Country Risk Report

A Quarterly Guide to Country Risks

September 2018

(Data as of Aug 31th)

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Summary

Country Risk

Ratings agencies

- **Turkey** was downgraded again by all three agencies. **Greece** was upgraded by S&P and Fitch. **Czech Republic** was improved by Fitch**,** and **Chile** was downgraded by **Moody's** ➡

Financial Markets

- **Global Risk Aversion (GRA) has not been altered by the turmoil in Emerging Markets (EMs) FX markets.** VIX and Financial Tensions Index (FTI-US) have decreased again during the last quarter, while US corporate rates and the global component of sovereign CDS have increased only slightly ➡

- **Limited contagion from most vulnerable EM apart from FX**. Overall, the recent sell-off seen in Argentina, Turkey and other EMs FX have spread somewhat to other EMs countries' currencies, as it can be seen in our FX EMs Synchronization Indicator. But the contagion to other countries' financial indicators (sovereign CDS or Financial Tensions Indexes (FTI)) has been restrained ➡

- However small, such widening of CDS spreads in EMs has turned the gaps between the agencies' ratings and their markets' implicit counterparts more negative (less positive) for most countries. Downgrade pressure is currently quite intense for Italy and Mexico ➡

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- **Our fundamentals-based rating (BBVA Research) is in line with the upgrade pressures seen in CDS sovereign markets in EM-Europe**. On the other hand, our rating is **slightly more positive in LatAm and in EU-Periphery** than both the agencies and markets. **In EM-Asia, all three visions currently coincide** ➡

- **Leverage is growing again in China and Turkey** after a pause of a few quarters, although still at a mild pace. We can observe disperse signs of leverage growth across the board, but most countries in both DMs and EMs still continue deleveraging ➡

- **There is currently no clear trend in real housing prices** that can be observed as predominant across the board or within geographical regions. Moreover, a high volatility pattern in prices growth seems to be prevailing in most countries. ➡

- **Our Early Warning Systems of Banking and Currency crises continue signaling only idiosyncratic vulnerabilities** and not region-wide or global-wide high risks. However, we cannot rule out that the contagion of those individual shocks to other countries could further intensify ➡

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01

Sovereign Markets and Ratings Update

Evolution of sovereign CDS by country
Evolution of sovereign ratings
Market downgrade/upgrade pressure

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Sovereign markets and rating agencies update

Sovereign Rating Index 2011-18

- **Peripheral EU median rating continued improving** for three consecutive quarters.

- **Turkey** was downgraded by all three agencies.

- **Greece** was upgraded by S&P and Fitch.

- **Czech Republic** was improved by Fitch, and **Chile** was downgraded by Moody's.

Source: BBVA Research by using S&P, Moody's and Fitch data

Sovereign Rating Index: An index that translates the three important rating agencies ratings letters codes (Moody's, Standard & Poors and Fitch) to numerical positions from 20 (AAA) to default (0). The index shows the average of the three rescaled numerical ratings.

Sovereign markets and rating agencies update

Sovereign Rating Index 2011-18: Developed Markets

Source: BBVA Research
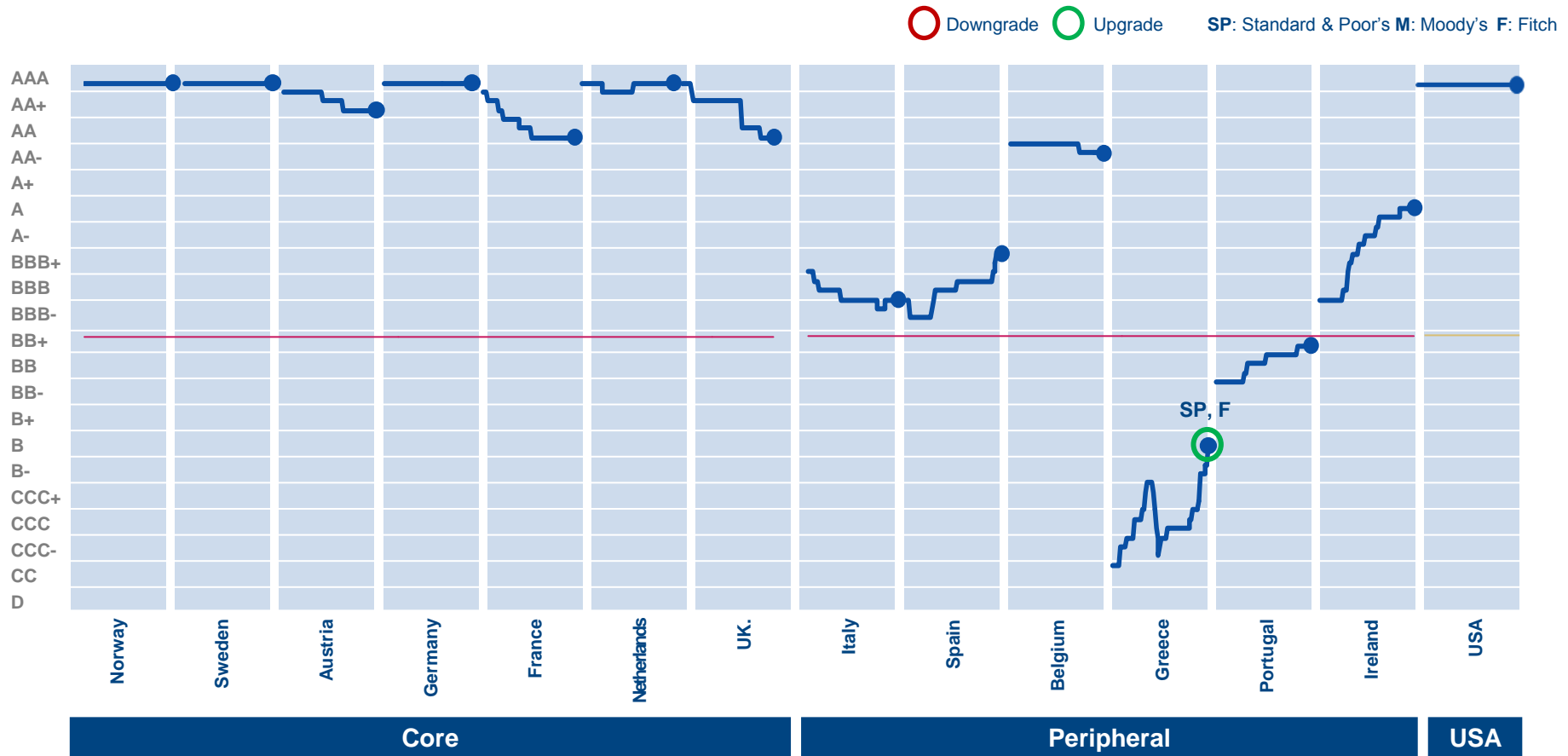
Sovereign markets and rating agencies update

Sovereign Rating Index 2011-18: Emerging Markets

○ Downgrade ○ Upgrade   **SP**: Standard & Poor's **M**: Moody's **F**: Fitch

Source: BBVA Research

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Sovereign markets and rating agencies update

Sovereign CDS Spreads
(Up until August 31st 2018)

Changes
(last six months MoM)

	2012	2013	2014	2015	2016	2017	2018		M A M J J A

Developed Markets
- USA
- UK
- Norway
- Sweden
- Austria
- Germany
- France
- Netherlands
- Italy
- Spain
- Belgium
- Greece
- Portugal
- Ireland

EM Europe
- Turkey
- Russia
- Poland
- Czech Republic
- Hungary
- Bulgaria
- Romania
- Croatia

LATAM
- Mexico
- Brazil
- Chile
- Colombia
- Peru
- Argentina

Asia
- China
- Korea
- Thailand
- Indonesia
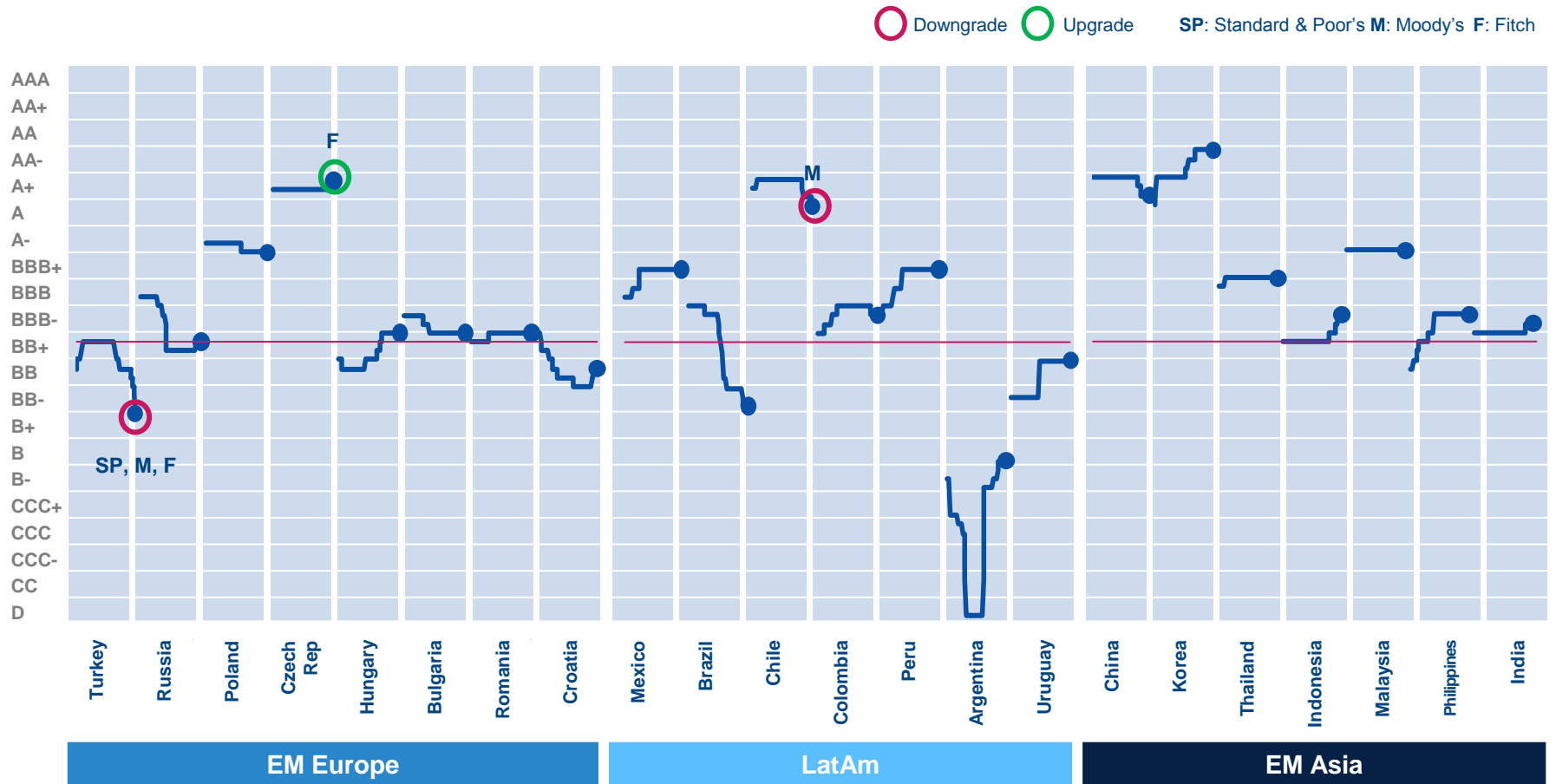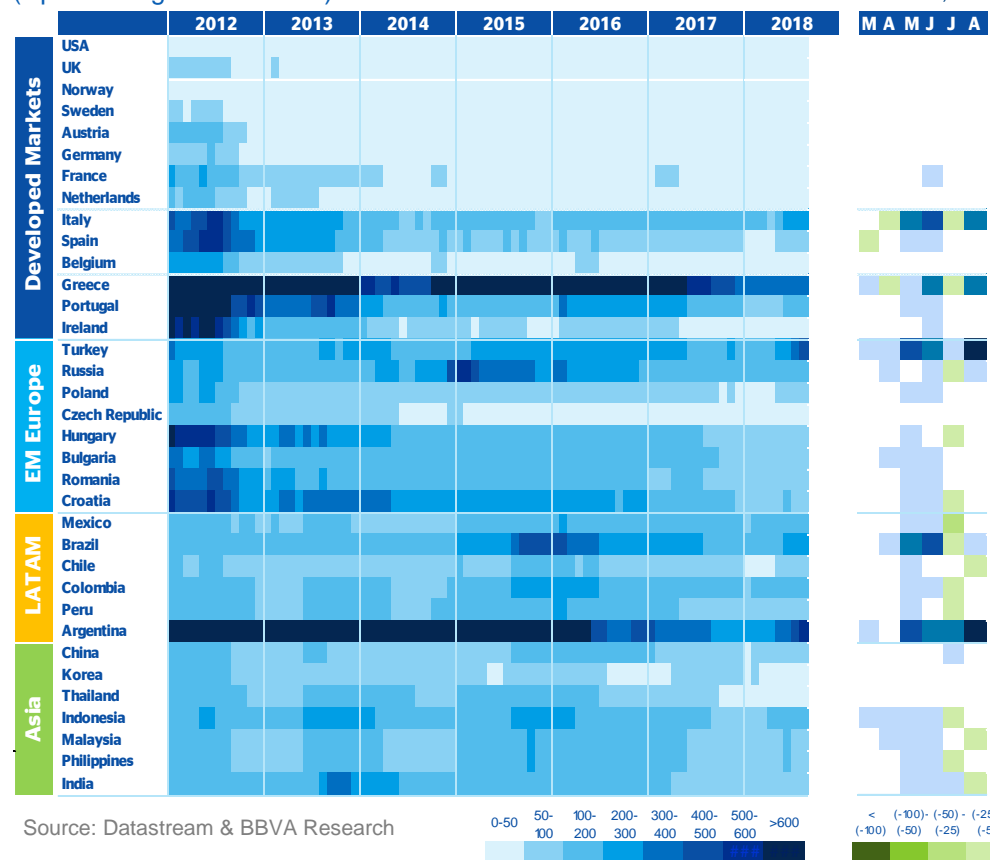- Malaysia
- Philippines
- India

Source: Datastream & BBVA Research

Legend: 0-50 | 50-100 | 100-200 | 200-300 | 300-400 | 400-500 | 500-600 | >600

Legend: < (-100) | (-100)-(-50) | (-50)-(-25) | (-25)-(-5) | (-5)-5 | 5-25 | 25-50 | 50-100 | >100

- CDS of Advanced Economies continue unaffected by the events in EMs

- Italian CDS soared during July due to political tensions. Greece's spread also surged despite its rating upgrades

- Turkey's spread soared more than 200 bps in the last quarter. Contagion in the region has been limited.

- Similarly, Argentina's CDS has also rocketed more than 200 bps with minor regional contagion. Brazil rose strongly in June, but has moderated since.

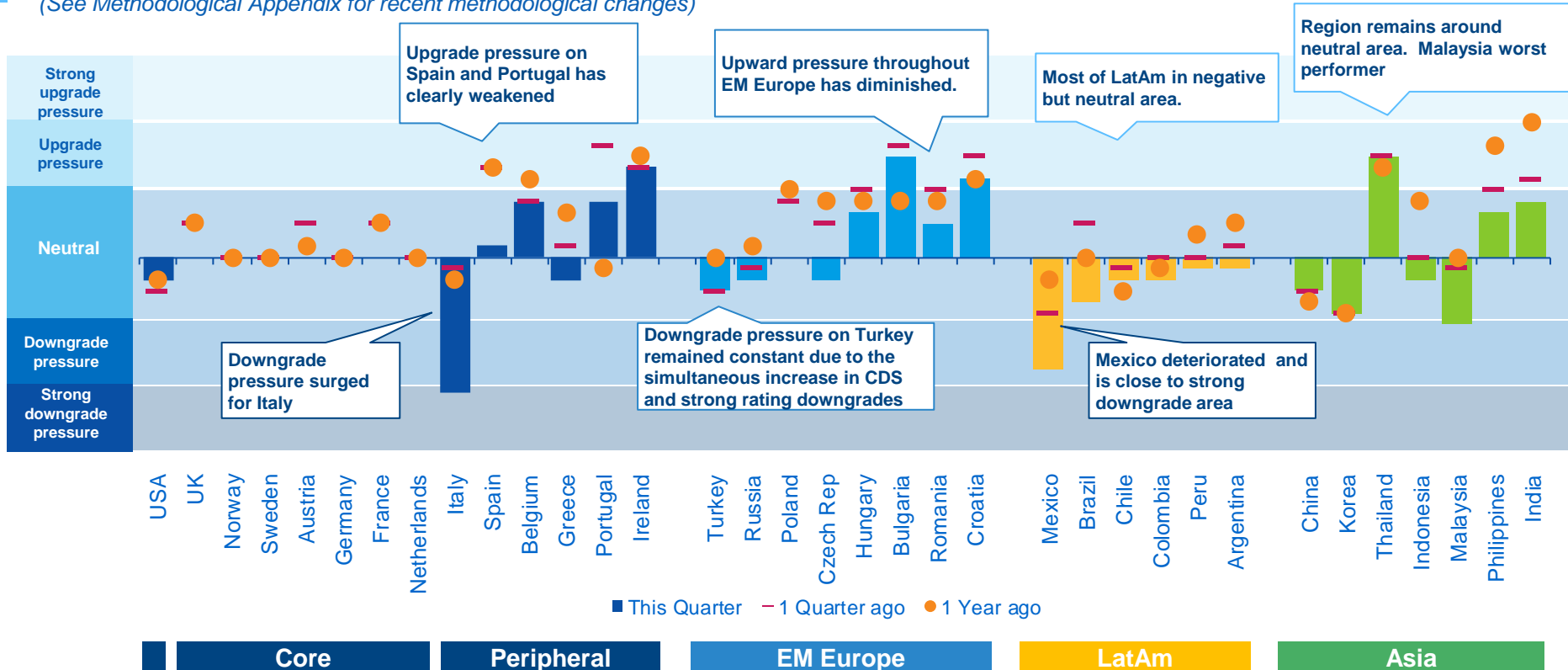- CDS in EM Asia have remained relatively stable

In the most recent months we have seen strong rises in the spread of certain countries (Italy, Greece, Turkey & Argentina and to a lesser extent Brazil), but so far they have remained as idiosyncratic shocks with limited contagion to other countries or regions

Sovereign markets and agencies ratings update

Markets vs. ratings pressure gap (Last date: 31 August 2018)

(difference between CDS-implied rating and actual sovereign rating, in notches, **quarterly average**)

(See Methodological Appendix for recent methodological changes)

Strong upgrade pressure

Upgrade pressure

Neutral

Downgrade pressure

Strong downgrade pressure

Upgrade pressure on Spain and Portugal has clearly weakened

Upward pressure throughout EM Europe has diminished.

Most of LatAm in negative but neutral area.

Region remains around neutral area. Malaysia worst performer

Downgrade pressure surged for Italy

Downgrade pressure on Turkey remained constant due to the simultaneous increase in CDS and strong rating downgrades

Mexico deteriorated and is close to strong downgrade area

USA UK Norway Sweden Austria Germany France Netherlands Italy Spain Belgium Greece Portugal Ireland Turkey Russia Poland Czech Rep Hungary Bulgaria Romania Croatia Mexico Brazil Chile Colombia Peru Argentina China Korea Thailand Indonesia Malaysia Philippines India

■ This Quarter — 1 Quarter ago ● 1 Year ago

Core	Peripheral	EM Europe	LatAm	Asia

Source: BBVA Research

The widening of CDS spreads in EMs in the last quarter has turned pressure gaps more negative (less positive) for most countries. Downgrade pressure is intense for Italy and Mexico; Moderate downgrade pressure for Turkey due to consecutive rating agencies downgrades
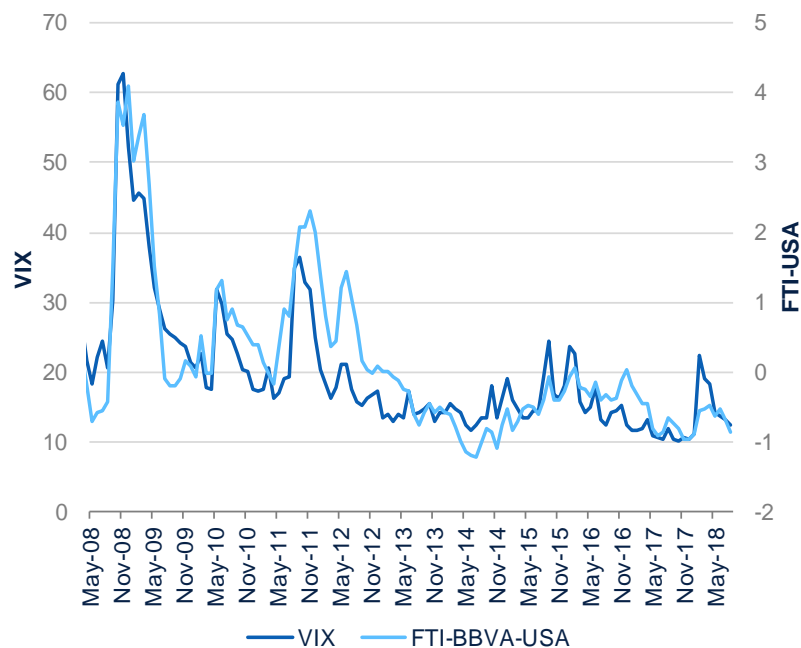
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Financial Markets, Financial Tensions and Global Risk Aversion

Global Risk Aversion Evolution according to Different Measures
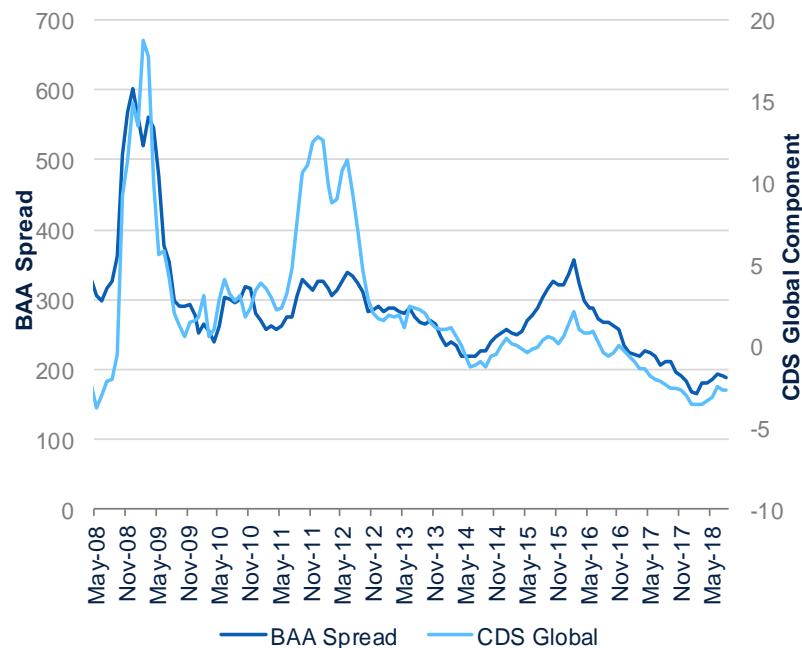Financial Tensions Index
EMs FX Synchronization Indicator

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Financial Tensions and Global Risk Aversion (GRA)

Global risk aversion indicators: VIX & FTI
(Monthly average)

Source: Bloomberg and BBVA Research

Global risk aversion indicators: BAA Spread & Global component in sovereign CDS
(Monthly Average)

*The global component of sovereign CDS corresponds to the first component from a PCA Analysis on 51 CDS from both EMs and DMS
Source: FED, Datastream and BBVA Research

Similarly to the previous quarter, the recent turmoil in FX EMs has had a limited impact on GRA indicators. VIX and FTI-US have again decreased during the quarter, while US corporate rates and the CDS global component have increased only slightly
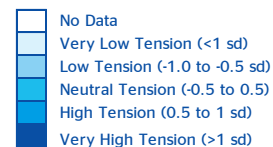
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Financial tensions and global risk aversion

BBVA Research Financial Stress Map
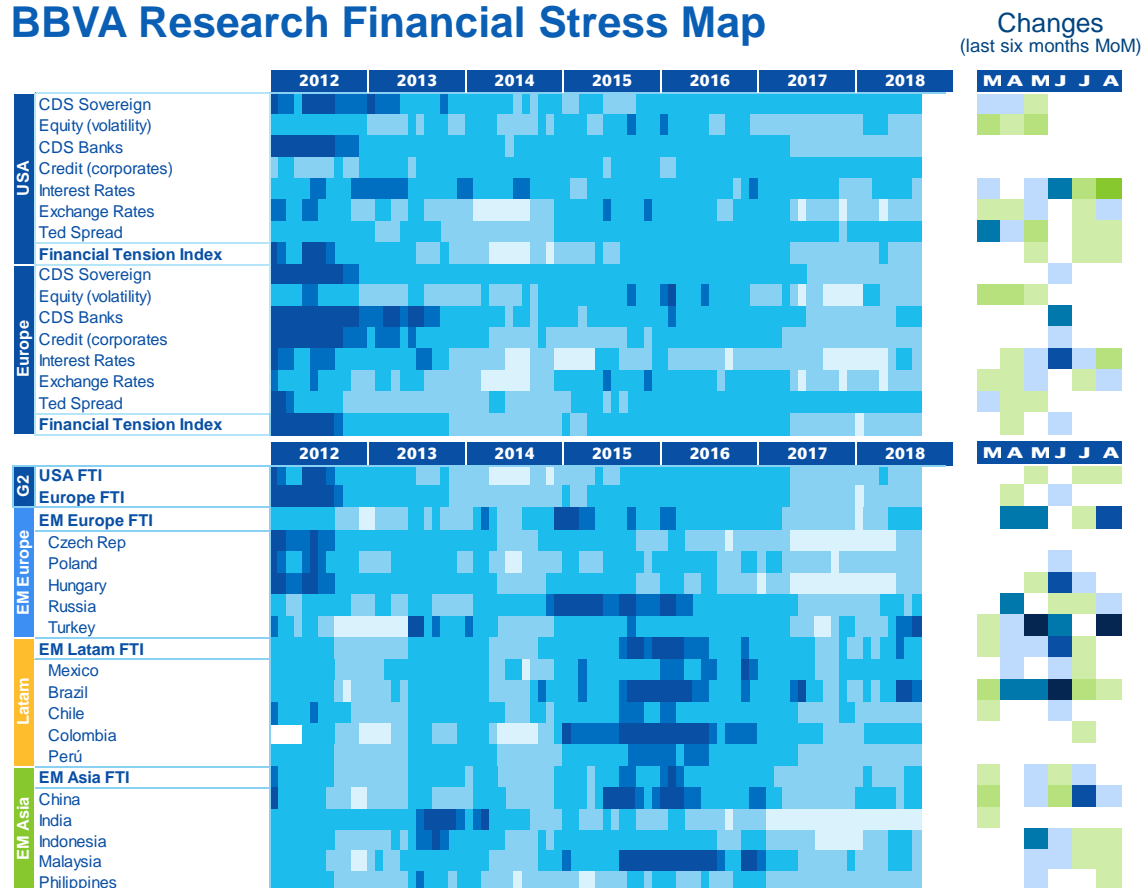
- FT in USA remain stable. FT in EU increased in June due to political tensions in Italy (reflected in interest rates) and have relaxed since.

- EM Europe FTI continues increasing sharply lead almost entirely by Turkey's woes.

- Similarly, FTI in LatAm has also surged lead mainly by tensions in Brazil, but has relaxed during July and August.

- FT in EM Asia have seen a small increase due to a rise in China's tensions.

Color scale for Index in levels

- No Data
- Very Low Tension (<1 sd)
- Low Tension (-1.0 to -0.5 sd)
- Neutral Tension (-0.5 to 0.5 sd)
- High Tension (0.5 to 1 sd)
- Very High Tension (>1 sd)

Color scale for monthly changes

- < -1.0
- (-1)-(-0.75)
- (-0.75) - (-0.25)
- (-0.25) - (-0.1)
- (-0.1) - 0.1
- 0.1 - 0.25
- 0.25 - 0.75
- 0.75 - 1
- >1

Source: BBVA Research
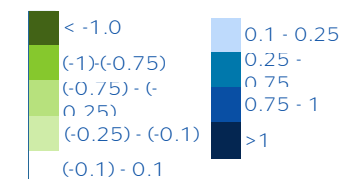
Financial Tensions in DMs remained stable while an overall increase was seen in EMs. As in the case of sovereign CDS, the rise has had a clear differentiation between and within different regions, with little contagion despite the intense surge in countries like Turkey or Brazil

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EMs FX Synchronization Indicator

Synchronization of EMs FX changes:
Median changes in FX EM rates (increase means depreciation) versus Synchronization index of FX EMs changes

FX depreciation

Lower synchronization

····· EM Median FX change   —— Synchronization (RHS)
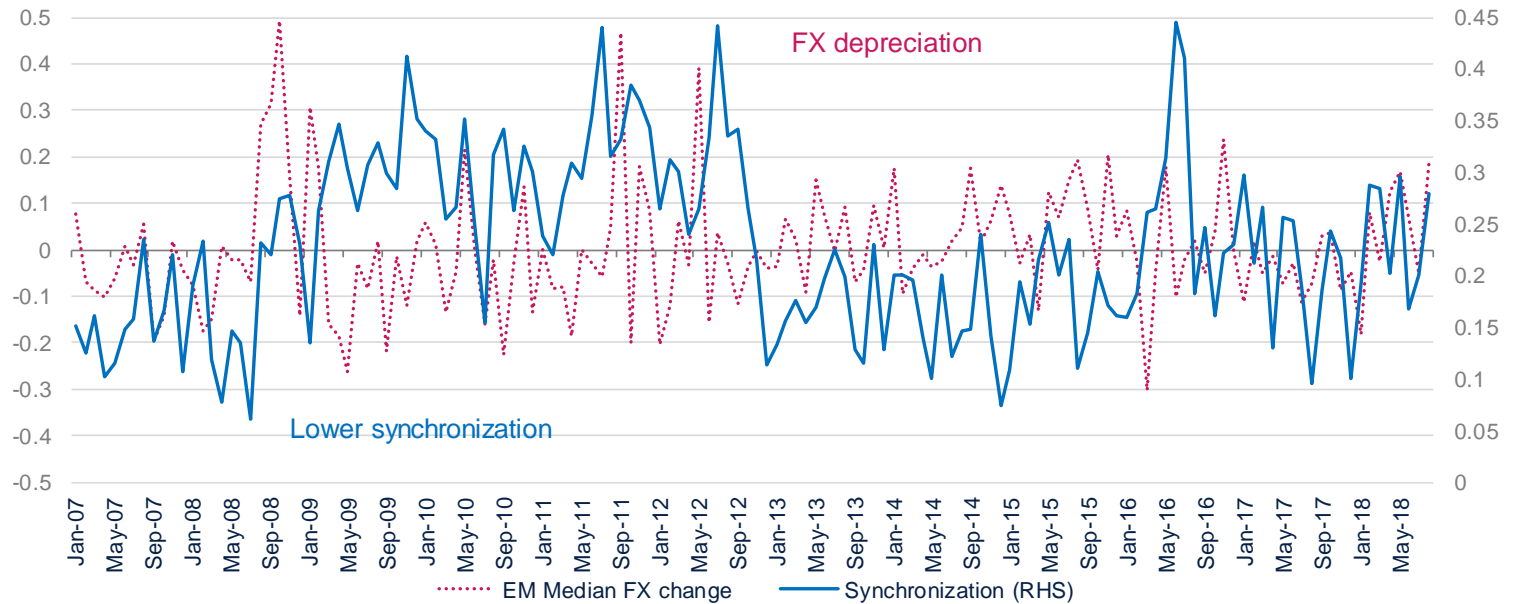
Source: BBVA Research

Synchronization in EMs' FX markets decreased during June and July, but has surged during August together with the sharp depreciation seen in Turkey and Argentina. The Median EM's depreciation has also surged during August. The increase synchronization and depreciation of the last year is consistent with the joint Fed's normalization process and the upsurge in idiosyncratic uncertainties

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EMs FX Synchronization Indicator

Synchronization of EMs FX changes:
Warning indicator based on Median EM FX changes and Synchronization Indicator

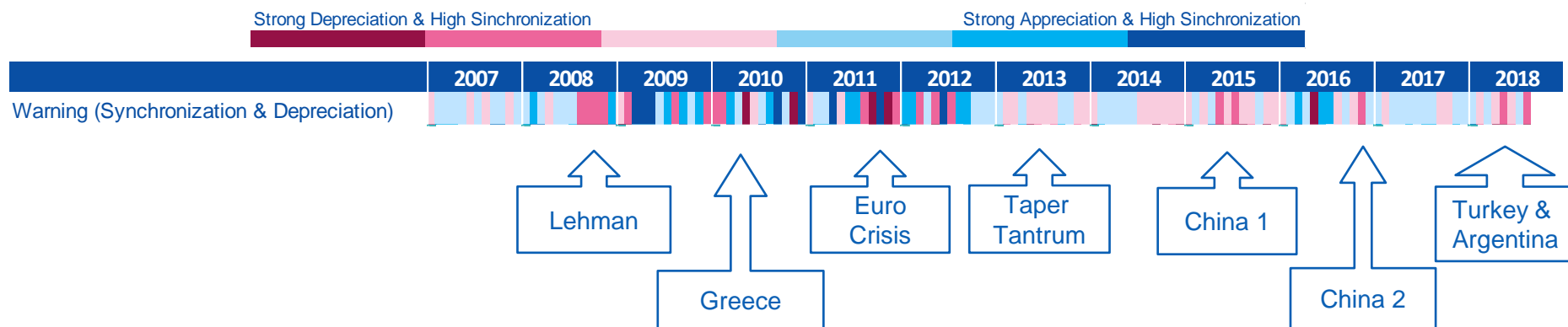Strong Depreciation & High Sinchronization   Strong Appreciation & High Sinchronization

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Warning (Synchronization & Depreciation)												

Lehman

Greece

Euro Crisis

Taper Tantrum

China 1

China 2

Turkey & Argentina

Based on the Synchronization index and the median change in EM markets, our warning indicator takes the maximum value when (on average) EM FX rates are depreciating strongly and there is a high degree of synchronization (intense red). On the other hand, the minimum value of the warning index occurs when on average FX rates are appreciating strongly and in a synchronized fashion (intense blue). The intermediate colors include several possible combinations of lower levels of depreciation/appreciation and/or lower degrees of synchronization.

Source: BBVA Research

Our combined warning indicator of EM FX synchronization indicates that the recent sell-off episodes in EM FX rates during May and August have had a high level of synchronization among EM currencies (although not the highest possible level)

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Macroeconomic vulnerability and in-house
Regional country risk assessment

BBVA-Research sovereign ratings by regions
Equilibrium CDS by regions
Vulnerability Radars by regions
Public and private debt levels

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Macroeconomic Vulnerability and Risk Assessment

CDS and equilibrium risk premium: August 2018

Core Europe: Safe havens at equilibrium levels

EU Periphery: In line with equilibrium levels

EM Europe: In line with equilibrium levels

LatAm: Below equilibrium levels

EM Asia: Below equilibrium levels

Core Europe   EU Periphery   EM Europe   Latam   EM Asia

—— CDS   ········ BBVA Equilibrium (range)
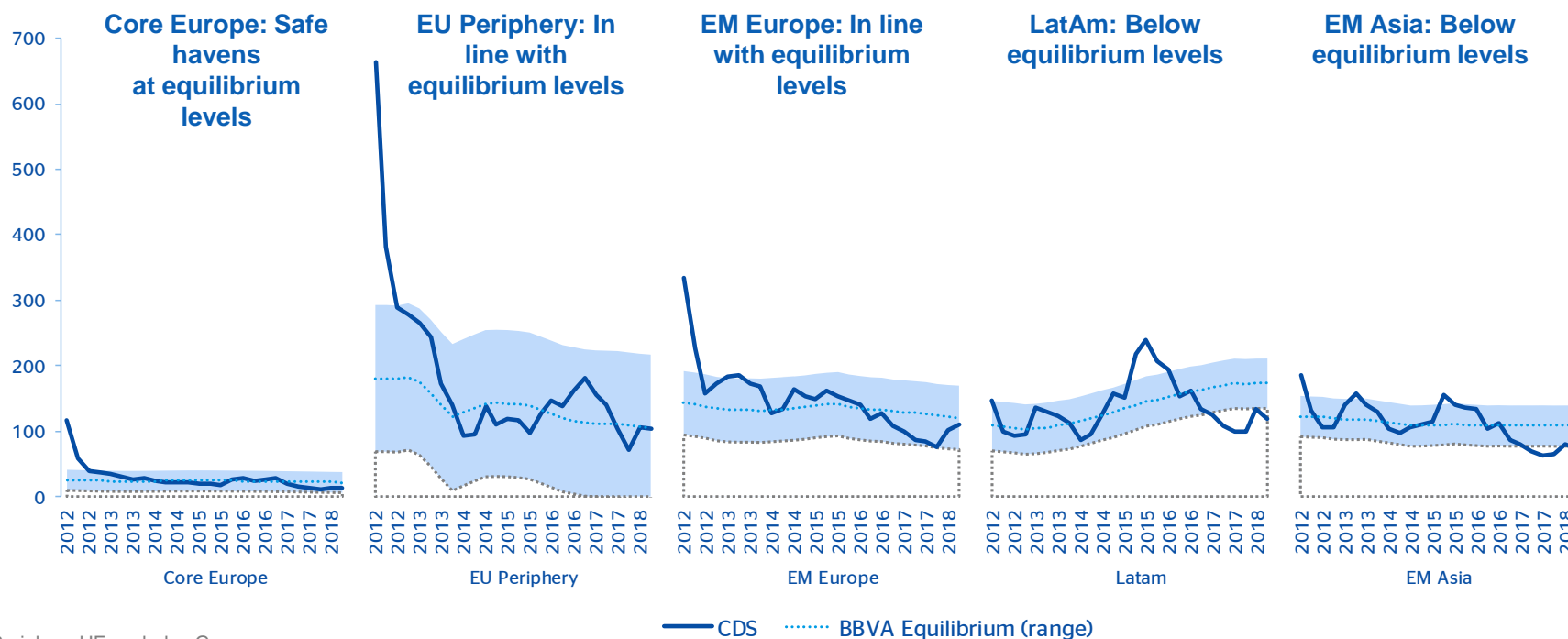
Periphery UE excludes Greece
Source: BBVA Research and Datastream

CDS from EM Europe have closed the gap with its Equilibrium levels, while they remain below such levels in LatAm and EM Asia (on average).

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Macroeconomic Vulnerability and Risk Assessment

Agencies' sovereign rating vs. BBVA Research rating and Market's Implicit rating
Agencies' Rating, BBVA's rating average (+/-1 std. dev.) and CDS implicit rating

Legend: Rating Agencies ······ BBVA-Research ······ CDS Implicit
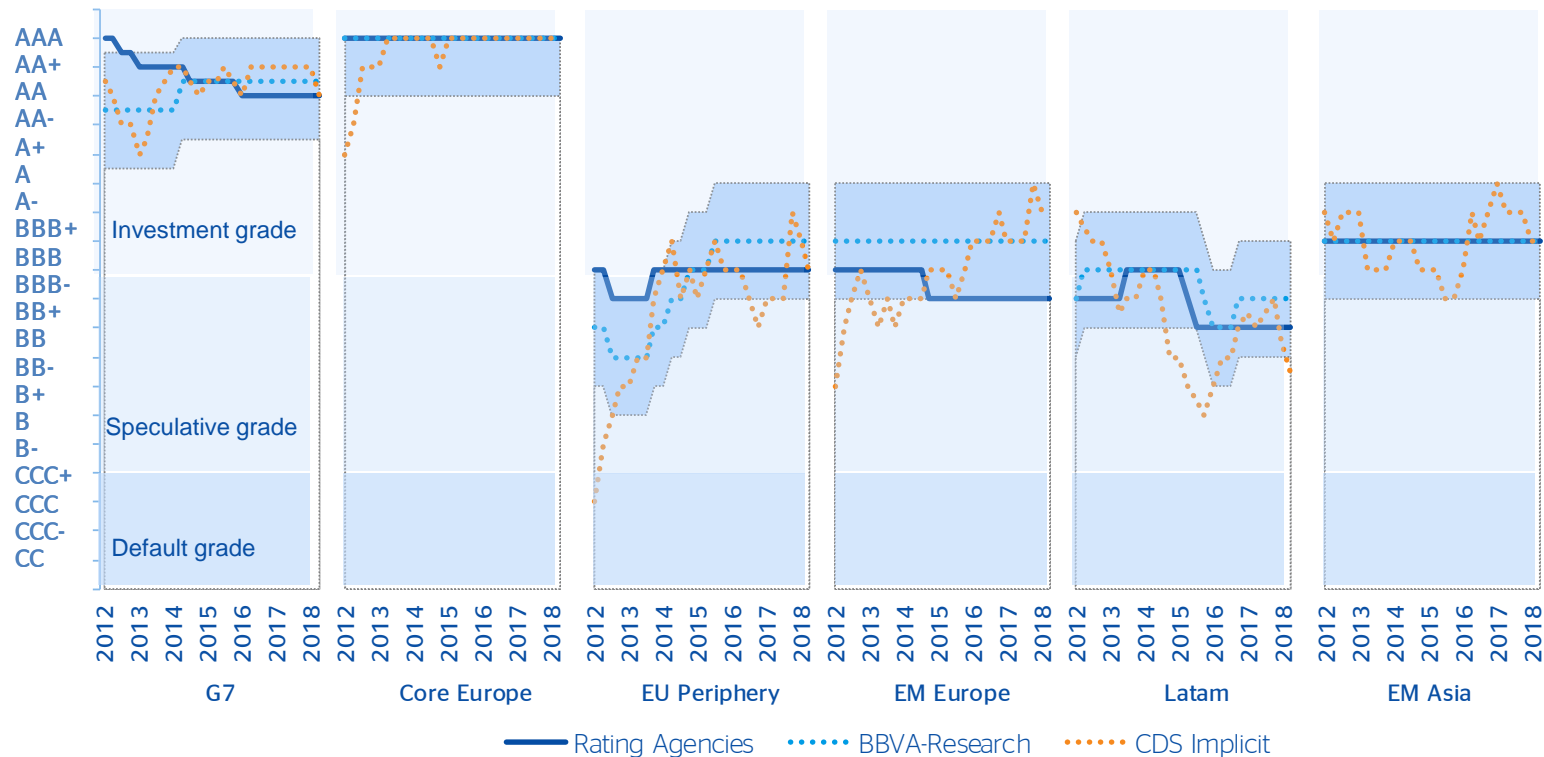
Chart y-axis categories: AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, BB, BB-, B+, B, B-, CCC+, CCC, CCC-, CC

Chart regions: Investment grade, Speculative grade, Default grade

Groups: G7, Core Europe, EU Periphery, EM Europe, Latam, EM Asia (years 2012–2018)

Source: Standard & Poors, Moody's, Fitch & BBVA Research

BBVA Research's fundamentals-based rating is in line with the upgrade pressures seen in CDS sovereign markets EM-Europe. On the other hand, our rating is slightly more positive in LatAm and in EU-Periphery than both the agencies and markets. In EM-Asia, all three visions currently coincide

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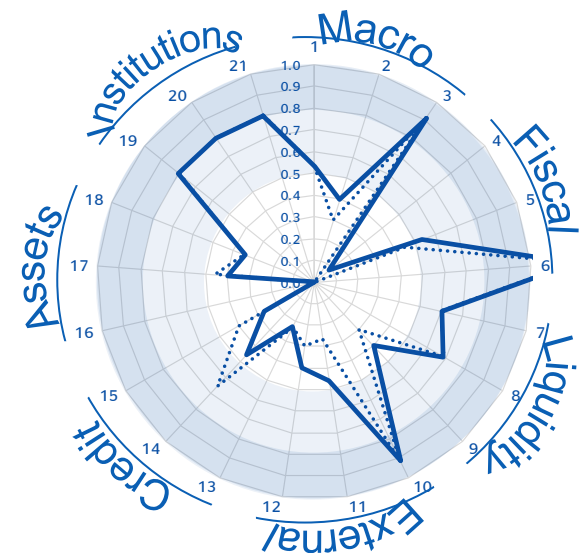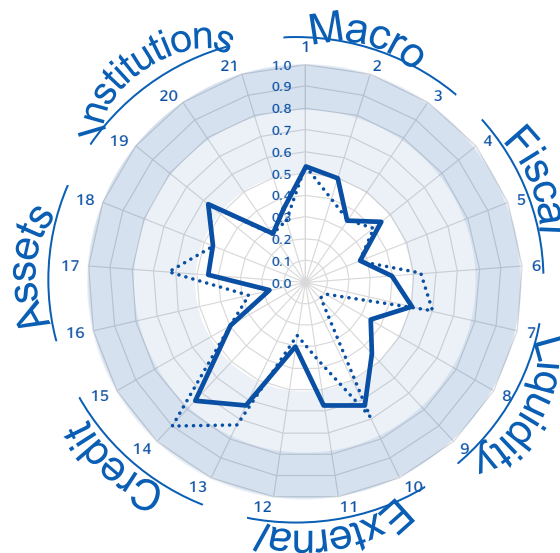# Macroeconomic Vulnerability and Risk Assessment

Developed markets: vulnerability radar 2018
(Relative position for the developed countries. Risk equal to threshold=0,8, Min risk=0. Previous year data is shown as a dotted line)

G7: Rising vulnerability from higher levels of public debt and higher financial needs. Lower vulnerability from housing prices and leverage growth

Core Europe Increased vulnerability due to financial needs. Corporate leverage remains as the main vulnerability

Periphery EU: Unemployment, public & external debt levels and institutional risks remain as highest vulnerabilities. Private leverage continues improving

High risk   Moderate Risk   Safe

Macro: (1) GDP (% YoY) (2) Prices (% YoY) (3) Unemployment (% LF)
Fiscal: (4) Structural balance (%) (5) Interest rate – GDP %YoY (6) Public debt (% GDP)
Liquidity: (7) Debt by non-residents (%total) (8) Financial needs (%GDP) (9) Financial pressure (% GDP)
External: (10) External debt (%GDP) (11) RER appreciation (%YoY) (12) CAC balance (%GDP)

Credit: (13) Household (%GDP) (14) Corporate (%GDP) (15) Credit-to-deposit (%)
Assets: (16) Private credit to GDP (%YoY) (17) Housing Prices (%YoY) (18) Equity (%)
Institutional: (19) Political stability (20) Corruption (21) Rule of law

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Macroeconomic Vulnerability and Risk Assessment

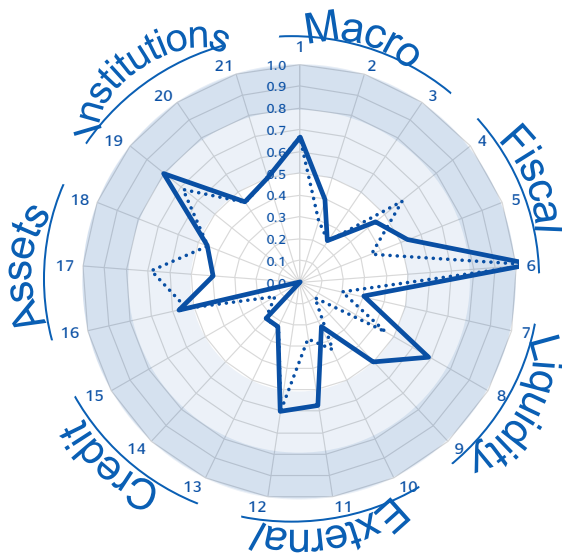## Emerging markets: vulnerability radar 2018
(Relative position for the emerging countries. Risk equal to threshold=0,8, Min risk=0. Previous year data is shown as a dotted line)

EM Europe: High vulnerabilities in external debt and debt held by non-residents, but lower corporate leverage. Higher fiscal vulnerability due to interest rate-growth differential.

LatAm: Low economic growth and high public debt levels stand out as highest vulnerabilities. Overall **fiscal vulnerabilities continue deteriorating**

EM Asia: Corporate & Households leverage decreasing further. Worsening fiscal vulnerabilities.
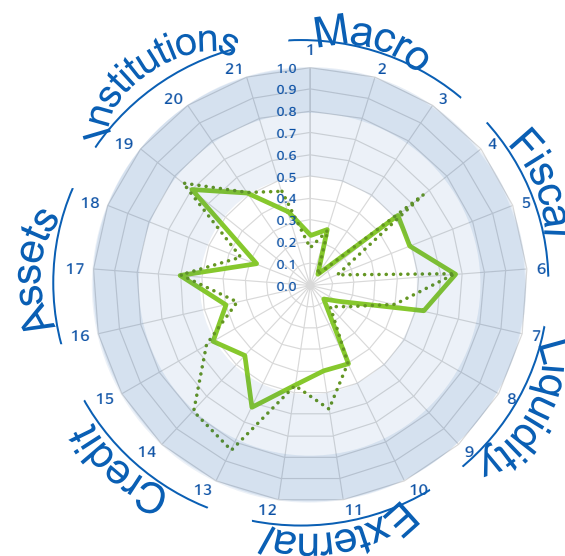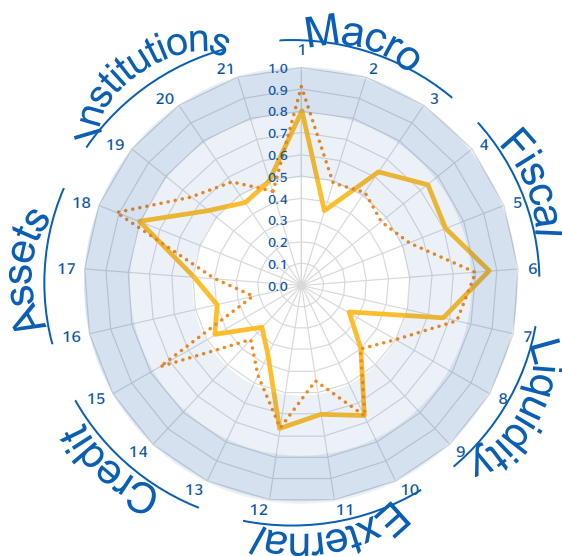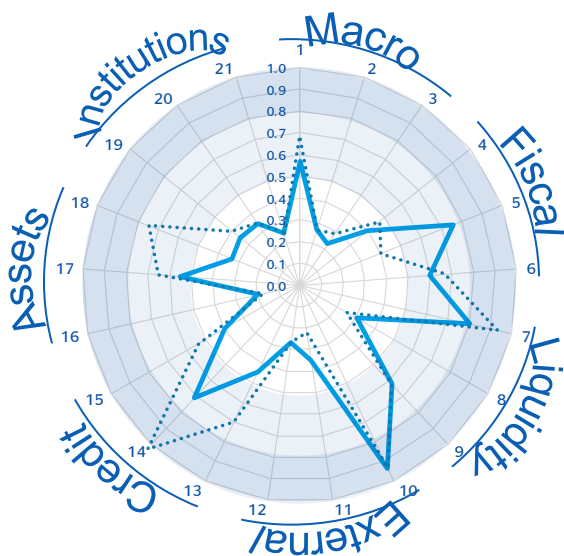
High risk   Moderate Risk   Safe

Macro: (1) GDP (% YoY) (2) Prices (% YoY) (3) Unemployment (% LF)
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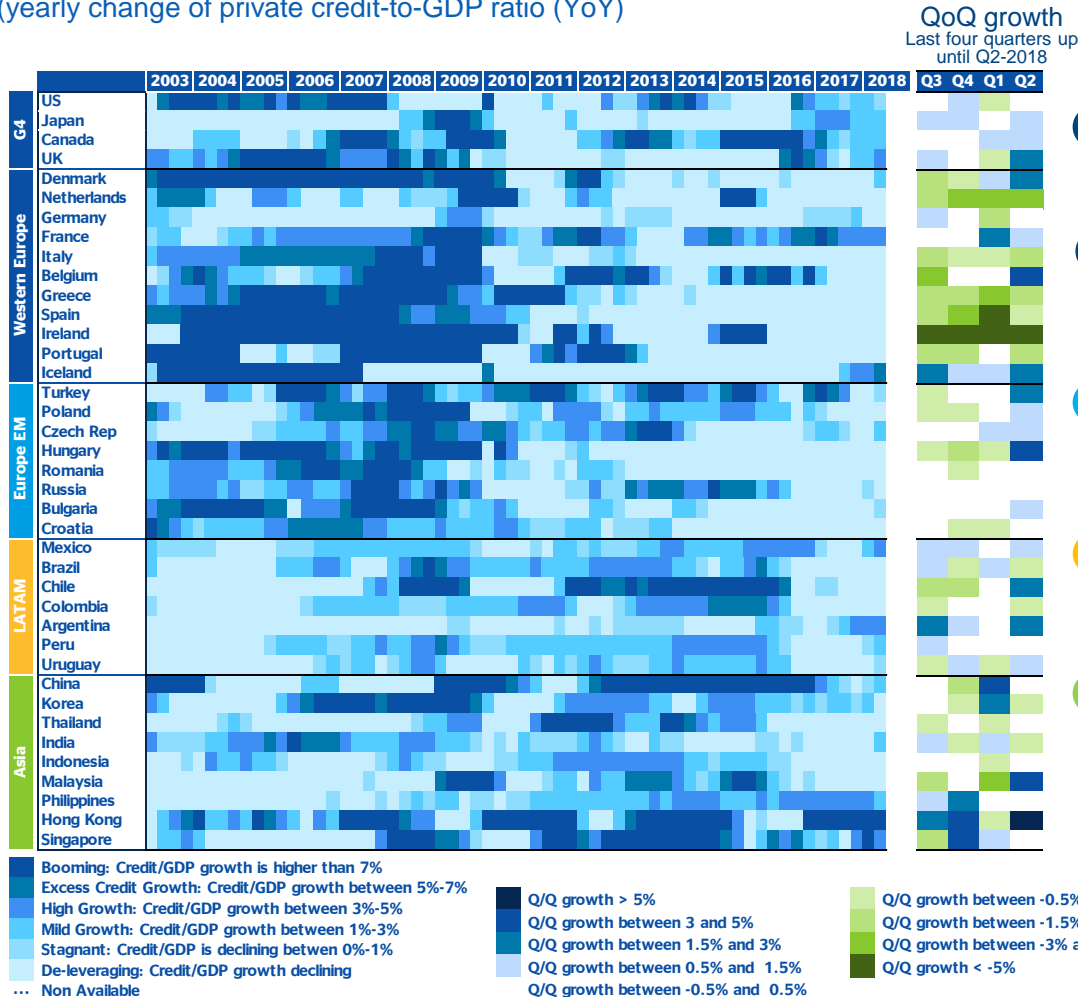
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Assessment of financial and external disequilibria

Private credit growth by country
Housing prices growth by country
Early warning system of banking crises by regions
Early warning system of currency crises by regions

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Assessment of financial and external disequilibria

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Leverage is growing again in China and Turkey after a pause of a few quarters, although still at a mild pace. We can observe disperse signs of leverage growth across the board, but most countries still continue deleveraging.

Private credit color map (2003-2018 Q2)
(yearly change of private credit-to-GDP ratio (YoY))

QoQ growth
Last four quarters up until Q2-2018

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Q3	Q4	Q1	Q2

G4: US, Japan, Canada, UK

Western Europe: Denmark, Netherlands, Germany, France, Italy, Belgium, Greece, Spain, Ireland, Portugal, Iceland

Europe EM: Turkey, Poland, Czech Rep, Hungary, Romania, Russia, Bulgaria, Croatia

LATAM: Mexico, Brazil, Chile, Colombia, Argentina, Peru, Uruguay

Asia: China, Korea, Thailand, India, Indonesia, Malaysia, Philippines, Hong Kong, Singapore

● Mild leverage growth in the first two quarters of 2018 in US, Japan, UK and Canada.

● Deleveraging continues in most countries throughout Europe with the exception of France and Iceland and some erratic behavior in other countries.

● In the las two quarters we have seen some incipient growth in leverage in EM Europe after a period of deleveraging (as in Turkey, Poland, Czech Rep).

● Argentina's leverage has been growing steadily for more than a year, while leveraging in other LatAm countries continues been mild or stagnant

● China's leveraging is growing again. HK leverage growth continues unrelenting. Philippines is slowing down while other countries continue without a clear growth pattern.

Legend:

- Booming: Credit/GDP growth is higher than 7%
- Excess Credit Growth: Credit/GDP growth between 5%-7%
- High Growth: Credit/GDP growth between 3%-5%
- Mild Growth: Credit/GDP growth between 1%-3%
- Stagnant: Credit/GDP is declining between 0%-1%
- De-leveraging: Credit/GDP growth declining
- ⋯ Non Available

- Q/Q growth > 5%
- Q/Q growth between 3 and 5%
- Q/Q growth between 1.5% and 3%
- Q/Q growth between 0.5% and 1.5%
- Q/Q growth between -0.5% and 0.5%

- Q/Q growth between -0.5% and -1.5%
- Q/Q growth between -1.5% and -3%
- Q/Q growth between -3% and -5%
- Q/Q growth < -5%

Source: IFS, BIS & BBVA Research,

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Assessment of financial and external disequilibria

There is no clear trend in housing prices that can be identified across the board or within regions. Moreover, a high volatility pattern seems to be prevailing in most countries.

Real housing prices color map (2003-2018 Q2)
(yearly change of real housing prices YoY)

QoQ growth
Last four quarters up
until Q2-2018
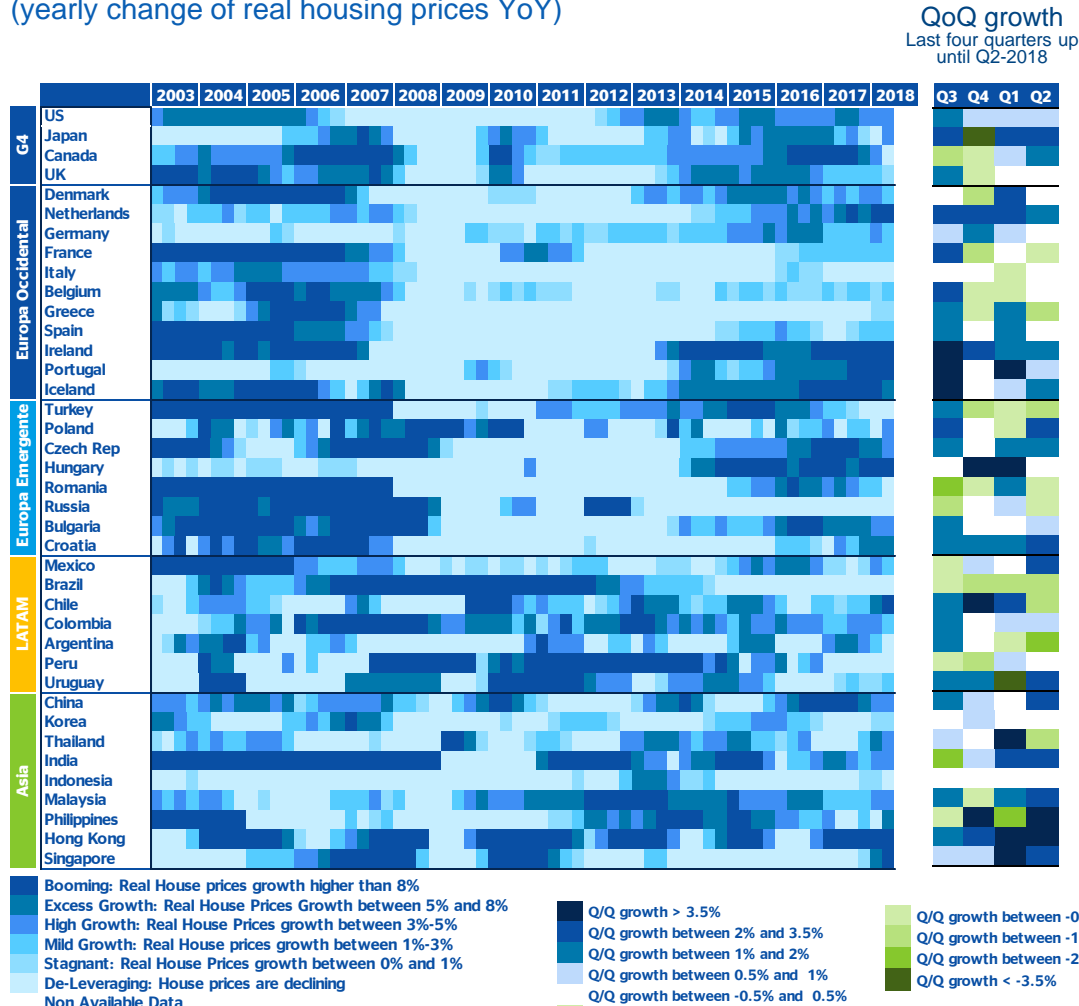
- Prices are steadily growing in US and Japan, and started growing again in Canada. High growth in prices continues in Netherlands, Ireland and Portugal, while declining in other countries or showing a volatile behavior.

- Real prices are declining in Turkey while booming in Croatia, Czech Republic and Hungary.

- Prices in Latam do not show any clear trend. Real growth is still higher, but volatile, in Colombia and Chile.

- Price's growth is picking up again in China, India and Malaysia, while they continue booming in Hong Kong and Singapore.

Legend:
- Booming: Real House prices growth higher than 8%
- Excess Growth: Real House Prices Growth between 5% and 8%
- High Growth: Real House Prices growth between 3%-5%
- Mild Growth: Real House prices growth between 1%-3%
- Stagnant: Real House Prices growth between 0% and 1%
- De-Leveraging: House prices are declining
- Non Available Data

- Q/Q growth > 3.5%
- Q/Q growth between 2% and 3.5%
- Q/Q growth between 1% and 2%
- Q/Q growth between 0.5% and 1%
- Q/Q growth between -0.5% and 0.5%

- Q/Q growth between -0.5% and -1%
- Q/Q growth between -1% and -2%
- Q/Q growth between -2% and -3.5%
- Q/Q growth < -3.5%

Source: BBVA Research, BIS, Haver and Oxford Economics.

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Assessment of financial and external disequilibria

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Early warning system (EWS) of Banking Crises (1998Q1-2020Q4)
(Probability of Systemic Banking Crisis (based on 8-quarters lagged data*):

REGIONS	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
OPEC & Oil Producers																							
Emerging Asia (exc. China)																							
China																							
South America & Mexico																							
Central America & Caribb.																							
Emerging Europe																							
Africa & MENA																							
Core Europe																							
Periphery Europe (exc. Greece)																							
Advanced Economies																							
United States																							
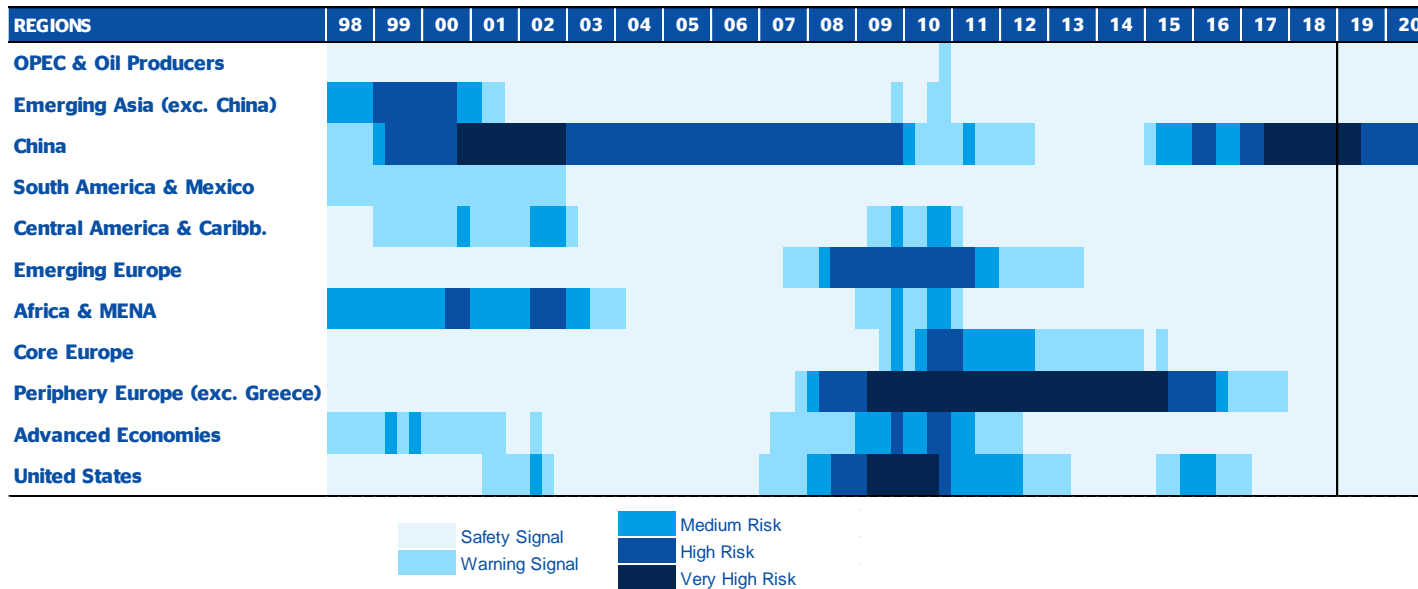
● The slowdown in leveraging in China has somewhat reduced the risk of a banking crisis in the coming years

● **The warning signals from the EU periphery have currently vanished**

- Safety Signal
- Warning Signal
- Medium Risk
- High Risk
- Very High Risk

- A banking crisis in a given country follows the definition by Laeven and Valencia (2012), which is shown in the Appendix
- The complete description of the methodology can be found at https://goo.gl/r0BLbI and at https://goo.gl/VA8xXv
- The probabilities shown are the simple average of the estimated individual countries probabilities for each region. The definition of each region is shown in the Appendix

*The probability of a crisis in Q4-2016 is based on Q4-2014 data. Source: BBVA Research
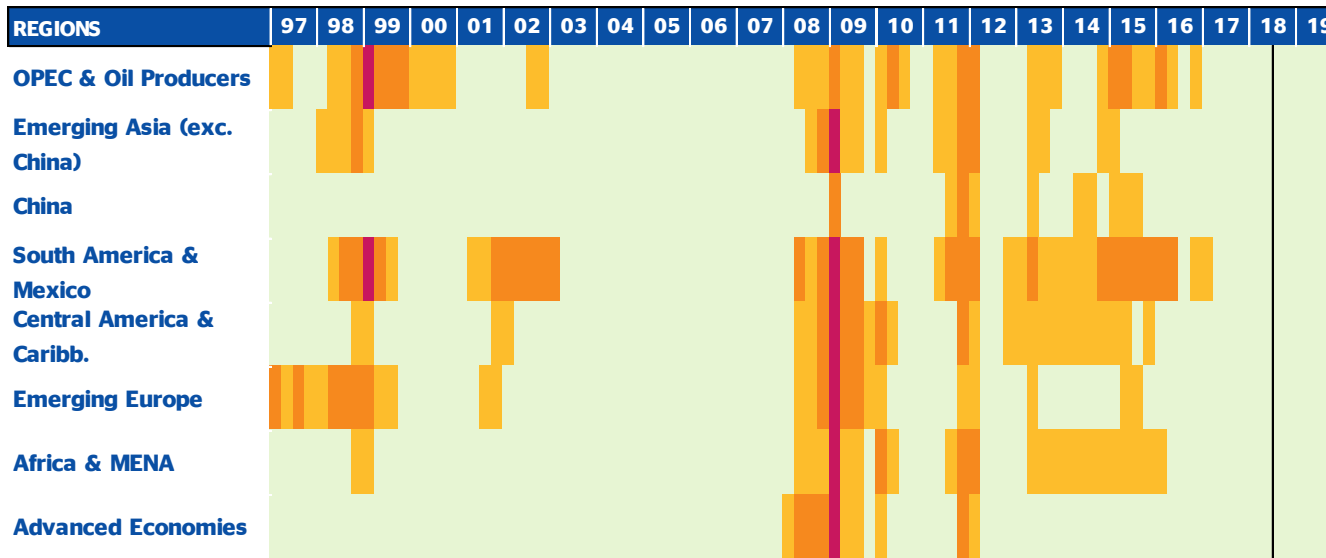
China's over-indebtedness continues to generate a relevant vulnerability of its banking sector in the coming years which must continue being tackled with macro-prudential and other economic policies oriented to reach a soft absorption of previous excesses.

Assessment of financial and external disequilibria

Early warning system (EWS) of Currency Crisis Risk: probability of currency tensions
The probability of a crisis is based on 4-quarters lagged data, e.g. Probability in Q4-2016 is based on Q4-2015 data

REGIONS	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
OPEC & Oil Producers																							
Emerging Asia (exc. China)																							
China																							
South America & Mexico																							
Central America & Caribb.																							
Emerging Europe																							
Africa & MENA																							
Advanced Economies																							

Our currency tensions Early Warning System, do not anticipate a **generalized crisis** in any of the regions, but shows a high degree of differentiation within regions

Legend:
- Safe
- Warning
- High Risk
- Very High Risk

- Our Currency-Crises Early Warning System EWS allows us to estimate the probability of a currency crisis, which is defined as a "large" fall in the exchange rate and in foreign reserves in a given country, according to certain predefined measures.
- The probabilities shown in the table are the simple average of the individual countries probabilities for each region. The list of the leading indicators used in the estimation of the probability and the definition of each region are shown in the Appendix.

Source: BBVA Research

During the last months several EM countries have experienced a significant depreciation of their foreign exchange rate. This episode, however cannot be generalized across all EM countries as a "crisis". Our EWS continues signaling the high vulnerability of several individual countries, but not of not region-wide or global-wide high risks

Vulnerability Indicators table by country

Vulnerability Indicators Table

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Vulnerability indicators* 2018: developed markets

	Fiscal sustainability			External sustainability			Liquidity management			Macroeconomic performance			Credit and housing			Private debt			Institutional		
	Structural primary balance (1)	Interest rate GDP growth differential 2016-21	Gross public debt (1)	Current account balance (1)	External debt (1)	RER appreciation (2)	Gross financial needs (1)	Short-term public debt (3)	Debt held by non-residents (3)	GDP growth (4)	Consumer prices (4)	Unemployment rate (5)	Private credit to GDP growth (4)	Real housing prices growth (4)	Equity markets growth (4)	Household debt (1)	NF corporate debt (1)	Financial liquidity (6)	WB political stability (7)	WB control corruption (7)	WB rule of law (7)
United States	-3.3	-0.6	108	-3.0	97	3.8	24	17	31	2.9	2.6	3.9	0.0	4.6	13.7	78	74	65	-0.4	-1.3	-1.7
Canada	-0.7	-0.1	87	-3.2	118	-2.0	9	10	25	2.1	2.2	6.2	2.0	3.7	7.2	99	120	130	-1.2	-2.0	-1.8
Japan	-3.1	-0.9	236	3.8	79	0.5	41	16	10	1.2	0.8	2.9	2.6	-0.5	11.3	58	103	49	-1.0	-1.5	-1.4
Australia	-0.5	-1.3	42	-1.9	113	-1.4	3	4	42	3.0	2.3	5.3	-1.1	-2.3	9.1	122	76	134	-1.0	-1.8	-1.8
Korea	1.2	-1.4	39	5.5	27	4.1	1	7	13	3.0	2.1	3.6	-0.1	0.3	-2.7	96	101	99	-0.2	-0.4	-1.1
Norway	-10.6	-1.6	37	6.1	159	1.5	-9	8	51	2.1	1.8	3.9	-8.8	-3.0	30.1	100	140	139	-1.2	-2.2	-2.0
Sweden	0.6	-2.9	38	3.1	186	-4.5	3	11	36	2.6	1.5	6.3	0.2	2.7	-2.7	87	141	187	-1.0	-2.2	-2.0
Denmark	-1.1	-0.6	36	7.6	163	1.1	5	11	35	2.0	1.6	5.7	1.2	3.9	-2.7	116	110	285	-0.8	-2.2	-1.9
Finland	-1.0	-1.9	61	1.4	163	1.4	8	10	73	2.6	1.7	8.0	-0.2	-2.3	4.5	67	108	139	-1.0	-2.3	-2.0
UK	-0.2	-0.4	86	-3.7	331	-5.2	9	8	35	1.6	2.7	4.4	3.3	1.9	4.4	86	83	57	-0.4	-1.9	-1.6
Austria	0.5	-1.4	75	2.5	169	2.0	6	8	81	2.6	2.2	5.2	-4.0	5.4	4.8	51	93	91	-0.8	-1.5	-1.8
France	-0.1	-0.9	96	-1.3	226	1.8	13	11	61	2.1	1.4	8.8	4.5	2.1	4.0	56	133	107	0.1	-1.4	-1.4
Germany	1.4	-2.2	60	8.2	146	2.8	4	8	56	2.5	1.6	3.6	-1.8	4.3	-0.2	53	54	86	-0.8	-1.8	-1.6
Netherlands	0.6	-1.9	54	9.6	569	1.8	7	14	52	3.2	2.1	4.9	-13.9	9.0	8.8	102	116	102	-0.9	-2.0	-1.9
Belgium	0.6	-1.1	101	0.3	265	2.8	18	17	61	1.9	1.5	7.0	-1.5	1.0	2.2	61	161	56	-0.5	-1.6	-1.4
Italy	2.2	0.6	130	2.6	129	1.3	22	16	36	1.5	1.6	10.9	-5.6	-1.1	5.1	41	73	90	-0.4	0.0	-0.3
Spain	-0.2	-0.9	85	1.6	175	2.3	18	16	50	2.8	1.6	15.5	-12.9	1.7	-7.9	60	98	96	-0.5	-0.5	-1.0
Ireland	0.9	-2.2	67	9.8	667	0.2	7	10	60	4.5	1.8	5.5	-36.5	12.0	2.3	47	205	47	-0.9	-1.6	-1.5
Portugal	2.3	-0.3	121	0.2	220	0.7	14	10	63	2.4	1.8	7.3	-5.4	11.4	14.3	70	108	110	-1.0	-1.0	-1.1
Greece	3.8	-1.8	191	-0.8	231	0.1	15	8	82	2.0	0.9	19.8	-9.4	0.5	-8.0	57	65	127	0.1	0.1	-0.2

Source: BBVA Research, Haver, BIS, IMF and World Bank

*Vulnerability indicators: (1) % GDP (2) Deviation from four-year average (3) % of total debt (4) % year on year (5) % of Total labour force (6) Financial system credit to deposit (7) Index by World Bank governance indicators

Vulnerability Indicators Table

SUMMARY INDEX

Vulnerability indicators* 2018: emerging markets

	Fiscal sustainability			External sustainability			Liquidity management			Macroeconomic performance			Credit and housing			Private debt			Institutional		
	Structural primary balance (1)	Interest rate GDP growth differential 2016-21	Gross public debt (1)	Current account balance (1)	External debt (1)	RER appreciation (2)	Gross financial needs (1)	Reserves to short-term external debt (3)	Debt held by non-residents (3)	GDP growth (4)	Consumer prices (4)	Unemployment rate (5)	Private credit to GDP growth (4)	Real housing prices growth (4)	Equity markets growth (4)	Household debt (1)	NF corporate debt (1)	Financial liquidity (6)	WB political stability (7)	WB control corruption (7)	WB rule of law (7)
Bulgaria	-0.5	0.4	24	3.0	69	2.8	4	1.7	44	3.8	2.1	6.0	0.9	5.0	-9.8	21	79	79	0.0	0.2	0.0
Czech Rep	1.0	-1.9	33	0.3	90	6.0	6	23	55	3.5	2.2	3.0	1.9	5.6	8.5	32	56	82	-1.0	-0.5	-1.1
Croatia	1.9	-0.3	75	3.0	84	2.2	12	2.8	34	2.8	1.2	12.0	-1.4	7.5	-2.6	32	27	89	-0.7	-0.2	-0.4
Hungary	-0.6	-1.8	67	2.5	102	-0.9	18	1.1	42	3.8	3.2	3.8	-1.0	9.5	2.6	18	83	82	-0.7	-0.1	-0.5
Poland	-1.0	-1.6	51	-0.9	68	0.2	8	1.6	53	4.1	2.9	4.1	-2.1	-8.2	-8.3	35	90	107	-0.5	-0.7	-0.7
Romania	-3.4	-2.7	38	-3.7	51	0.9	9	1.9	50	5.1	3.5	4.6	-1.3	2.3	2.9	16	36	80	-0.3	0.0	-0.3
Russia	0.4	-0.3	19	4.5	24	0.3	1	4.9	20	1.7	3.5	5.5	-0.6	-2.0	22.9	17	50	107	0.9	0.9	0.8
Turkey	-1.9	-0.4	28	-6.3	53	0.6	7	0.9	37	3.0	20.0	11.0	0.3	-0.3	-3.9	17	70	128	2.0	0.2	0.2
Argentina	-2.8	-8.0	61	-4.7	43	-22.2	11	1.0	40	0.5	33.1	8.9	4.8	2.1	18.8	8	16	74	-0.2	0.3	0.3
Brazil	-1.4	2.2	87	-1.6	33	-4.7	14	4.0	9	2.3	3.9	11.6	-0.6	-3.8	15.7	25	43	89	0.4	0.4	0.1
Chile	-1.9	-2.3	24	-1.8	62	8.3	2	1.6	26	3.4	2.6	6.2	-2.0	5.3	11.7	35	52	159	-0.5	-1.1	-1.1
Colombia	0.5	0.3	49	-2.6	39	35.6	5	2.8	31	2.7	3.4	9.2	-1.6	3.9	14.8	21	25	115	1.0	0.3	0.3
Mexico	1.1	0.4	54	-1.9	37	-9.5	7	3.4	32	2.3	3.6	3.5	3.1	3.2	-3.6	16	26	85	0.8	0.8	0.5
Peru	-1.8	-2.2	27	-1.3	36	7.5	4	6.3	40	3.2	2.0	6.6	1.1	-2.8	22.7	16	35	107	0.2	0.4	0.5
China	-3.1	-5.7	71	1.0	13	0.9	4	3.8	..	6.6	2.8	4.0	1.7	4.4	-10.9	60	152	93	0.5	0.3	0.2
India	-1.6	-4.1	69	-1.5	20	1.1	11	4.0	6	7.4	5.2	3.5	1.1	4.9	14.6	11	44	79	1.0	0.3	0.1
Indonesia	-0.8	-2.8	30	-1.9	35	-0.6	5	2.3	59	5.3	3.5	5.2	-0.5	0.4	-0.5	17	22	100	0.4	0.4	0.4
Malaysia	0.4	-2.4	54	3.7	66	1.6	10	1.3	27	5.3	3.0	3.2	-2.3	3.9	-4.1	88	--	113	-0.1	-0.1	-0.5
Philippines	0.9	-4.6	37	-0.5	18	-6.9	5	5.4	26	6.7	4.1	5.5	2.3	-1.7	-8.3	4	41	69	1.3	0.5	0.4
Thailand	-0.7	-2.5	42	9.3	34	3.1	7	3.4	14	3.9	0.8	0.7	-1.2	6.1	1.3	68	47	99	0.9	0.4	0.0

Source: BBVA Research, Haver, BIS, IMF and World Bank

*Vulnerability indicators: (1) % GDP (2) Deviation from four-year average (3) % of total debt (4) % year on year (5) % of Total labour force (6) Financial system credit to deposit (7) Index by World Bank governance indicators

Methodological Appendix

Appendix
Methodology: indicators and maps

- Financial Stress Map: It stresses levels of stress according to the normalised time series movements. Higher positive standard units (1.5 or higher) stand for high levels of stress (dark blue) and lower standard deviations (-1.5 or below) stand for lower level of market stress (lighter colours)

- Sovereign Rating Index: An index that translates the letter codes of the three important rating agencies' rating (Moody's, Standard & Poors and Fitch) to numerical positions from 20 (AAA) to default (0). The index shows the average of the three rescaled numerical ratings

- Sovereign CD Swaps Maps: It shows a colour map with six different ranges of CD Swaps quotes (darker >500, 300 to 500, 200 to 300, 100 to 200, 50 to 100 and the lighter below 50 bp)

- Downgrade Pressure Gap: The gap shows the difference between the implicit ratings according to the Credit Default Swaps and the current ratings index (numerically scaled from default (0) to AAA (20)). We calculate implicit probabilities of default (PD) from the observed CDS and the estimated equilibrium spread. For the computation of these PDs we follow a standard methodology as described in Chan-Lau (2006), and we assume a constant Loss Given Default of 0.6 (Recovery Rate equal to 0.4) for all the countries in the sample. We use the resulting PDs in a cluster analysis to classify each country at every point in time in one of 20 different categories (ratings) to emulate the same 20 categories used by the rating agencies. From June 2018 on, the cluster analysis is performed recursively, starting with an initial sample going from Jan-2004 to Dec-2008 and adding one month at each step, generating monthly specific thresholds for determining the implicit ratings.

- The graph plots the difference between CDS-implied sovereign rating and the actual sovereign rating index, in notches. Higher positive differences account for potential Upgrade pressures and negative differences account for Downgrade potential. We consider the +/- 2 notches area as being Neutral

- Vulnerability Radars: A Vulnerability Radar shows a static and comparative vulnerability for different countries. For this we assigned several dimensions of vulnerabilities, each of them represented by three vulnerability indicators. The dimensions included are: Macroeconomics, Fiscal, Liquidity, External, Excess Credit and Assets, Private Balance Sheets and Institutional. Once the indicators are compiled, we reorder the countries in percentiles from 0 (lower ratio among the countries) to 1 (maximum vulnerabilities) relative to their group (Developed Economies or Emerging Markets). Furthermore, Inner positions (near 0) in the radar shows lower vulnerability, while outer positions (near 1) stand for higher vulnerability. Furthermore, we normalize each value with respect to given risk thresholds, whose values have been computed according to our own analysis or empirical literature. If the value of a variable is equal to the threshold, it would take a value of 0.8 in the radar

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Appendix
Methodology: indicators and maps

Risk Thresholds Table

| Vulnerability Dimensions	Risk thresholds Developed Economies	Risk thresholds emerging economies	Risk direction	Research
Macroeconomics				
GDP	1.5	3.0	Lower	BBVA Research
Inflation	4.0	10.0	Higher	BBVA Research
Unemployment	10.0	10.0	Higher	BBVA Research
Fiscal vulnerability				
Cyclically adjusted deficit ("Strutural Deficit")	-4.2	-0.5	Lower	Baldacci et Al (2011). Assesing fiscal stress. IMF WP 11/100
Expected interest rate GDP growth diferential 5 years ahead	3.6	1.1	Higher	Baldacci et Al (2011). Assesing fiscal stress. IMF WP 11/100
Gross public bebt	73.0	43.0	Higher	Baldacci et Al (2011). Assesing fiscal stress. IMF WP 11/100
Liquidity problems				
Gross financial needs	17.0	21.0	Higher	Baldacci et Al (2011). Assesing fiscal stress. IMF WP 11/100
Debt held by non residents	84.0	40.0	Higher	Baldacci et Al (2011). Assesing fiscal stress. IMF WP 11/101
Short term debt pressure				
Public short-term debt as % of total public debt (Developed)	9.1		Higher	Baldacci et Al (2011). Assesing fiscal stress. IMF WP 11/100
Reserves to short-term debt (Emerging)		0.6	Lower	Baldacci et Al (2011). Assesing fiscal stress. IMF WP 11/100
External Vulnerability				
Current account balance (% GDP)	4.0	6.0	Lower	BBVA Research
External debt (% GDP)	200.0	60.0	Higher	BBVA Research
Real exchange rate (Deviation from 4 yr average)	5.0	10.0	Higher	EU Commission (2012) and BBVA Research
Private Balance Sheets				
Household debt (% GDP)	84.0	84.0	Higher	Chechetti et al (2011). "The real effects of debt". BIS Working Paper 352 & EU Comission (2012)
Non-financial corporate debt (% GDP)	90.0	90.0	Higher	Chechetti et al (2011). "The real effects of debt". BIS Working Paper 352 & EU Comission (2013)
Financial liquidity (Credit/Deposits)	130.0	130.0	Higher	EU Commission (2012) and BBVA Research
Excess Credit and Assets				
Private credit to GDP (annual change)	8.0	8.0	Higher	IMF global financial stability report
Real housing prices growth (% YoY)	8.0	8.0	Higher	IMF global financial stability report
Equity growth (% YoY)	20.0	20.0	Higher	IMF global financial stability report
Institutions				
Political stability	0.2 (9th percentile)	-1.0 (8th percentile)	Lower	World Bank governance Indicators
Control of corruption	0.6 (9th percentile)	-0.7 (8th percentile)	Lower	World Bank governance Indicators
Rule of caw	0.6 (8th percentile)	-0.6 (8 th percentile)	Lower	World Bank governance Indicators

Appendix
Methodology: models and BBVA country risk

- BBVA Research sovereign ratings methodology: We compute our sovereign ratings by averaging four alternative sovereign rating models developed at BBVA Research:

- Credit Default Swaps Equilibrium Panel Data Models: This model estimates actual and forecast equilibrium levels of CDS for 48 developed and emerging countries and 10 macroeconomic explanatory variables. The CDS equilibrium is calculated using the centered 5-year moving average of the explanatory variables weighted according to their estimated sensitivities. For estimating the equilibrium level, the BAA spread is left unchanged at its long-term median level (2003-2016). The values of these equilibrium CDS are finally converted to a 20 scale sovereign rating scale.

- Sovereign Rating Panel Data Ordered Probit with Fixed Effects Model: The model estimates a sovereign rating index (a 20 numerical scale index of the three sovereign rating agencies) through ordered probit panel data techniques. This model takes into account idiosyncratic fundamental stock and flows sustainability ratios allowing for fixed effects , thus including idiosyncratic country-specific effects

- Sovereign Rating Panel Data Ordered Probit without Fixed Effects Model: We used the estimates of the previous model but retaining only the contribution of the macroeconomic and institutional variables, without adding the country "fixed-effect" contribution. In this way we are able to account more clearly for the effect of only those macroeconomic variables that we can identify.

- Sovereign Rating Individual OLS Models: These models estimate the sovereign rating index (a 20 numerical scale index of the three sovereign rating agencies) individually. Furthermore, parameters for the different vulnerability indicators are estimated taken into account the history of the country, independent of others. The estimation comes from Oxford Economics Forecasting (OEF) for the majority of countries. For those countries that are not analysed by OEF, we estimate a similar OLS individual model.

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Appendix
Methodology: models and BBVA country risk
BBVA Research sovereign ratings methodology diagram

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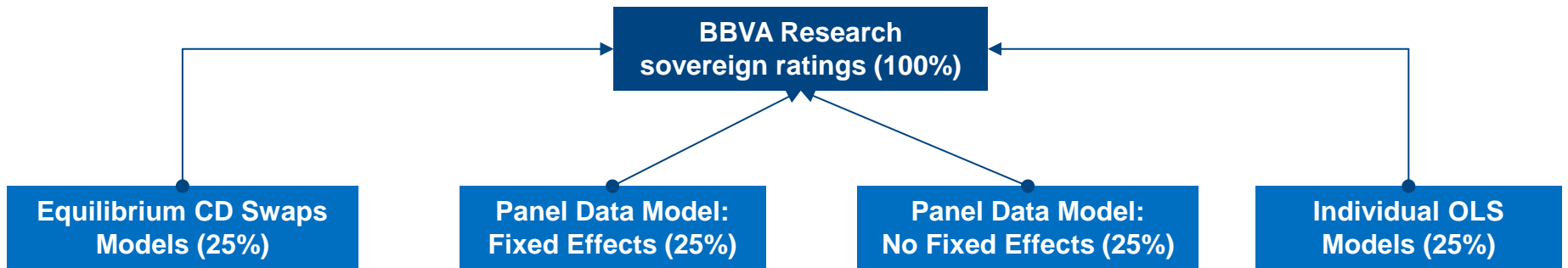
Appendix
Methodology: Special Topic

- Synchronization Indicator: This indicator measures by how much all the exchange rates (against USD) in a group of 23 emerging economies are moving together during a period of 15 days (rolling window). A more extensive description of the methodology will be included in a forthcoming note. We first calculate the daily percentage change of the exchange rate of each one of the 23 countries using a daily sample of FX rates changes that goes from Janury-2004 to May-31th of 2018. Then, we estimate through a PCA a unique common factor using all the observations in the whole sample of 3576 days. Additionally, we also estimate the daily median of FX changes for the 23 countries (changes are standardized).

- The weights that each country has on the common factor are kept constant during the whole sample. However, we estimate in a daily fashion how much this common factor explains of the total variation in the 23 countries' FX rates (R2) within a rolling period including the latest 15 days. We assume that the highest the R2 the higher the Synchronization or comovement of the 23 FX rates. This moving-R2 corresponds to the dark blue line in the graph shown in slide 19. The dotted red line corresponds to the average within the latest 15 days of the daily median change among the 23 countries.

- Once we have estimated the Synchronization index and the median change in EM markets, we construct a warning indicator that takes the maximum value when (on average) EM FX rates are depreciating strongly and there is a high degree of Synchronization (intense red). On the other hand, the minimum value of the warning index occurs when on average FX rates are appreciating strongly and in a synchronized fashion (intense blue). The intermediate colors include several possible combinations of lower levels of depreciation/appreciation and/or lower degrees of Synchronization.

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Appendix
Methodology: Early Warning Systems

EWS Banking Crises:
The complete description of the methodology can be found at https://goo.gl/r0BLbI and at https://goo.gl/VA8xXv. A banking crisis is defined as systemic if two conditions are met: 1) Significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or bank liquidations), 2) Significant banking policy intervention measures in response to significant losses in the banking system. The probability of a crisis is estimated using a panel-logit model with annual data from 68 countries and from 1990 to 2012. The estimated model is then applied to quarterly data. The probability of a crisis is estimated as a function of the following leading indicators (with a 2-years lag):

- Credit-to-GDP Gap (Deviation from an estimated long-term level)
- Current account balance to GDP
- Short-term interest rate (deviation against US interest rate)
- Libor interest rate
- Credit-to-Deposits
- Regulatory Capital to Risk Weighted Assets ratio..

EWS Currency Crises:
We estimate the probability of a currency crisis (a large fall in exchange rate and foreign reserves event) is estimated using a panel-logit model with 78 countries from 1980Q1 to 2015Q4, as a function of the following variables (with an 4-quarters lag):

- Credit-to-GDP ratio Gap (based on HP filter)
- Inflation
- BAA Spread
- Cyclical Current Account (based on HP filter)
- Short-term interest rate (deviation against US interest rate)
- Libor interest rate (different lags)
- Real effective exchange rate
- Investment to GDP
- GDP real growth rate (HP-trend and cyclical deviation from trend)
- Total trade to GDP

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Appendix
Methodology: Early Warning Systems

EWS Banking Crises Definition of Regions:

• OPEC and Other Oil Exporters: Algeria, Angola, Azerbaijan, Bahrain, Canada, Ecuador, Nigeria, Norway, Qatar, Russia and Venezuela

• Emerging Asia: Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Philippines, Thailand and Vietnam.

• South America & Mexico: Argentina, Brazil, Chile, Colombia, Mexico, Paraguay, Peru and Uruguay

• Other LatAm & Caribbean: Bolivia, Costa Rica, Dominican Rep., El Salvador, Guatemala, Honduras, Nicaragua and Panama

• Africa & MENA: Botswana, Egypt, Israel, Morocco, Namibia and South Africa.

• Emerging Europe: Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Rep, Slovenia, Turkey, Ukraine

• Core Europe: Austria, Belgium, Denmark, Finland, France, Germany, Netherlands, Sweden and United Kingdom.

• Periphery Europe: Greece, Ireland, Italy, Portugal and Spain

• Advanced Economies: Australia, Japan, Korea, Singapore, Iceland, New Zealand and Switzerland.

EWS Currency Crises Definition of Regions:

• OPEC and Other Oil Exporters: Algeria, Angola, Azerbaijan, Bahrain, Nigeria, Norway, Oman, Qatar, Russia, Trinidad and Tobago, United Arab Emirates and Venezuela

• Emerging Asia: Bangladesh, China, Hong Kong, India, Indonesia, Malaysia, Pakistan, Philippines, Thailand and Vietnam.

• South America & Mexico: Argentina, Brazil, Chile, Colombia, Mexico, Paraguay, Peru and Uruguay

• Other LatAm & Caribbean: Bolivia, Costa Rica, Dominican Rep., El Salvador, Guatemala, Honduras, Jamaica and Nicaragua

• Emerging Europe: Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Rep, Slovenia, Turkey, Ukraine

• Africa & MENA: Botswana, Egypt, Israel, Morocco, Namibia, South Africa and Tunisia

• Advanced Economies: Australia, Japan, Korea, Singapore, Canada, Iceland, New Zealand and Switzerland.

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