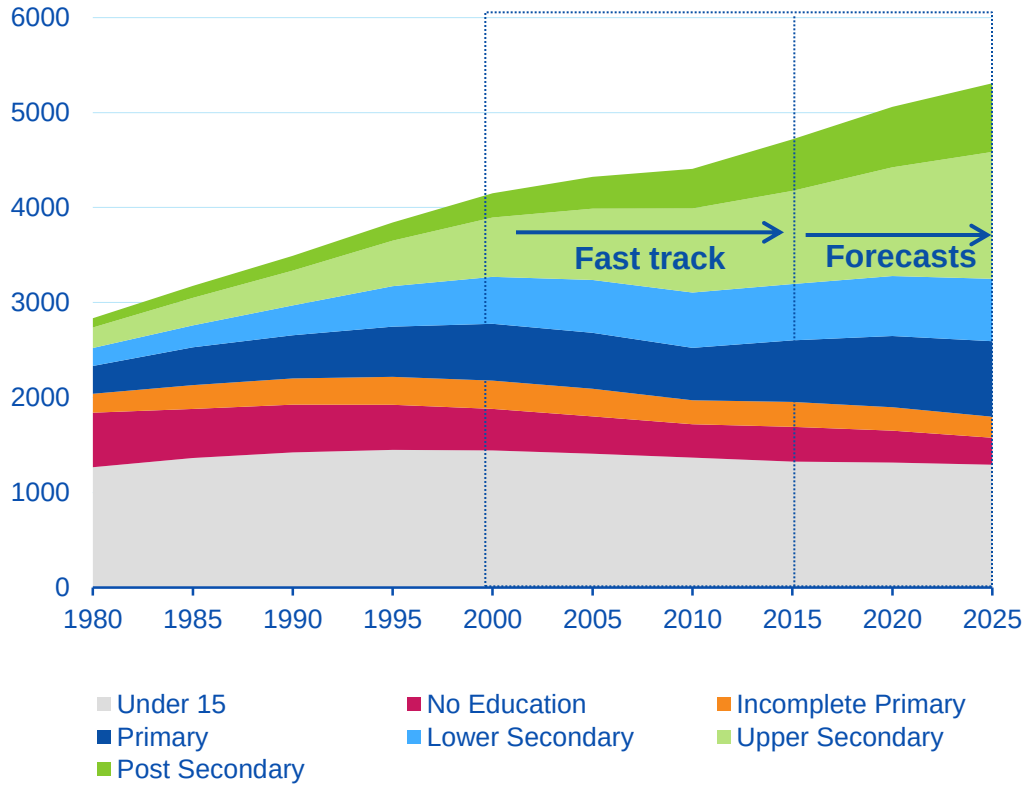



Differences among countries are more accentuated in the EAGLEs group than in the Nest with **Russia, Malaysia, Turkey and Iran** having **the highest proportion of medium-high middle classes** and affluent segments in the EAGLEs group.

DMs= Developed Markets
** No available data for Saudia Arabia,, UAE , Myanmar, Mozambique, Ethiopia, Lybia and Uzbequistan
Source: BBVA Research, UN, WB, IMF

# What is the role of human capital?

**Emerging countries' demographic transition by education** (millions)




**The educational sector will be both the motor and beneficiary of expanding middle classes**

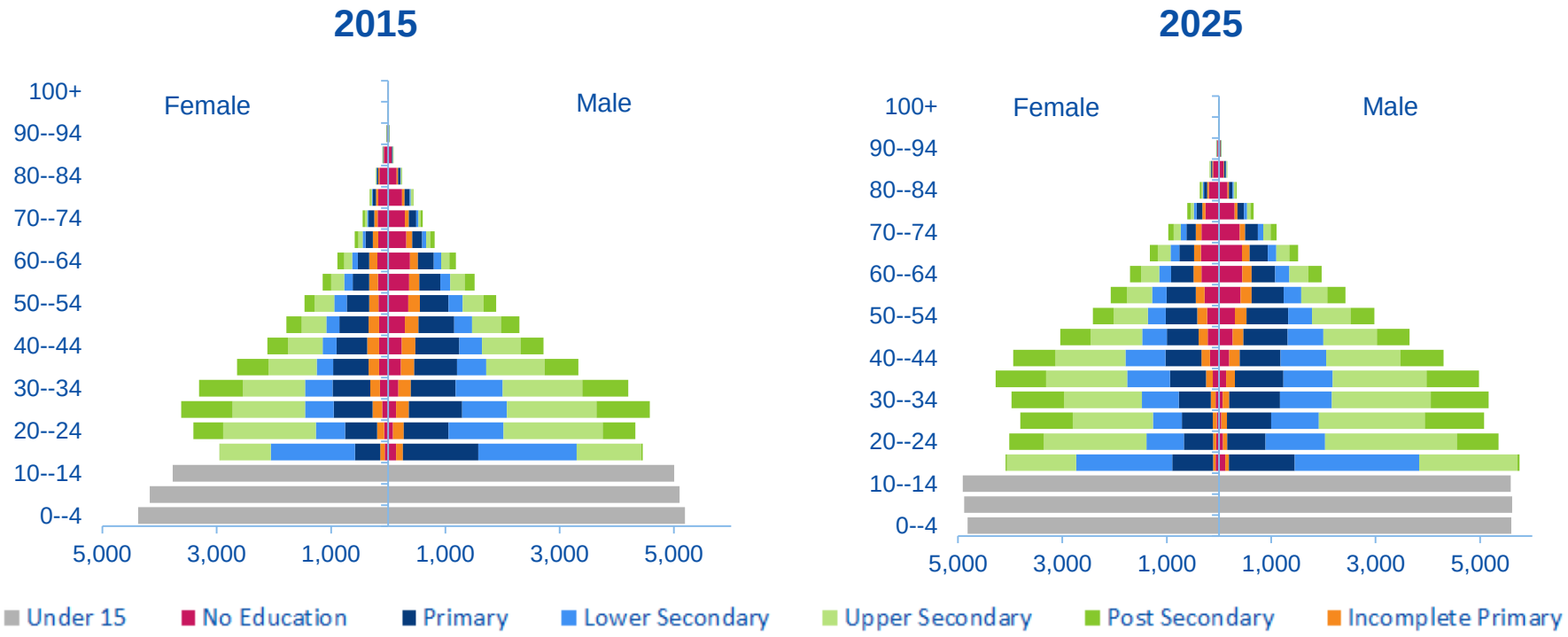
The education population dynamics has evolved positively during the last decades**, reshaping its to a society dominated by people with secondary or higher studies**

**People with secondary or higher** studies moved from **less than one third in the 90s to 60%** of total population in **2015** and **it will be three quarters in the next ten years**

See the annex for further information about the methodology.
Source: BBVA Research, IIASA

# It is needed to offset the diminishing population premium in the emerging world…

**Demographic transition in the EAGLEs: population pyramid by skills** (total population 000's)

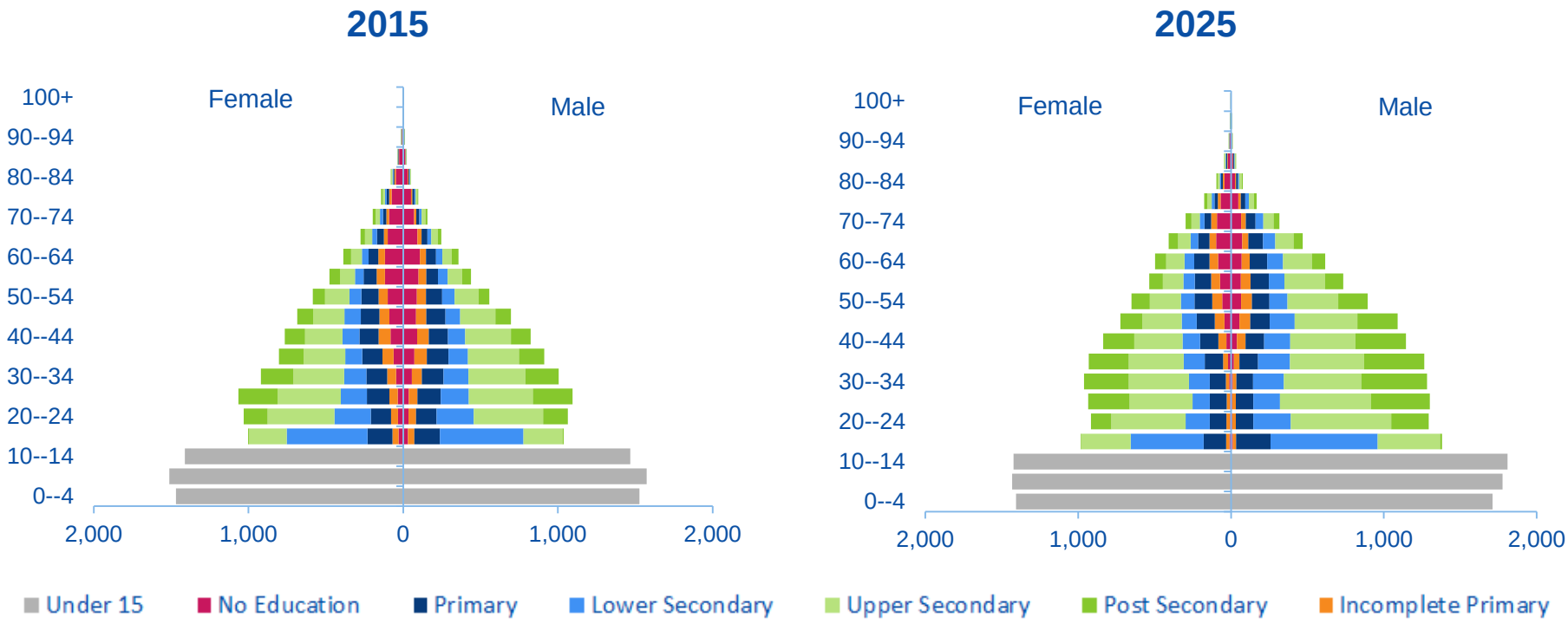



A substantial progress in educational attainment is expected in the EAGLEs countries, where people with at least secondary education would evolve from 59% in 2015 and 70% by 2025

Source: BBVA Research, IIASA

# It is needed to offset the diminishing population premium in the emerging world…

**Demographic transition in the Nest: population pyramid by skills** (total population 000's)



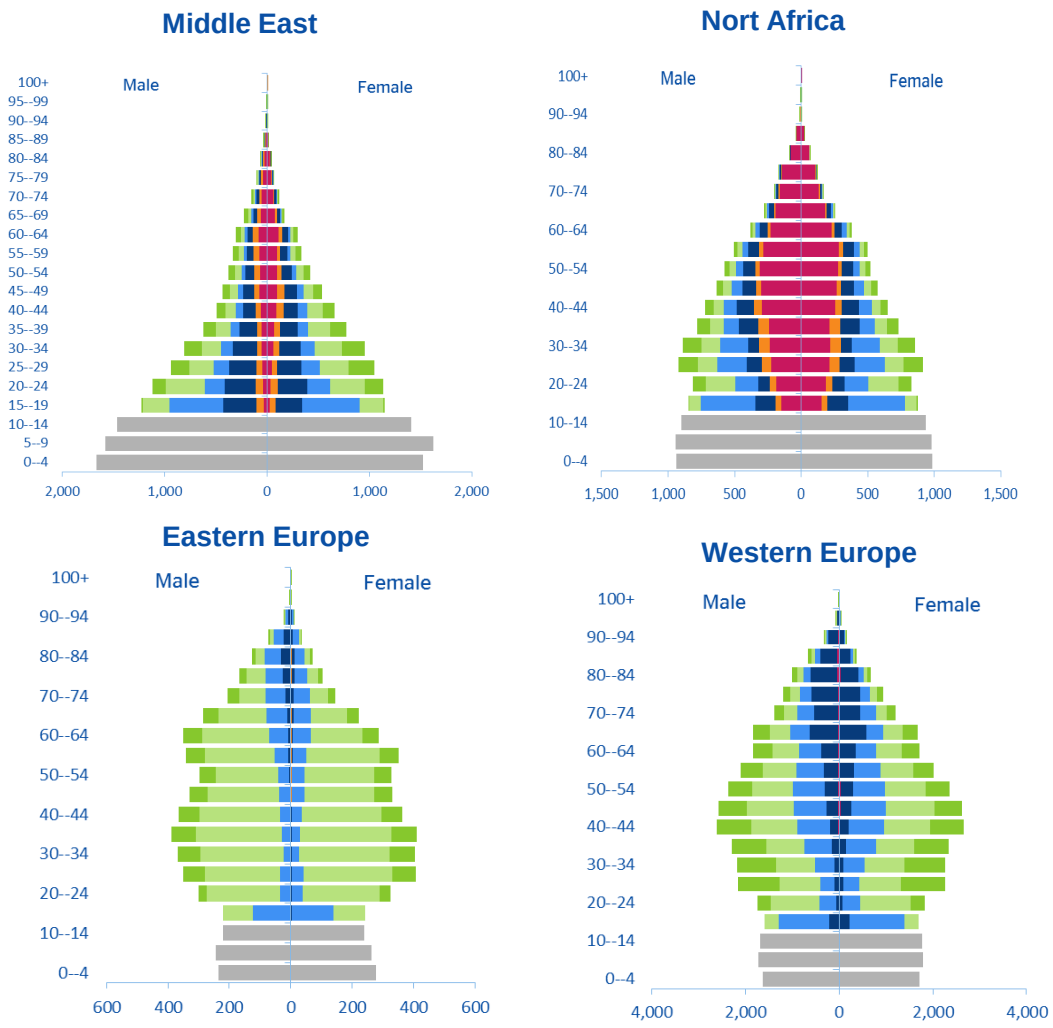

In the Nest group, the pace of convergence to high educated population would be even faster than in the EAGLEs group and three quarters of the total population will have secondary and/or tertiary studies in the next decade.

Source: BBVA Research, IIASA

# The population pyramid is not favourable in MENA

**The Middle East and Europe Demographic by skills**

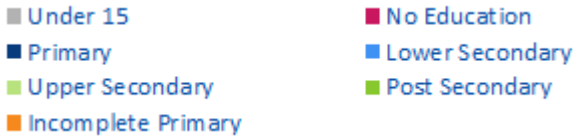
**Source: BBVA Research and IIASA**




**Economic growth has to be over 5% to absorb the young population entering the labor market**

**There is an increasing divergence in MENA's youth "what they see is not what they get"**

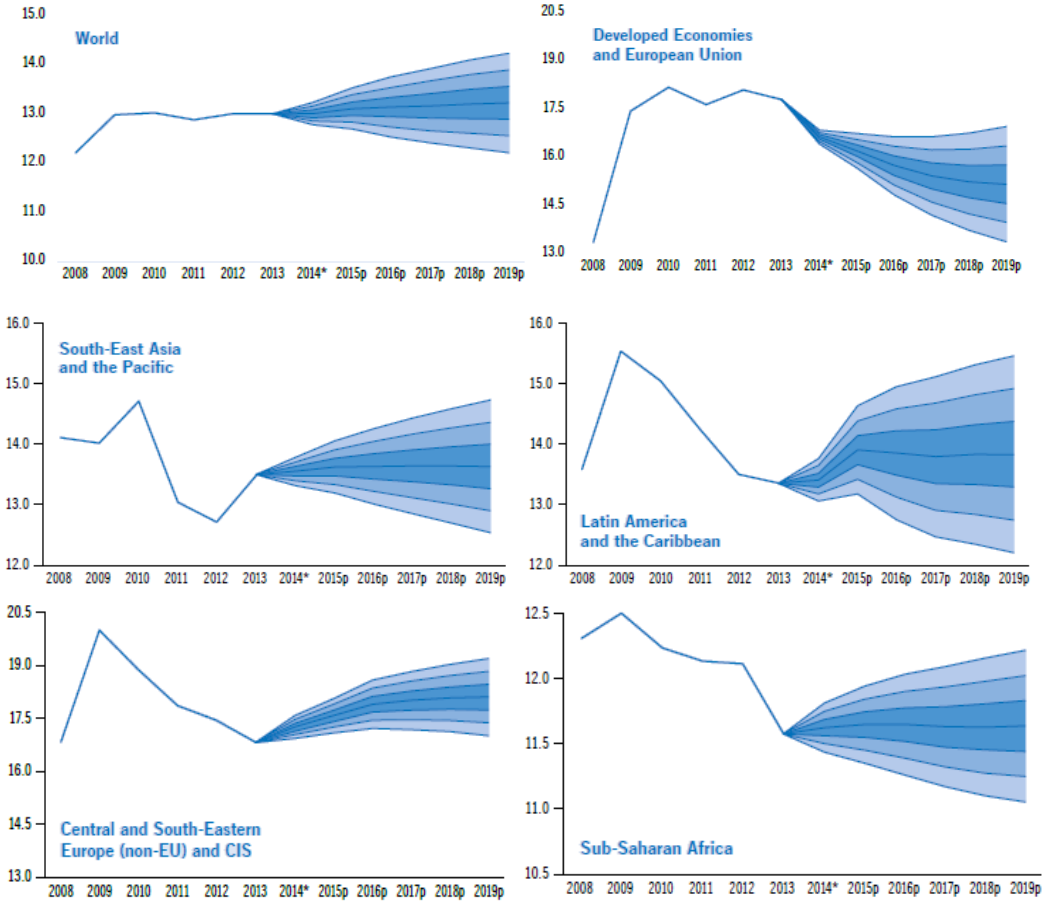
**There is an open door (and "potential" interest on both sides if managed adequately) to migrate to Europe where population is aging, but security issues and social & religious issues are a barrier**

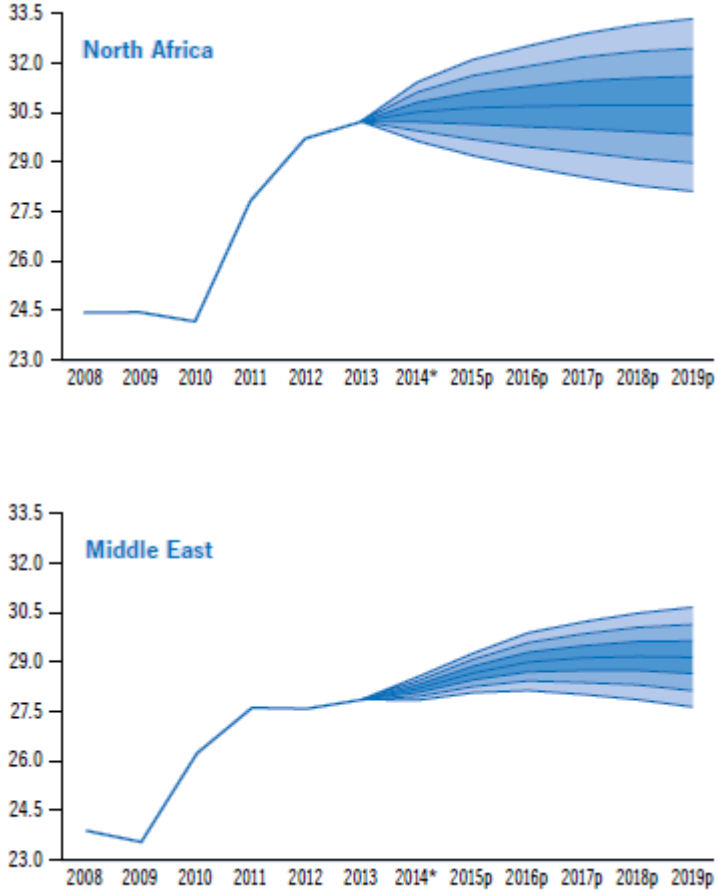


# Neither are the prospects of youth unemployment

## Youth Unemployment Rates projections

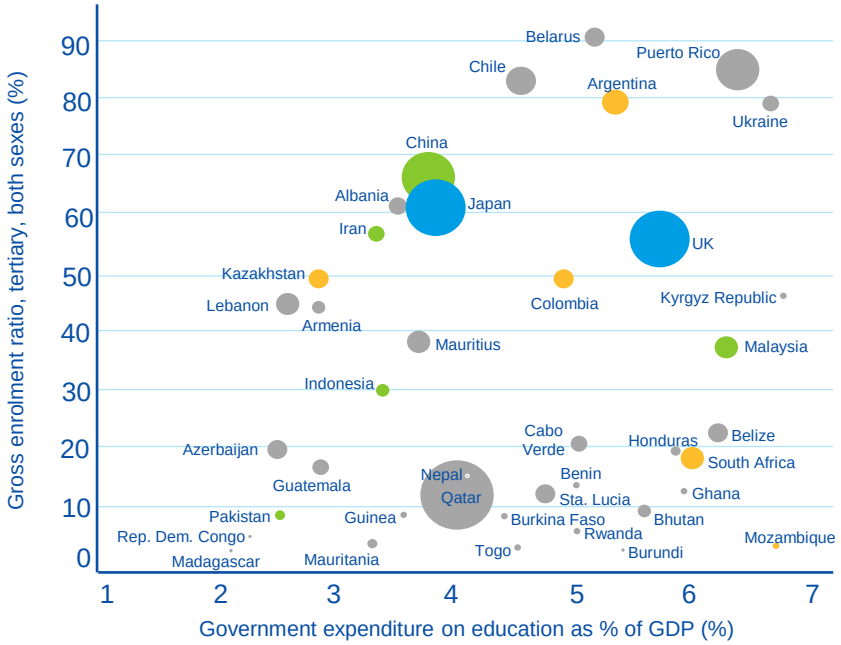
**Source: Ilo**



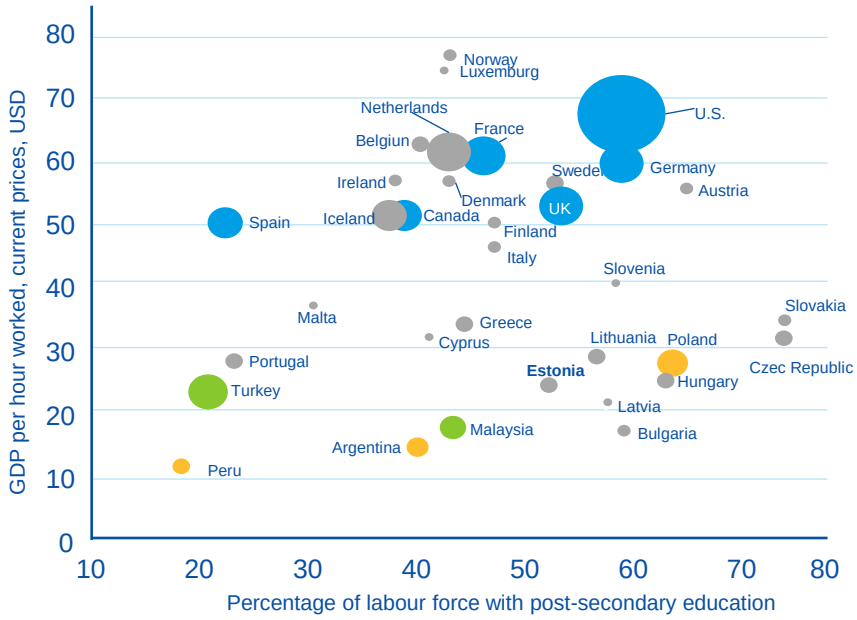



# This is key: education has an impact on the labor market

## Relationship between Government expenditure in education and the enrollment ratio in tertiary education




## Relationship between labor productivity and the education level of the labor force




Eagles Nest Developed countries Other emerging countries

**Public expenditure on education leads to high educational attainment, which also has a positive impact on the labor market.**

Source: BBVA Research and WB

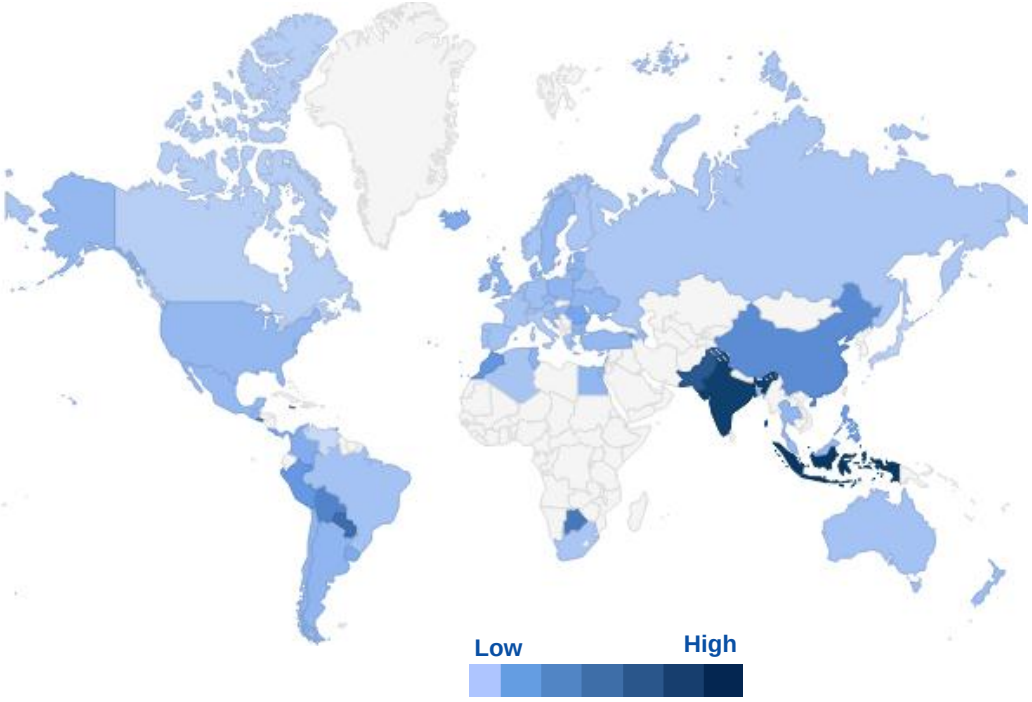
Source: BBVA Research, and ILO

# Digital EAGLEs

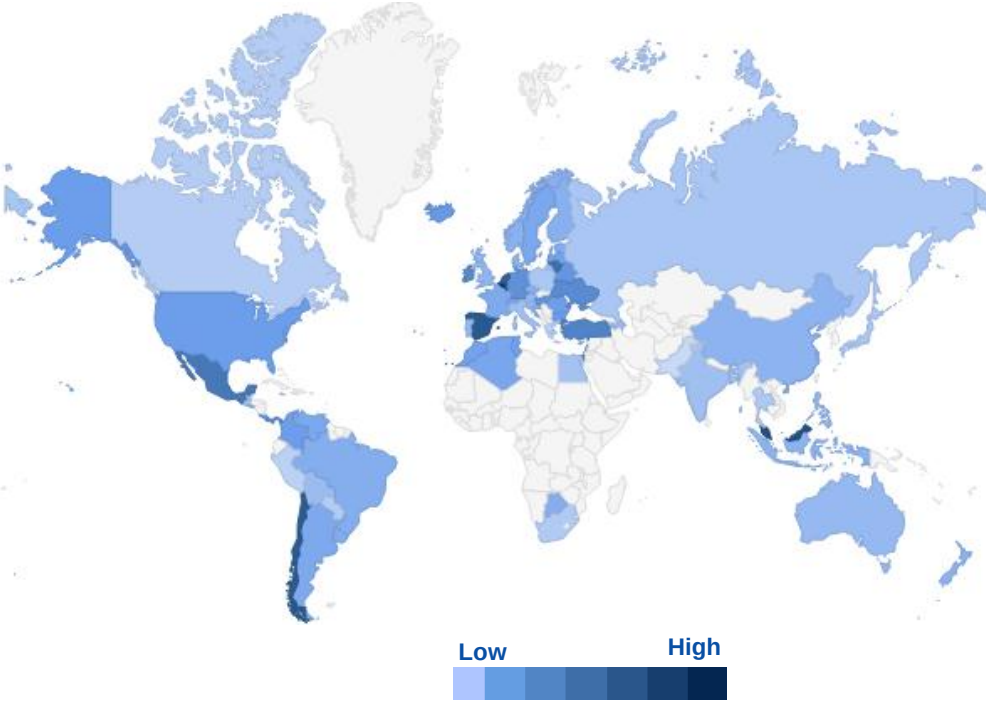
## outlook and perspectives

# Fixed and Mobile broadband adoption rates in the next decade

## Changes in Fixed-Broadband penetration 2014-25



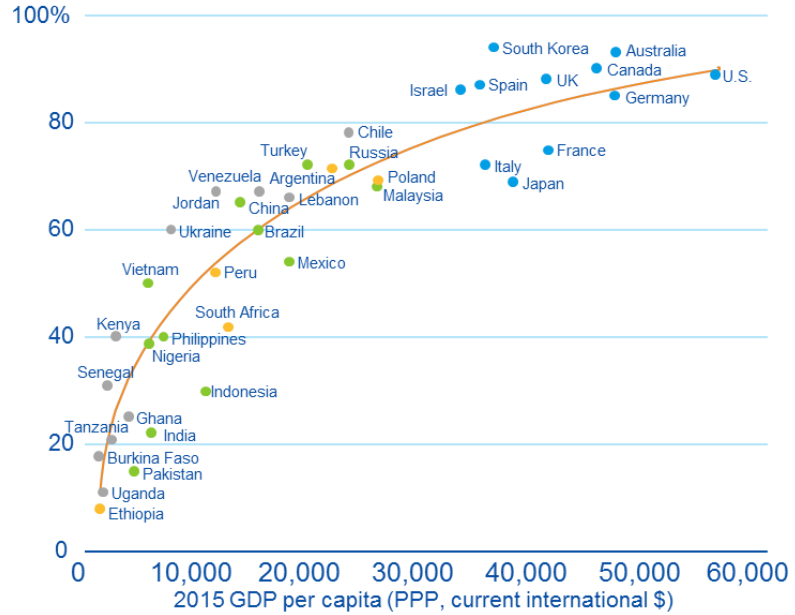

## Changes in Mobile-Broadband penetration 2014-25



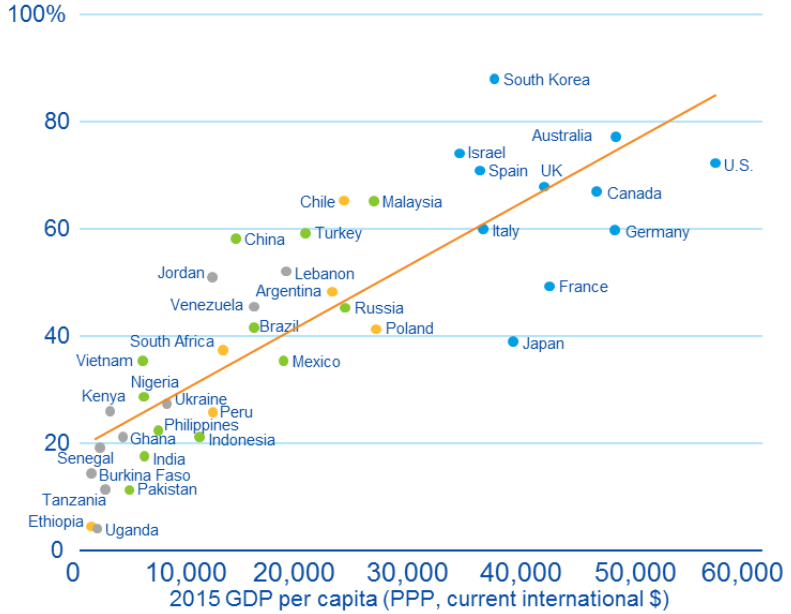

See “Fixed and Mobile broadband adoption rates across the world: Present and Future “, BBVA Research for further information.

# The impact of digital economy on growth

**Relationship between per capita income and internet access 2015**
(Adults who use the internet at least occasionally)




**Relationship between per capita income and Smartphone ownership in 2015**
(Adults who report owning a smartphone)




Eagles  Nest  Developed countries  Other emerging countries

**There is a strong correlation between country wealth (measured by GDP per capita PPP) and internet access, as well as with the smartphone ownership**

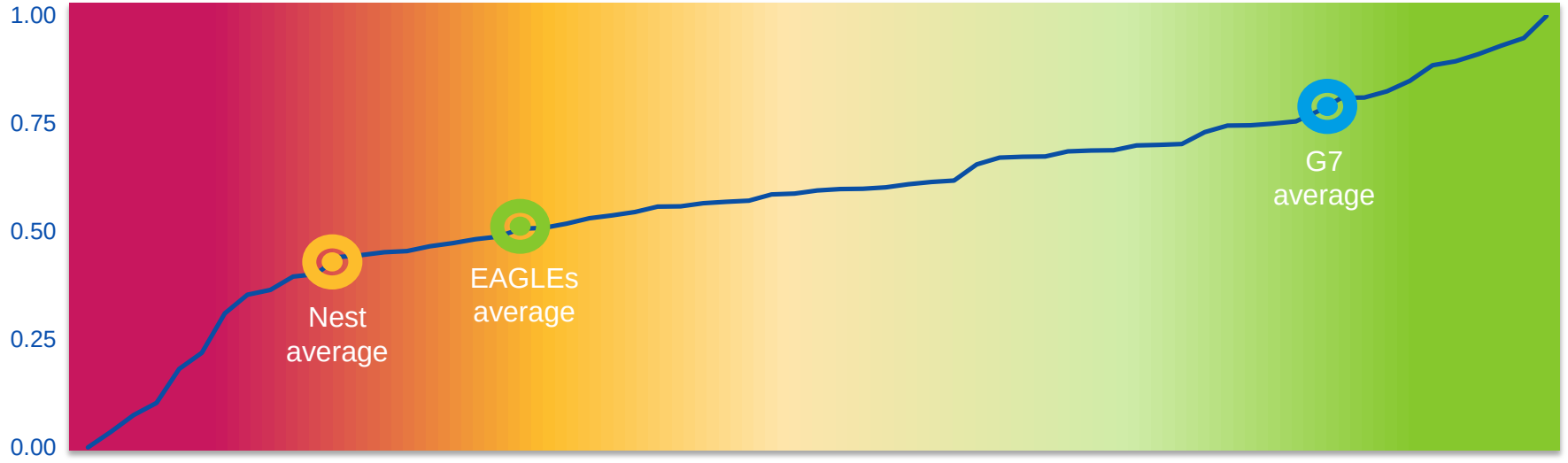
Source: BBVA Research and Pew Research Centre report on Smartphone Ownership and Internet Usage in Emerging Economies 2016

Source: BBVA Research and Pew Research Centre report on Smartphone Ownership and Internet Usage in Emerging Economies 2016

# Macro perspective: Digitalization Index 2015

**Cross country picture: Digitalization Index in 2015**

(Composite index: ICT infrastructure, ICT usage, ICT cost, digital content, and ICT regulation)




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Algeria | Vietnam | Morocco | China | Hungary | Ireland | Germany | Sweden |
| Qatar | Peru | Thailand | Saudi Arabia | Turkey | Chile | Malaysia | Netherlands |
| Nigeria | Argentina | Mexico | Croatia | Romania | United Arab Emirates | Denmark | Finland |
| Pakistan | Egypt | Sri Lanka | Colombia | Uruguay | Belgium | Latvia | Lithuania |
| Bangladesh | Ukraine | Italy | Slovenia | Luxembourg | Spain | Canada | Korea, Rep. |
| Paraguay | Greece | Poland | Kazakhstan | Brazil | Singapore | Australia | Japan |
| India | Philippines | Bulgaria | Russian Federation | Czech Rep. | Austria | France | Estonia |
| Venezuela | Indonesia | Cyprus | Slovak Republic | South Africa | Portugal | United States | Hong Kong SAR |
| | | | | | | | United Kingdom |

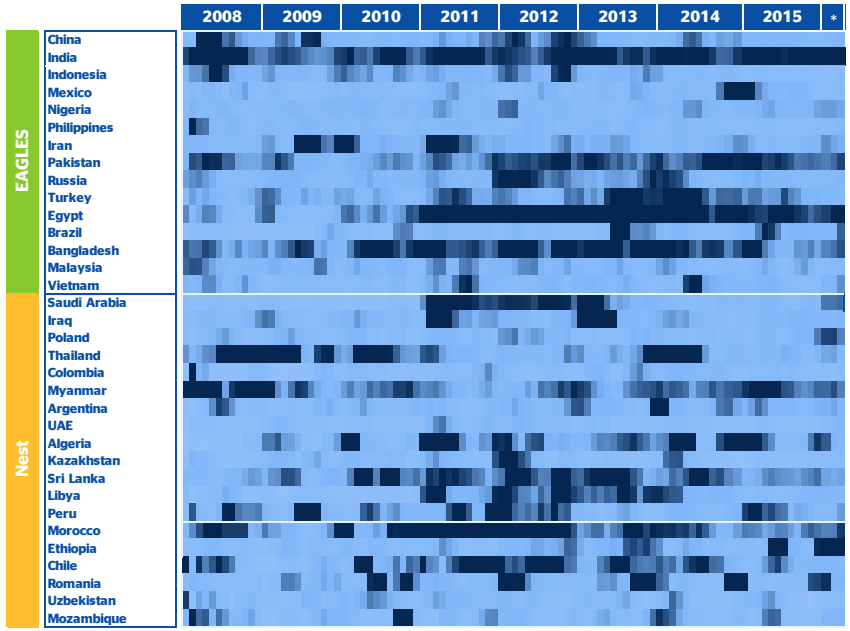
Source: BBVA Research, WEF, ITU and World Bank

See the annex for further information about the Digitalization Index.

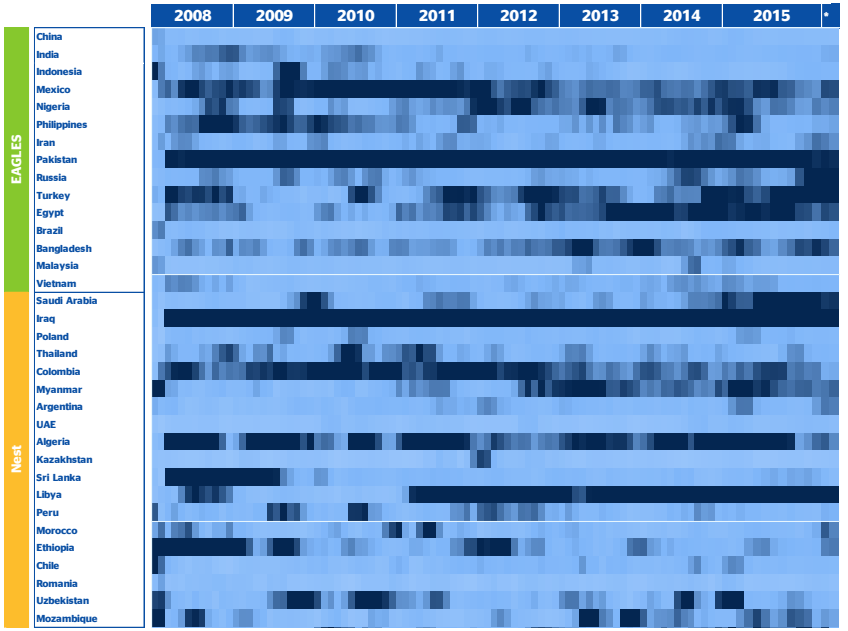
# Balance of risks

# The Global Awakening has spiked after Years of calm

**World Protest Intensity Map 2008–16**
(Number of protests / Total events. Dark Blue: High Intensity)




**World Conflict Intensity Map 2008–16**
(Number of conflicts / Total events. Dark Blue: High Intensity)

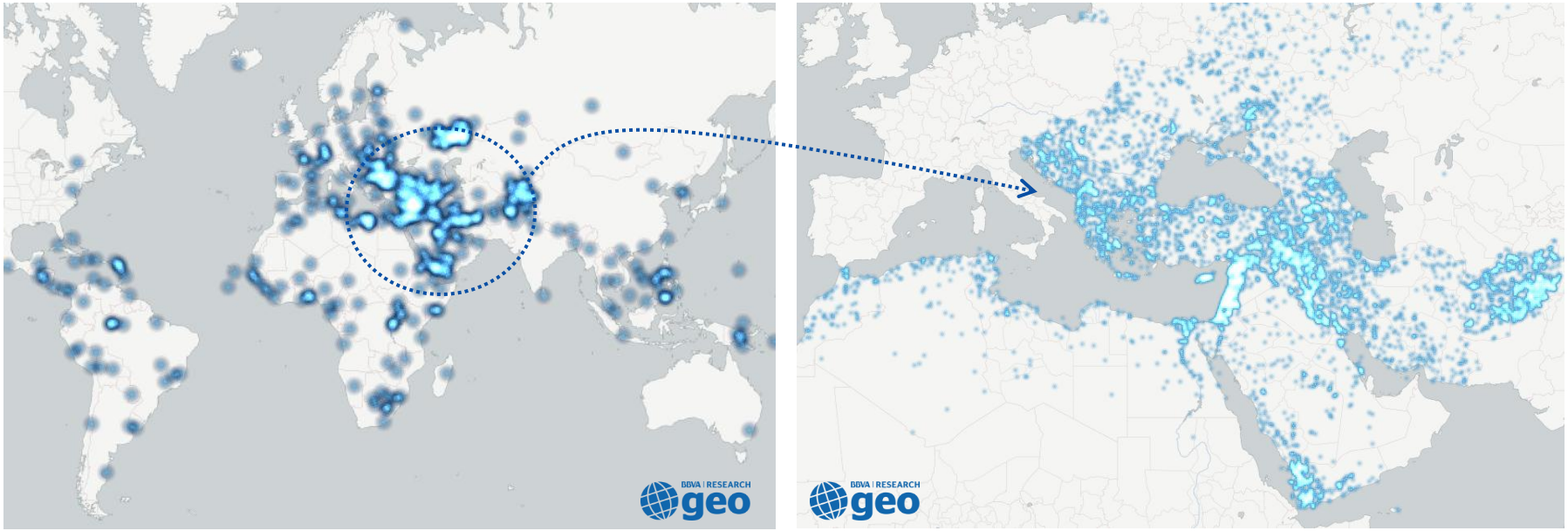



The Arab Spring marks a turning point in the dynamics of social unrest in the emerging world, particularly in MENA. Some frozen conflicts keep well alive in EAGLEs and Nest countries, achieving chronic levels of instability.

Source: www.gdelt.org & BBVA Research

# The Geopolitical situation continues challenging the emerging world

**BBVA World Conflict Heatmap 2015-16** (Number of conflicts / Total events)



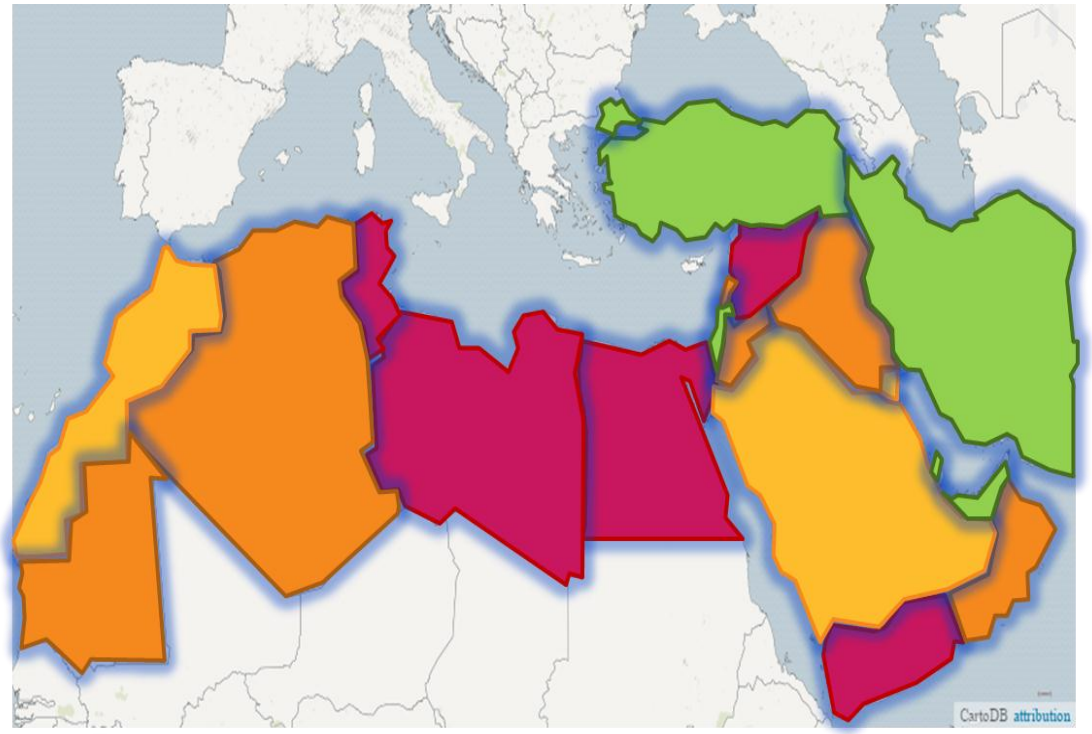

The key hot spots remain in the Middle East, North Africa, Afghanistan and Ukraine. The complex Syrian war remains with important spillovers spiraling into Europe. ISIS exploited fragilities in the neighborhood to expand in North Africa, Afghanistan and the Caucasus.

Source: www.gdelt.org & BBVA Research
See the annex for further information about the data and the used methodology to construct the index.

# In fact, it is getting worse as political instability is a bad receipt for growth and helps jihadists groups

## Different outcomes of the Arab Spring

Source: BBVA Research




- Political Stability
- Political reforms and Minor Changes
- Protest and social Unrest
- Change in Government or Civil War

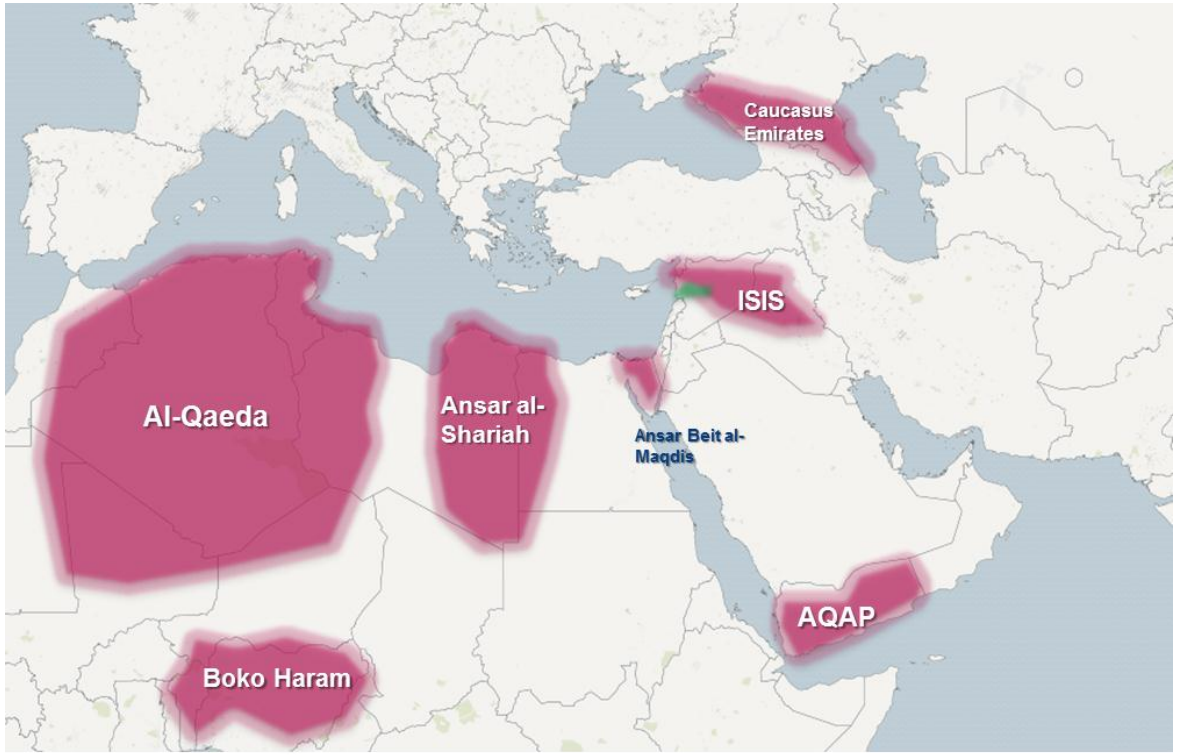
**The Arab Spring still nurtures "many unknowns".**

**The Global Awakening in the region did spread rapidly with some countries changing their Governments or entering civil wars.**

# Jihadists groups are taking advantage of the vacuum of power to destabilize

## Jihadist Network across the Greater Middle East

Source: Stratfor




**The power vacuum in the Middle East has also been filled by non-state jihadist actors.**

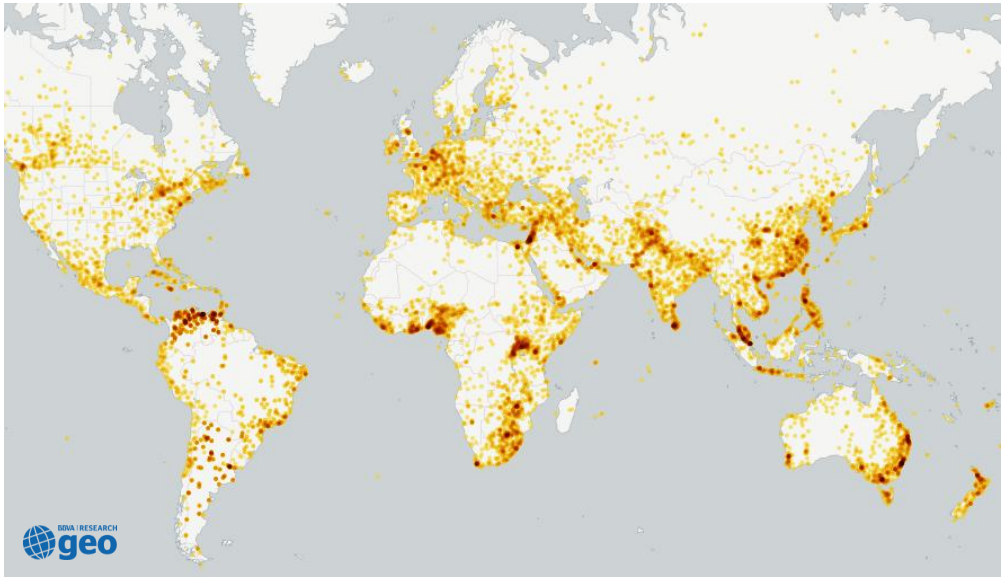
**Sunni jihadism fueled sectarian dispute especially in Iraq, Yemen and Syria where mixed populations live together.**

**The spread of the jihadist network in the region attracted more foreign direct interventions and proxy support to some of these groups to beat rivals.**

**Russia and US engaged fighting jihadist terrorist organizations.**

# Macroeconomic vulnerabilities still an important issue in the emerging countries

**Macroeconomic vulnerabilities in 2015-16**
(media coverage about macro vulnerabilities around the world)



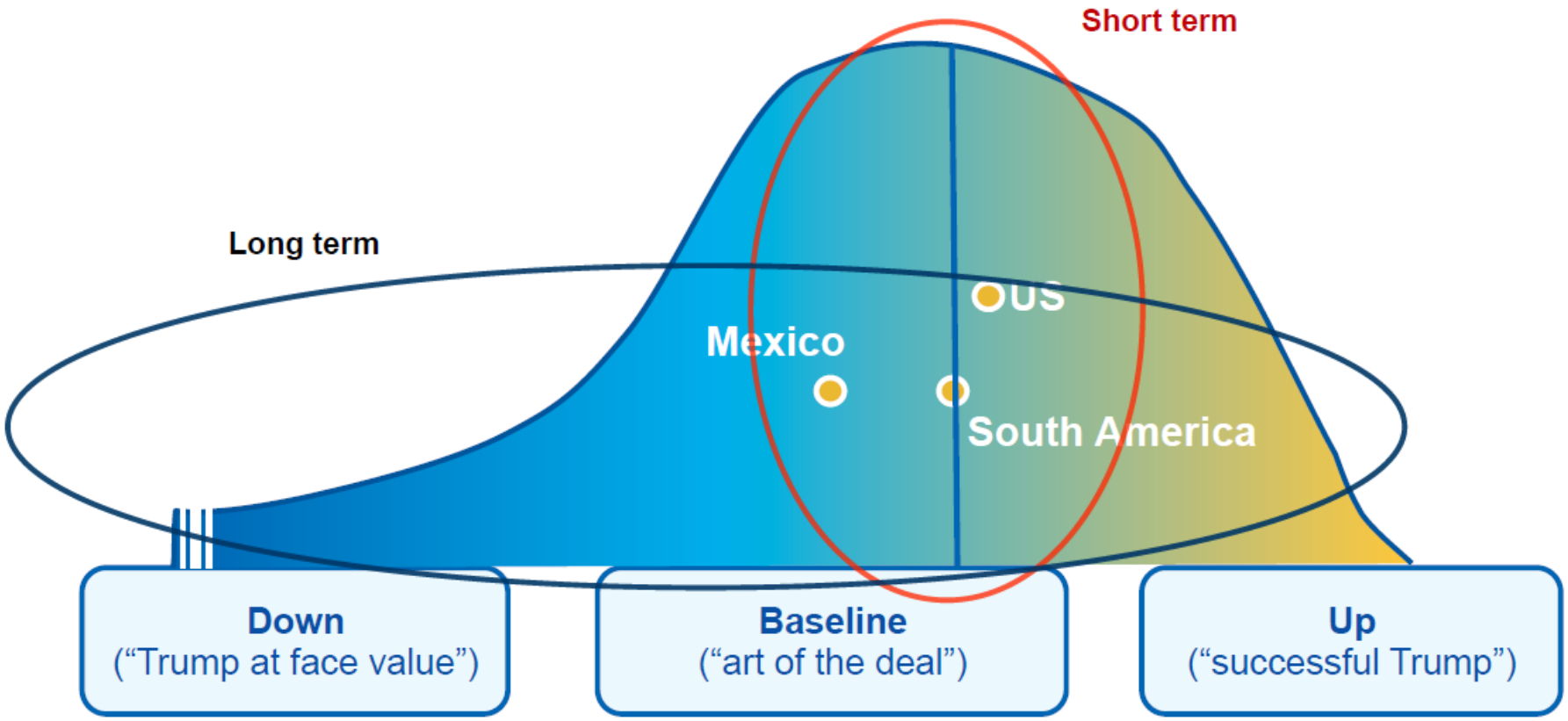

China's transition to lower and more balanced economic growth rates has introduced important challenges in the emerging world

The normalization of US monetary policy will lead to less investor appetite for emerging markets

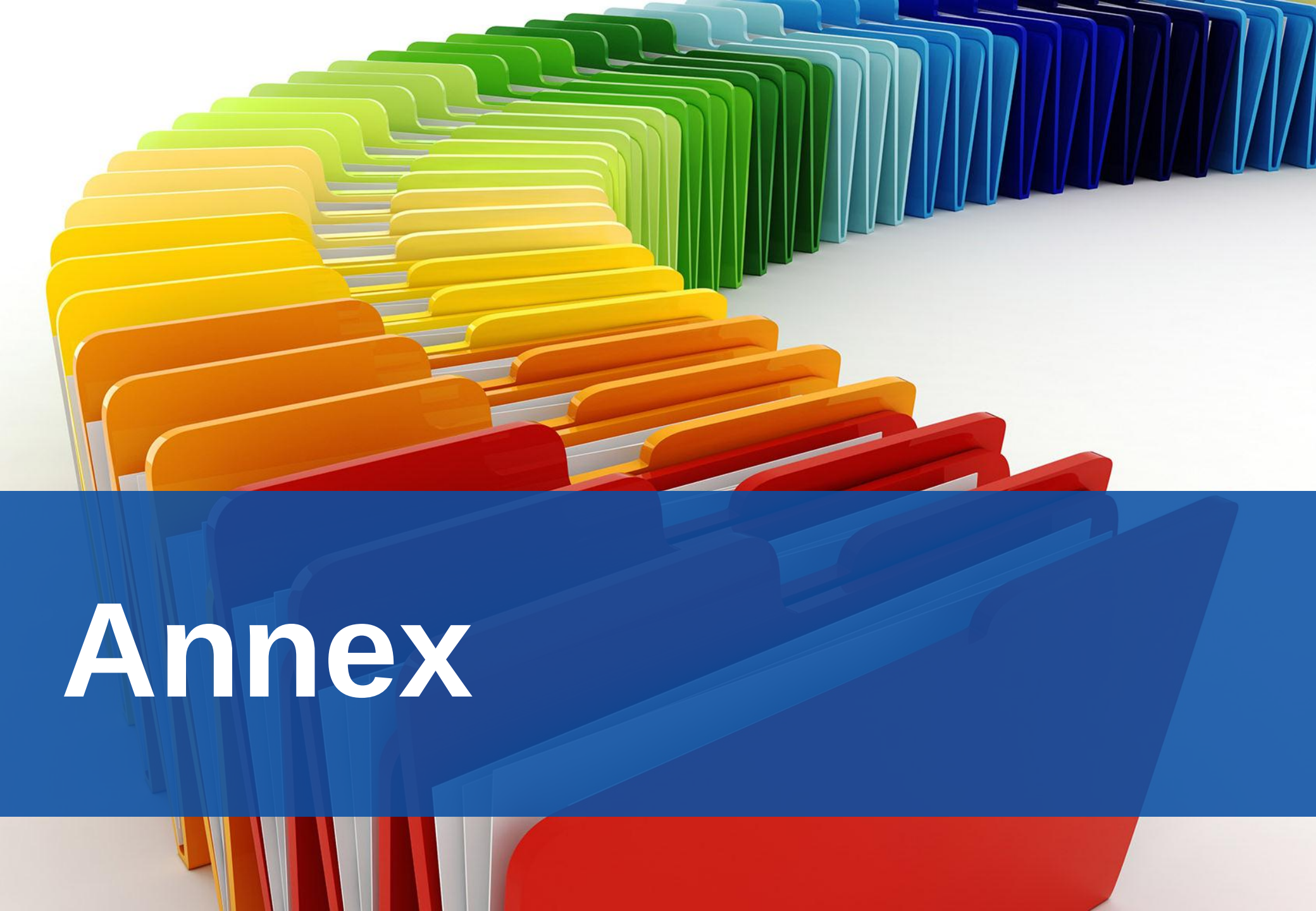
The fall in commodities prices also had a significant impact on the emerging economies, but with asymmetric effects

Source: www.gdelt.org & BBVA Research

# US administration can bring a wide and asymmetric distribution of risks: we need to wait and see




Source: BBVA Research



# Annex

# Methodological issues: BBVA EAGLEs and Nest membership definition

The **reference variable** in our calculations is the **incremental GDP**, i.e. the increase of real GDP in PPP-adjusted terms during the following ten years. To compute it, we add growth forecasts to the estimate of PPP-adjusted for the starting year provided by the IMF. Our approach is therefore a mixture of size and growth.

**We update growth forecasts for the following ten years on an annual basis**. We use BBVA Research projections for those countries that we cover in depth, and IMF projections in the latest World Economic Outlook (and updates) for the remainder. In the latter case, we extend the available forecast horizon by assuming as constant the growth rate available for the last year.

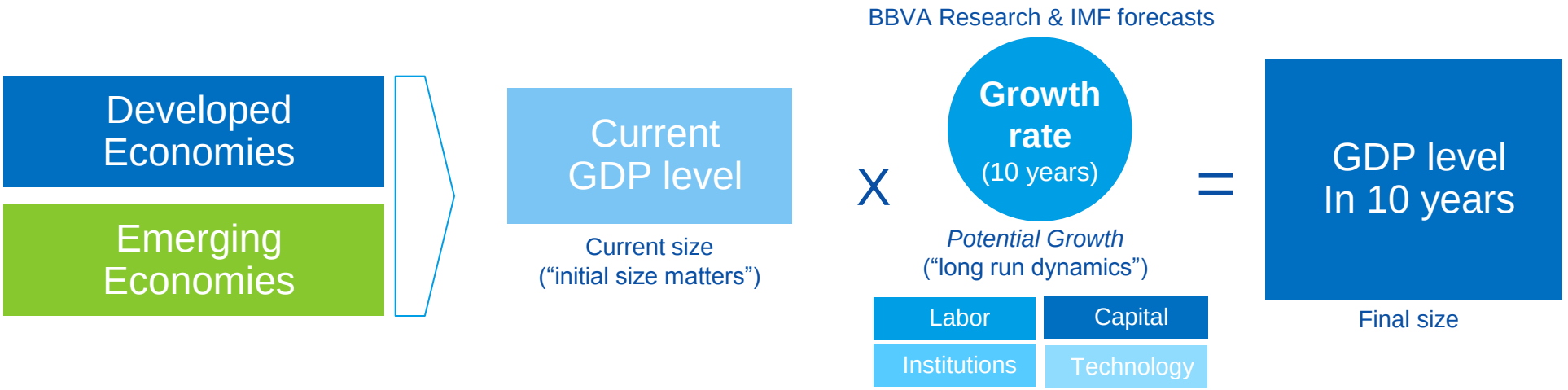
After updating the growth forecasts we compute the incremental GDP for all countries in the world and then rank them from largest GDP to smallest, defining membership of BBVA EAGLEs and Nest as follows:

- The **BBVA EAGLEs** are defined as those emerging economies contributing to world growth more than the average of the G6 countries in the next ten years.

- The **BBVA Nest** is formed of those emerging economies contributing to world growth more than the average of the non-G7 developed economies, which have a PPP-adjusted GDP of over USD100bn but below the EAGLEs threshold.

# Methodological issues: a reminder of the EAGLEs methodology

## Step 1: Estimating GDP level in the next decade




## Step 2: Calculating incremental GDP


See the annex for further information.

# Methodological issues: population projections

We use PPP-adjusted real GDP per capita measured in 2010 dollars. GDP values and projections correspond to the October 2014 edition of the IMF/WEO database, while population estimates and forecasts are from the 2012 revision of the UN World Population Prospects. Regarding income distributions, our starting point is the information available in the WDI/World Bank, which includes the two top and bottom deciles and all quintiles. As data are not continuous we interpolate missing data. Projections until 2025 keep distributions constant from the latest observation.

We group population according to the following five income ranges: 1/ poor and low-income (up to USD5,000), 2/ low middle class (USD5,000-15,000), 3/ medium middle class (USD15,000-25,000), 4/ high middle class (USD25,000-40,000), and 5/ affluent (over USD40,000).

The number of countries included has been extended to 90 and the current coverage accounts for over 90% of the world population:

- **Developed economies**: United States, Japan, Germany, France, United, Kingdom, Italy, Korea, Spain, Canada, Australia, Netherlands, Belgium, Greece, Czech Republic, Portugal, Sweden, Austria, Denmark, Finland, Slovak Republic, Ireland, Slovenia, Estonia and Luxembourg.
- **Emerging economies**: China, India, Indonesia, Brazil, Pakistan, Nigeria, Bangladesh, Russia, Mexico, Philippines, Ethiopia, Vietnam, Egypt, Iran, Turkey, DR Congo, Thailand, South Africa, Tanzania, Colombia, Kenya, Ukraine, Argentina, Algeria, Uganda, Poland, Iraq, Sudan, Morocco, Afghanistan, Venezuela, Peru, Malaysia, Uzbekistan, Nepal, Mozambique, Ghana, Yemen, Angola, Madagascar, Cameroon, Syria, Sri Lanka, Romania, Côte d'Ivoire, Niger, Chile, Burkina Faso, Malawi, Paraguay, Mali, Kazakhstan, Guatemala, Ecuador, Cambodia, Zambia, Zimbabwe, Senegal, Hungary, Bulgaria, Croatia, Panama, Qatar, Uruguay, Lithuania and Latvia.

# Methodological issues: population proyections by skills

The multi-dimensional cohort-component projections we presented here for the period 2015-2025 by age, sex and educational levels correspond to Wittgenstein Centre projections. They are based on the multi-dimensional demographic model presented in Lutz (2013). It models the dynamics of changing composition of the population over time focusing on educational attainment distributions and using a multi-stage model that describe movements of people that can go back and forth between more than two states. The population is sub-divided according to their demographic characteristics and it allows to model how societies change over time according to the shifting relative sizes of these sub-groups.

While internationally consistent data on populations by age and sex are readily available for most countries, data on educational attainment distributions required additional harmonization efforts due to discrepancies across countries, age and time. Due to the variety of nationally distinct educational systems, we use UNESCO's International Standard Classification of Education (ISCED) to make education statistics comparable across countries. Thus, according to ISCED 1997, the level of education is divided in six categories, which will correspond to different sub-groups in the model: ISCED 0 - pre-primary education; ISCED 1 - primary (elementary/basic) education; ISCED 2 - lower secondary education; ISCED 3 - upper secondary education; ISCED 4 - post-secondary non-postsecondary courses; ISCED 5 - first stage of post-secondary education; ISCED 6 - second stage of post-secondary education (postgraduate).

# Methodological issues: Digitalization Index components

## Infrastructure

- Fixed (wired)-broadband speed, in Mbit/s.
- International Internet bandwidth. It is measured in bits per second per internet users.
- Percentage of total population covered by a mobile network signal.
- International Internet bandwidth in megabits per second (Mbit/s).

## Users adoption

- Active mobile-broadband subscriptions.
- Fixed (wired)-broadband subscriptions.
- Mobile telephone subscriptions
- Percentage of households with Internet access at home.
- Proportion of individuals that used the Internet in the last 12 months.
- how widely used are virtual social networks in the country.

## Firms adoption

- What extent do businesses use ICTs for transactions with other businesses in the country?
- What extent do businesses use Internet for selling their goods and services to consumers in the country?
- What extent do businesses adopt new technology in the country?

[1 = not at all; 7 = to a great extent]

## Cost

- Monthly subscription charge for fixed (wired) broadband Internet service (PPP $)Fixed (wired) broadband is considered any dedicated connection to the Internet at downstream speeds equal to, or greater than, 256 kilobits per second, using DSL.

## Regulation

- How developed are your country's laws relating to the use of ICTs (e.g., electronic commerce, digital signatures, consumer protection)?

[1 = not developed at all; 7 = extremely well-developed]

## Content

- The Government Online Service Index assesses the quality of government's delivery of online services on a 0-to-1 (best) scale. There are four stages of service delivery: Emerging, Enhanced, Transactional and Connected. In each country, the performance of the government in each of the four stages is measured as the number of services provided as a percentage of the maximum services in the corresponding stage.

# Methodological issues: Media Digital Climate Index

## Media Digital Climate Index

| Digital Economy | Fintech (Banking Digital Transformation) | Digital Regulation |
|---|---|---|
| Principal Components Analysis on each component | | |
| digital government, ICT security, software as a service, social media, big data, innovation driven inclusive growth, technology extension services, human capital for innovation and entrepreneurship, funding innovation , innovation and technology policy, firm innovation productivity and growth, innovation technology and entrepreneurship, sector specific ICT applications, telecommunications and broadband access, ICT industry and services, cloud computing, big data, ICT and financial sector, sensorization, d printing, digital manufacturing, internet of things, ICT innovation and transformation, e government applications, e commerce applications, mobile applications e government, digital economy strategy, ICT strategy, national e government strategy, national broadband strategy, innovation collaboration, technology transfer offices, information and communication technologies | electronic payments, mobile money, financial management information systems, electronic identity, e money payment and market infrastructure, ICT and financial sector, application programming interfaces, financial sector development, payment systems standards, internet banking, mobile banking, commercial banking | internet censorship, financial management information systems, electronic identity open data policy, ICT security, e money, payment and market infrastructure telecommunications law and regulation, telecommunications sector policy and regulation, ICT law, ICT policy regulatory framework and institutions, ICT strategy policy and regulation, data security, data privacy, e commerce legislation, ICT licensing, electronic commerce law, consumer protection law, international standards and technical regulations, personal data protection |

# Methodological issues: Digital Evolution Index

The Digital Evolution Index analyzes the key underlying drivers that govern a country's evolution into a digital economy: Demand Conditions, Supply Conditions, Institutional Environment and Innovation and Change. To gain a comprehensive view of digital readiness across countries, these drivers are further divided into 12 components, measured using a total of 83 indicators.

1º

## Supply Conditions

***Access Infrastructure***
*Bandwidth, servers, security and accessibility of digital content*.

**Transaction Infrastructure**
Depth of consumer financial services, business use of ICT.

**Fulfillment Infrastructure**
Quality of transportation networks, logistics performance.

2º

## Demand Conditions

**Consumer Profile**
Consumer income, consumption, demographics.

**Financial Savviness**
Consumer use of financial services and digital payment Technology.

**Internet & Social Media Savviness**
Broadband and mobile Internet use, use of informational websites, social media usage.

3º

## Institutional Environment

**Gov't Effectiveness**
Political stability, rule of law, governance quality, corruption.

**Gov't & Business Environment**
Investment inflows, competitive marketplace facilitation, ease of business in-country.

**Gov't & Digital Ecosystem**
e-Governance, government facilitation of ICT and digital ecosystem creation

4º

## Innovation and Change

**Ecosystem Attractiveness & Competitive Landscape**
Private equity investment, business focus on customers.

**Extent of Disruption**
User adoption of new technology and services, advertising.

**Startup Culture**
Venture capital availability, ease of registration of new Businesses.

# Methodological issues: GDELT database

1º

## What is GDELT?

*"Global Database of Events, Language and Tone"* is an innovative open access database containing a comprehensive and high resolution catalogue of geo-referenced socio-political events from 1979 to the present.

GDELT processes news in broadcast, print and web media globally in over 100 languages, containing over 250 million records.

2º

## What language does it use?

Social events are coded using the "Conflict and Mediation Event Observations (CAMEO)" event coding system and a numeric score is assigned from the Goldstein Scale, which captures the intensity of the events.

Moreover, it includes more that 10000 themes about society, economy, politics, technology,… and the entire World Bank's taxonomy

3º

## How is information processed?

The information is extracted from the media and systematized using the "Textual Analysis by Augmented Replacement Instructions (TABARI)" algorithm, a machine coding procedure of events that uses pattern recognition to find "Dyadic Relations" and track Events of Interest.

It contains a real-time streaming news machine translation, monitoring English media and more than 98.4% of daily non-English media volume.

4º

## How do we extract it?

To exploit GDELT, we take advantage of Big-Query, a platform that allows us to handle large data sets in near-real time based on standard SQL query language.

Moreover, we use additional Software (R and Python) to manipulate the database and to make further analysis like modeling social dynamics.

# Methodological issues: Tracking Protests and Conflicts

**We have developed a tracking of protest and conflict indexes for every country in the world since 1 January 1979 through present day with daily, monthly, quarterly and annual frequencies. To construct this, we use a rich 'big database' of international events** (GDELT at www.gdelt.org) which monitors the world's events covered by the news media from nearly every corner of the world in print, broadcast, and web formats, in over 100 languages, every moment of every day updated every 15 minutes.

- **BBVA Protest Intensity Index:** We collect every registered protest in the world for a particular time which are separately collated under the various headings of the **CAMEO taxonomy** as: demonstrate or rally, demonstrate for leadership change, demonstrate for policy change, demonstrate for rights, demonstrate for change in institutions and regime, conduct hunger strike for leadership change, conduct hunger strike for policy change, conduct hunger strike for rights, conduct hunger strike for change in institutions and regime, conduct hunger strike not specified before, conduct strike or boycott for leadership change, conduct strike or boycott for policy change, conduct strike or boycott for rights, conduct strike or boycott for change in institutions and regime, conduct strike or boycott not specified before, obstruct passage or block, obstruct passage to demand leadership change, obstruct passage to demand policy change, obstruct passage to demand rights, obstruct passage to demand change in institutions and regime, protest violently or riot, engage in violent protest for leadership change, engage in violent protest for policy change, engage in violent protest for rights, engage in violent protest for change in institutions and regime, engage in political dissent not specified before.

- **BBVA Conflict Intensity index:** In the same way, we collect every registered conflict in the world for a particular time considering a **wide variety of conflicts under the CAMEO taxonomy headings** as: impose restrictions on political freedoms, ban political parties or politicians, impose curfew, impose state of emergency or martial law, conduct suicide, carry out suicide bombing, carry out car bombing, carry out roadside bombing, car or other non-military bombing not specified below, use as human shield, use conventional military force not specified before, impose blockade, restrict movement, occupy territory, fight with artillery and tanks, employ aerial weapons, violate ceasefire, engage in mass expulsion, engage in mass killings, engage in ethnic cleansing, use unconventional mass violence not specified before, use chemical, biological, or radiological weapons, detonate nuclear weapons, use weapons of mass destruction not specified before.

Using this information, we construct an intensity index for both events. **The number of protests and conflicts each day/month/quarter/year are divided by the total number of all events recorded by GDELT for that day/month/quarter/year to create a protest and conflict intensity score** that tracks just how prevalent protest and conflict activity has been over the last quarter-century, correcting thus for the exponential rise in media coverage over the last 30 years and the imperfect nature of computer processing of the news.

# Methodological issues: emotional indicator and coding system in GDELT

**The GDELT database** offers several mechanisms for assessing the “importance” or “impact” of a particular event. The most common measures are:

**Goldstein Scale.** This is a widely used scale in geopolitics that maps WEIS event codes onto a number representing level of conflict or cooperation. Each **CAMEO event code** is assigned a **numeric score from -10 to +10**, capturing the theoretical potential impact that type of event will have **on the stability** of a country. This is known as the Goldstein Scale. This field specifies the Goldstein score for each event type. NOTE: this score is based on the type of event, not the specifics of the actual event record being recorded. Thus two riots, one with 10 people and one with 10,000, will both receive the same Goldstein score. This can be aggregated to various levels of time resolution to yield an approximation of the stability of a location over time.

**Average Tone.** This is the average “tone” of all documents containing one or more mentions of this event. The score ranges from -100 (extremely negative) to +100 (extremely positive). **Common values range between -10 and +10,** with 0 indicating neutral. This can be used as a method of filtering **the “context” of events** as a subtle measure of the importance of an event and as a proxy for the “impact” of that event. For example, a riot event with a slightly negative average tone is likely to have been a minor occurrence, whereas if it had an extremely negative average tone, it suggests a far more serious occurrence. A riot with a positive score probably suggests a very minor occurrence described in the context of a more positive narrative (such as a report of an attack occurring in a discussion of improving conditions on the ground in a country and how the number of attacks per day has been greatly reduced). To measure the emotional connotation in which the event appears, GDELT uses the tonal dictionary from Shook et al (2012). This scale goes beyond CAMEO event codes and is the measure that we use in the report.

To extract all this information from the text, the data are coded using the **open-source Petrach system** for events and additional software for location and tone. This coding engine identifies all named entities through noun phrases: alll nouns, verbs, adjectives, adverbs,.. in the text. Unidentified cases can be separately processed with named-entity-resolution software. The speed of the algorithm is achieved through the use of shallow parsing algorithms and parallel processing.

# Methodological issues: effect of the oil price on the current account

- In order to estimate the effect of the oil price changes in the current account we first have to estimate the effect of the oil price on the oil trade balance: the oil trade balance of a country is defined as the difference between the value of oil exports and of oil imports as a percentage of its GDP. In order to estimate the effect of the oil price in the oil trade balance we estimate a set of models in which the dependent variable is the oil balance (%GDP) and the explanatory variables are: i) the lagged oil trade balance; ii) the real price of oil; and iii) the relative real income per capita. The relative income per capita is calculated as each country's deviation from the World's average income. GDP per capita is measured in PPP terms, and in real US dollars (See "The current account balance and the oil price shock", BBVA Research for further information). We then include the oil trade balance as one of the key factors that determine the current account balance.

- The methodology used for estimating the structural and cyclical current account balance and its determinants is fully explained in the Economic Watch "An analysis of the performance and the determinants of the current account in Spain". In our Current Account Model, each explanatory variable is broken-down into three components depending on their frequency of oscillation, i.e. long-term, medium-term and short-term, and further, we allow each of them has its own estimated effect on the observed current account to GDP ratio.

- The model is estimated in a panel data of 92 countries for the period 1980-2014 containing 1,973 observations. The database is constructed using IMF-WEO, World Bank, UN, OECD, Darvas (2012) and BBVA Research data. All the variables are expressed in terms of deviations from its respective global average, except for the dependent variable, the initial NIIP, the oil trade balance and variations in the exchange rate, as in these cases the global average would be zero.

- The estimation is made using feasible generalised least squares (FGLS) and the variance-covariance matrix is adjusted to correct for heteroskedasticity and autocorrelation of residuals. Subsequently, the estimation of the short- and medium-term coefficients resulting from the panel data approach is adapted to the each one of the 92 countries. Specifically, these coefficients are re-estimated using a Bayesian time-series model designed for each country. In particular, the Bayesian model uses the short- and medium-term coefficients obtained from the panel data model, as well as their distribution, as priors for the Bayesian estimation. The long-term coefficients estimated through the panel data model remain unchanged.

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