BBVA | RESEARCH

A QUARTERLY GUIDE TO COUNTRY RISKS
February
2017
(Data as of 15th of February 2017)

Country Risk Report

Summary

Country Risk

Ratings agencies

- Belgium and Turkey were downgraded by Fitch. Hungary was upgraded by Moody's and Iceland by S&P. Tunisia downgraded by Fitch

Financial Markets

- Yet another quarter in which Financial Tensions, Global Risk Aversion (GRA) and Sovereign CDS have all been easing significantly across the board, with some peaks during the quarter due to the uncertainty about the new US Administration policies. Most measures of GRA are reaching levels not seen since the spring of 2014
- The overall decrease in CDS spreads reduced downgrade pressures and increased upgrade ones for most countries.
- The decline in downgrade pressure was specially noticeable in LatAm, but it was also felt in the rest of EMs
- China, Mexico and Portugal are the countries facing the largest downgrade pressure

BBVA Research

- Emerging Europe is the region whose countries have the higher likelihood of having their ratings improved by the rating agencies' given the BBVA Research view about its economic fundamentals, followed by the EU Periphery
- Public debt levels are still worsening in several developed economies, increasing fiscal vulnerability even further. However risks related to private leverage has kept decreasing
- External vulnerabilities and high equity valuations seem somewhat worrisome in EM Europe and LatAm. Fiscal vulnerability remains high in EM Asia
- We observe some signs of deceleration in China's excessive private leveraging process, although housing prices growth are still a concern

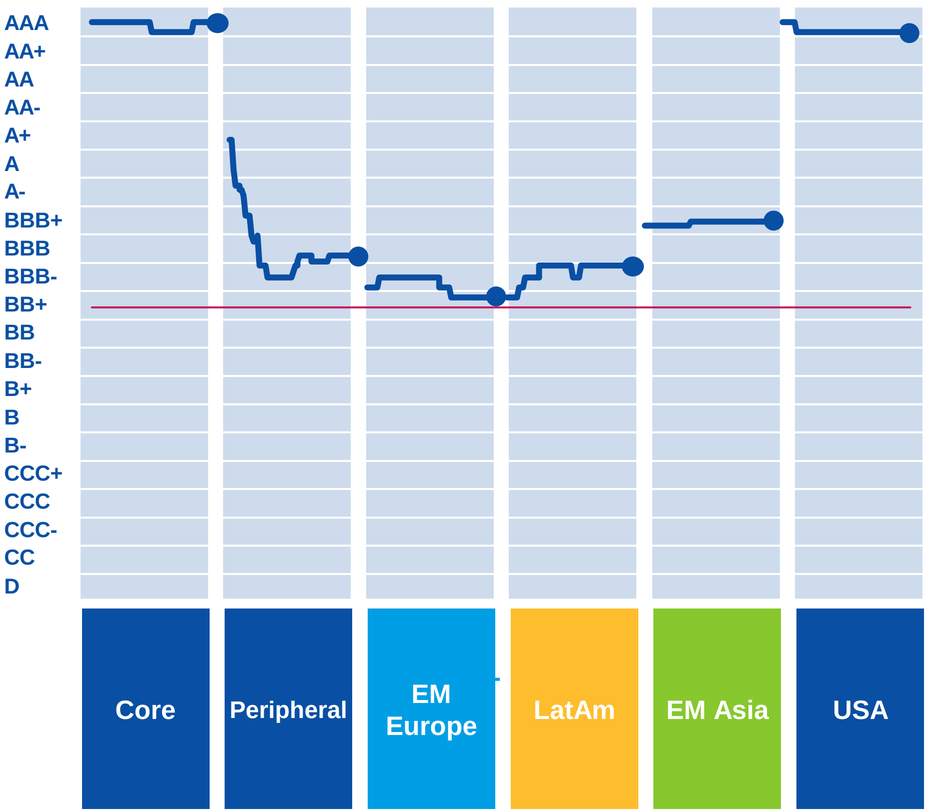
Index

1 Sovereign markets and ratings update

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

Sovereign markets and rating agencies update

Sovereign Rating Index 2011-17



- **Belgium and Turkey** were downgraded by Fitch. **Hungary** was upgraded by Moody's and **Iceland** by S&P. Tunisia downgraded by Fitch.

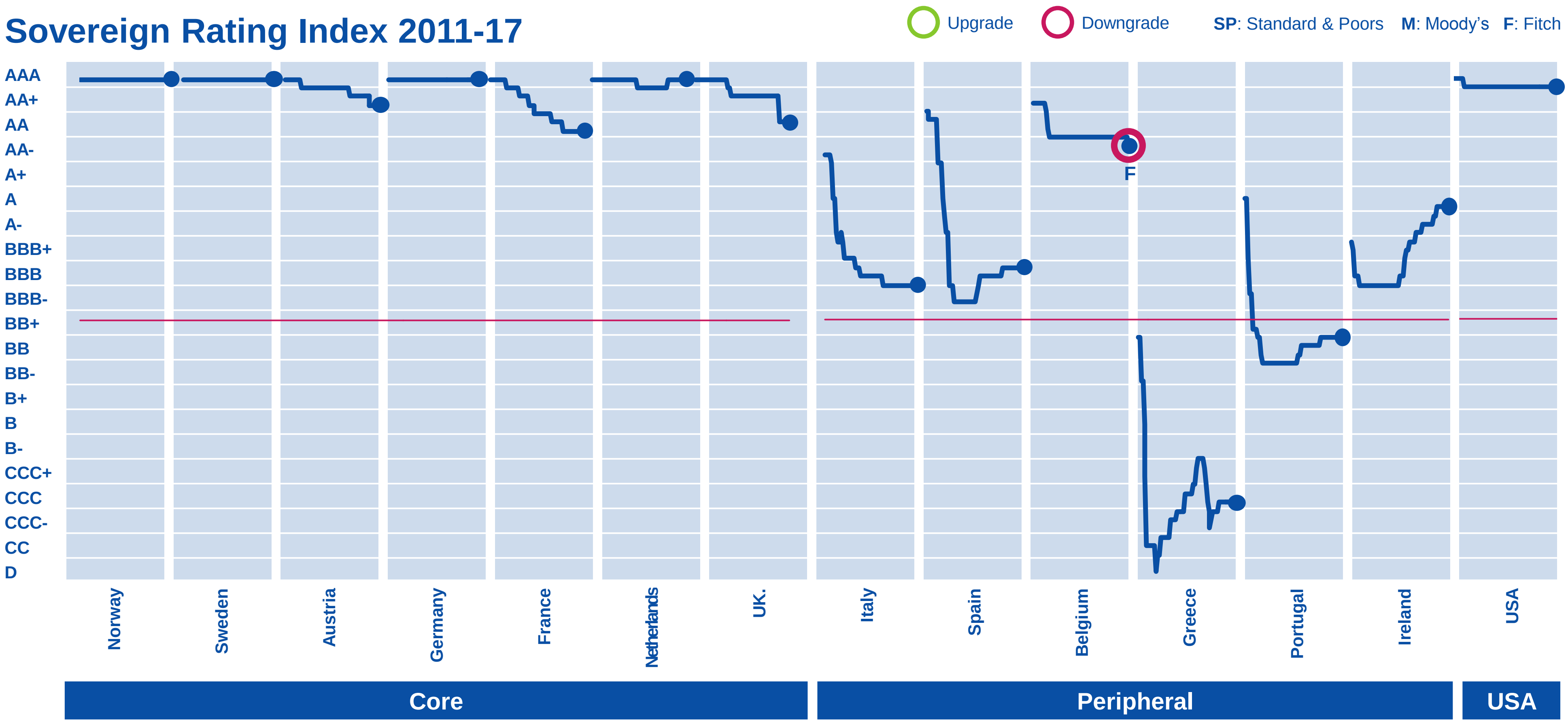
Source: BBVA Research by using S&P, Moody's and Fitch data

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.

DEVELOPED COUNTRIES

Sovereign markets and rating agencies update

Sovereign Rating Index 2011-17

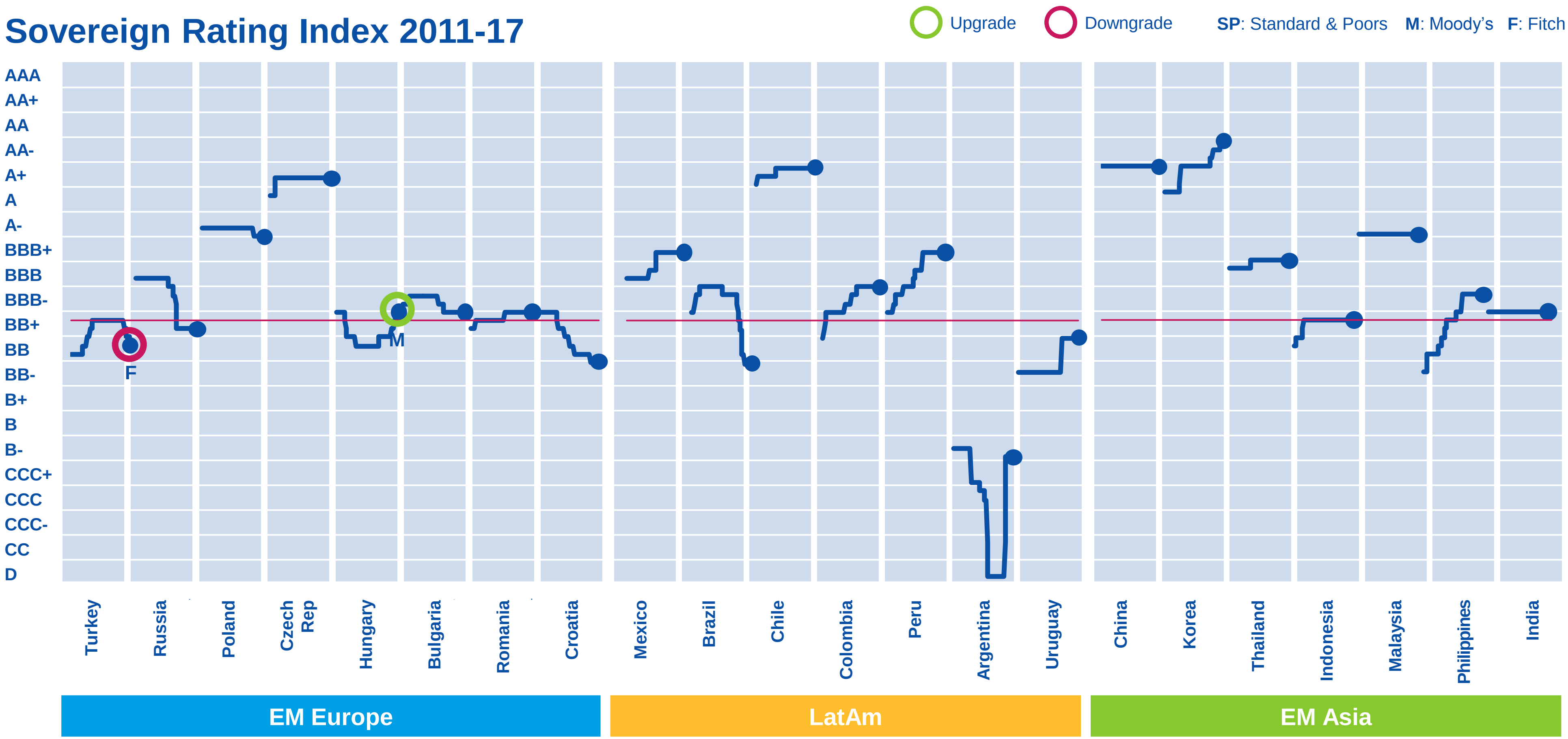


Source: BBVA Research

EMERGING COUNTRIES

Sovereign markets and rating agencies update

Sovereign Rating Index 2011-17



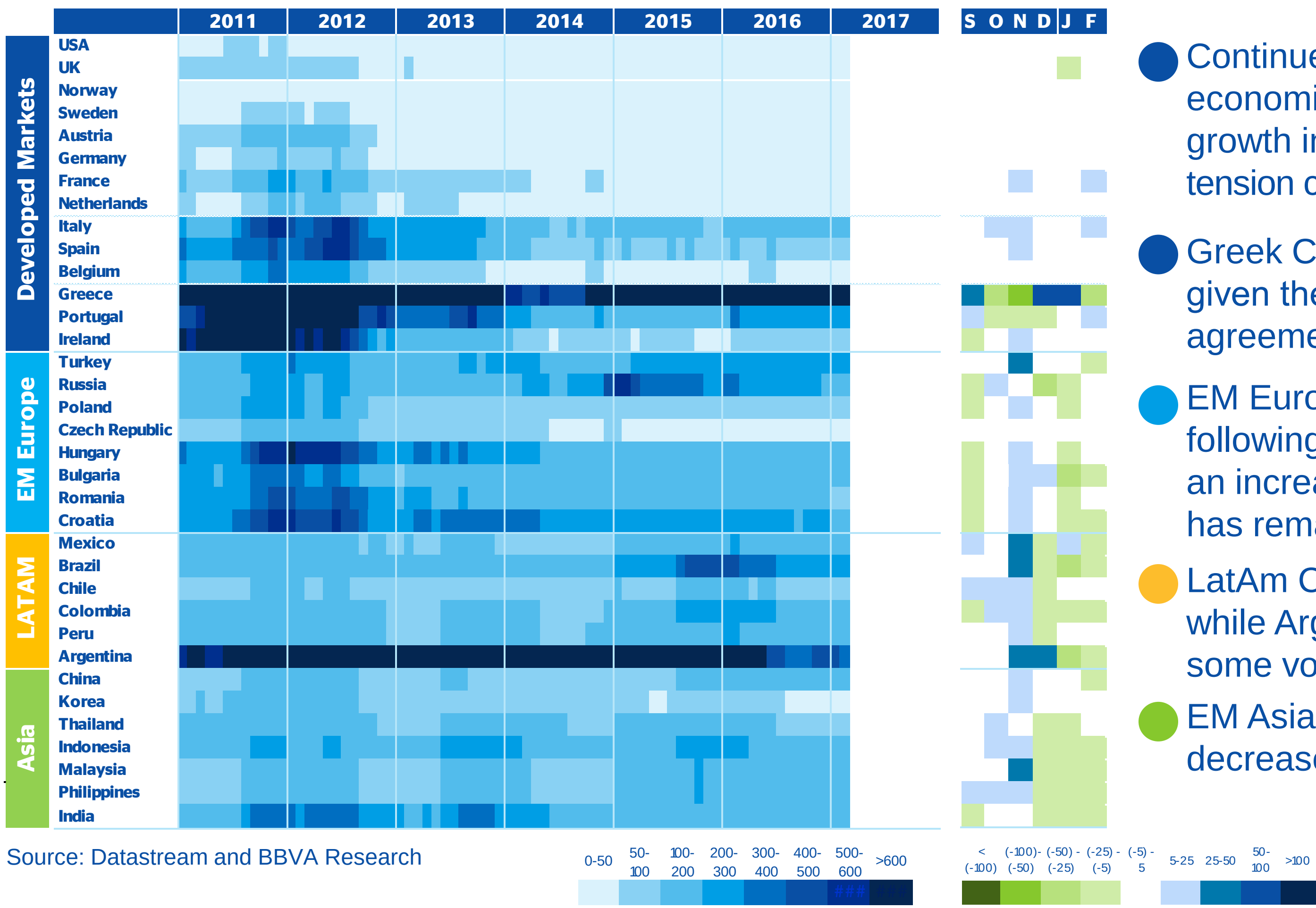
Source: BBVA Research

Sovereign markets and rating agencies update

Sovereign CDS have been stable or decreasing in most countries. Argentina and Greece have seen some volatility in their spreads while France and Italy saw a slight rise in the last month.

Sovereign CDS spreads (February 15th)

Changes
(last six months MoM)



Source: Datastream and BBVA Research

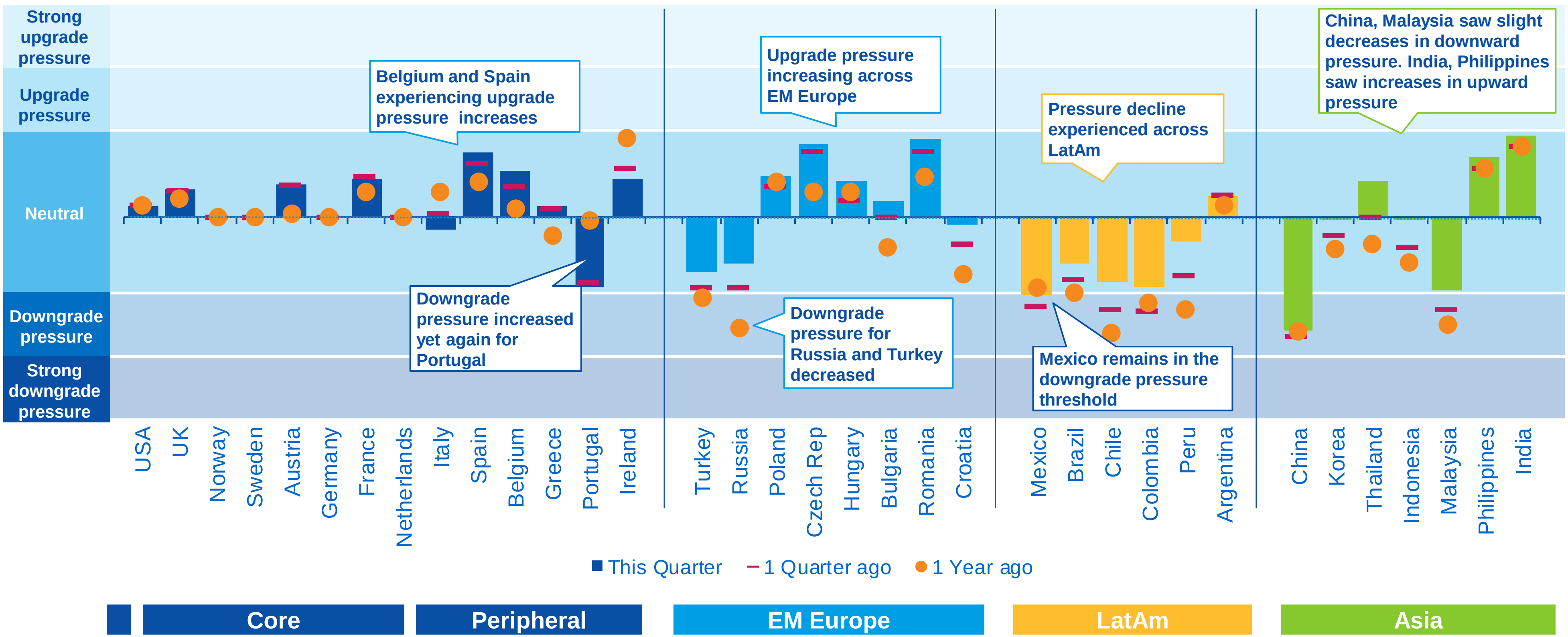
- Continued stability in advanced economies. France and Italy saw slight growth in February amidst rising political tension concerns.
- Greek CDS experienced some volatility, given the context of creditors' lack of agreement
- EM Europe saw a reduction in spreads following the U.S. elections. Turkey saw an increase in November, after which it has remained stable
- LatAm CDS eased across the board while Argentina is still experiencing some volatility
- EM Asia saw a slight and steady decrease in spread levels

Sovereign markets and agency ratings update

The overall decrease in CDS reduced downgrade pressures and increased upgrade ones for most countries. The decline in downgrade pressure was especially noticeable in LatAm, but also in the rest of EMs.

Agencies' rating downgrade pressure gap (15th of February 2017)

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



Source: BBVA Research

2 Financial tensions and global risk aversion

Financial tensions

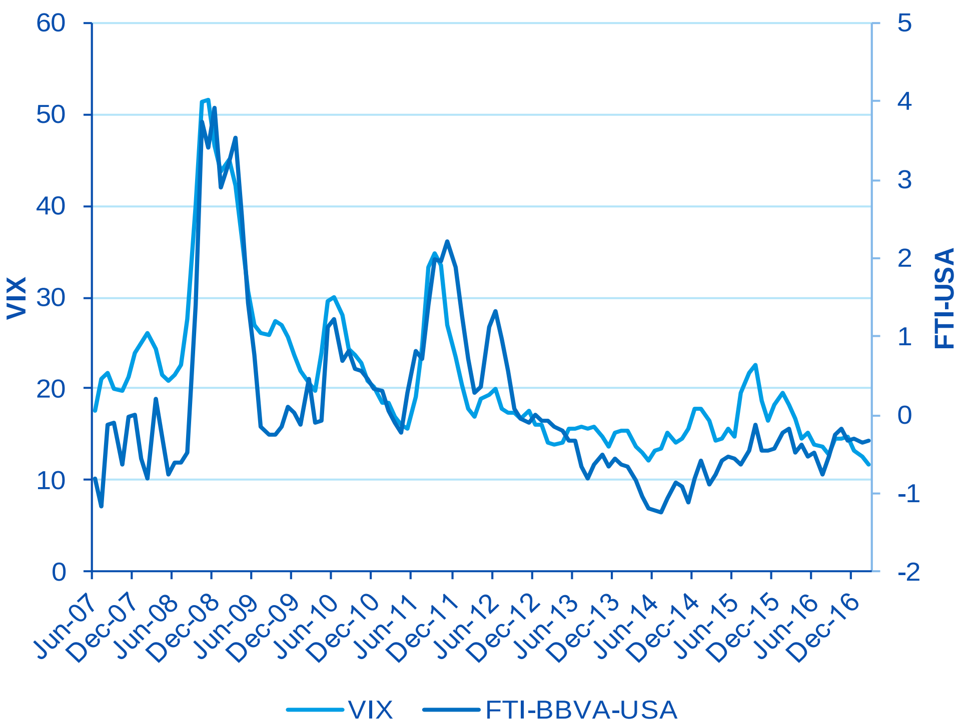
Global Risk Aversion evolution according to different measures

International financial markets, global risk aversion and capital flows

Global risk aversion has been decreasing steadily for a whole year according to most measures, except for FTI-BBVA-USA, in which the uncertainty about the new US Government policies weighed on

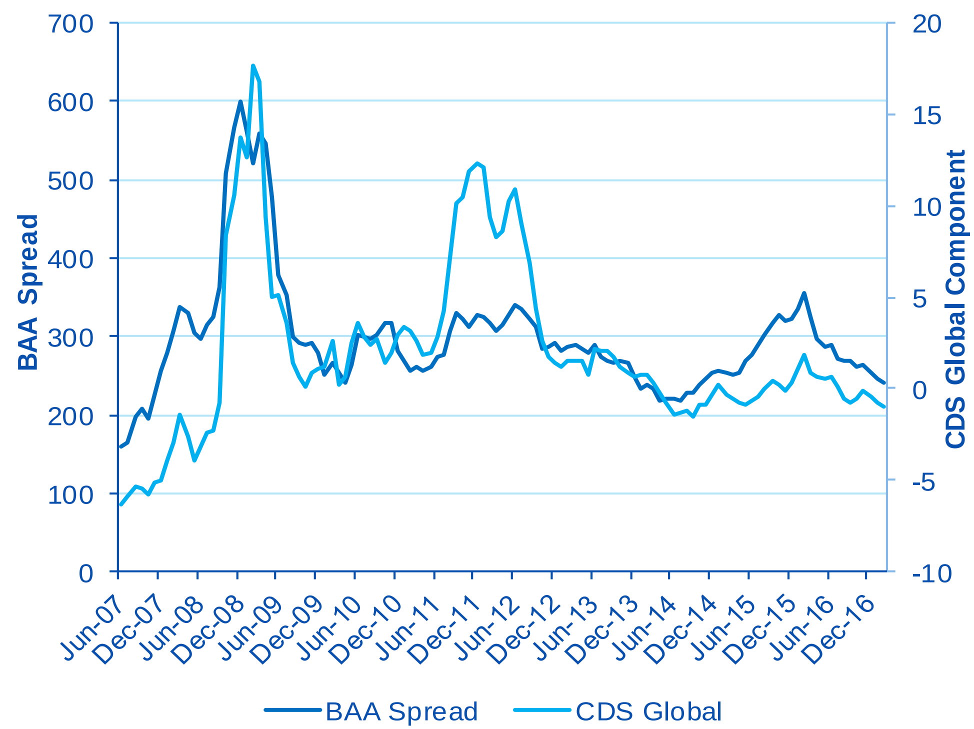
Global risk aversion indicators: VIX & FTI

(Monthly average)



Global risk aversion indicators: BAA Spread & Global component in sovereign CDS

(Monthly average)



Source: BBVA Research

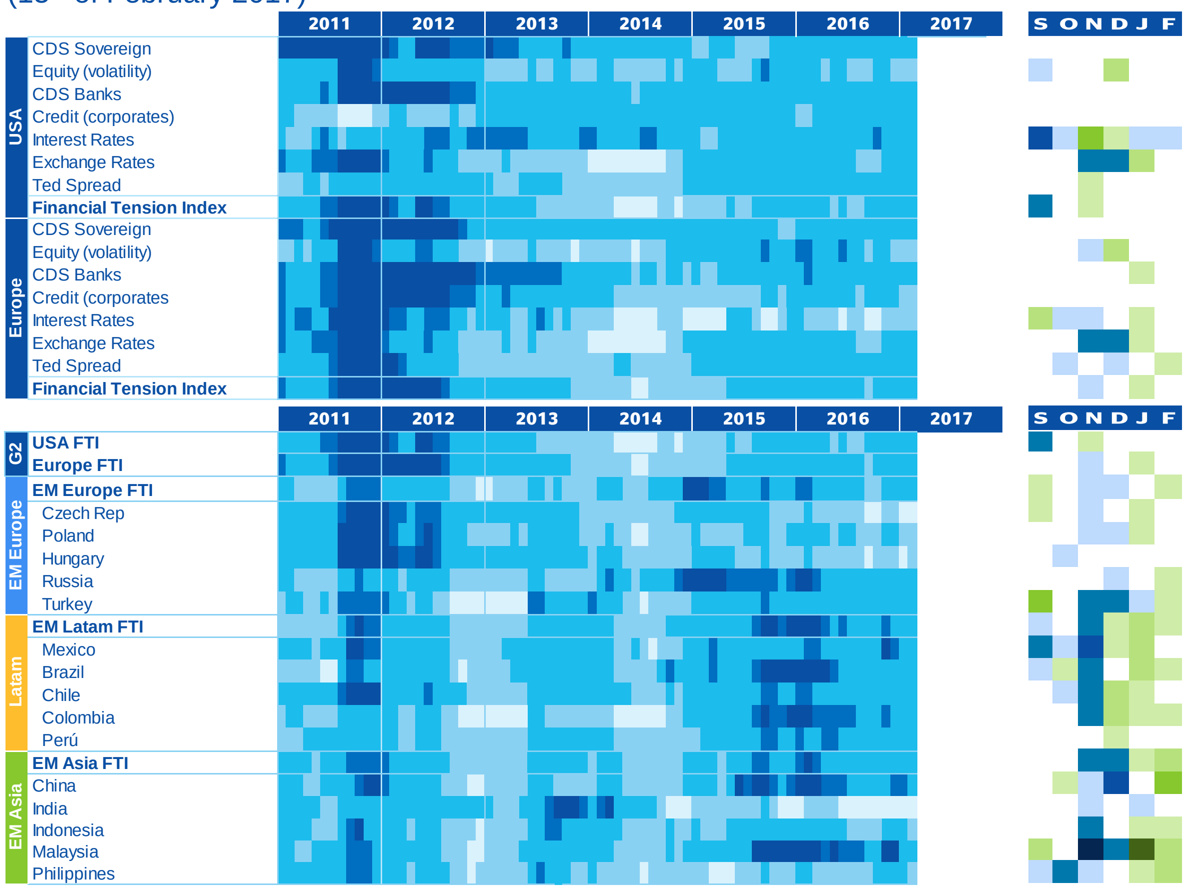
International financial markets, global risk aversion and capital flows

Financial tensions (FT) saw a slight rise following November elections in the U.S. but have since fallen across the board

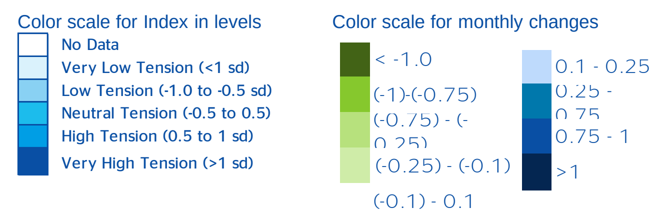
BBVA Research Financial Stress Map

(15th of February 2017)

Changes
(last six months MoM)



- Financial tensions remained stable overall in the U.S. and Europe, with more stability in the U.S. Interest rates, in particular, saw some volatility following November, but have since subsided.
- EM Europe FTI has remained remarkably stable.
- FT in LatAm decreased, especially in Mexico, following the spike in November.
- EM Asia saw overall stability, with a post-November lowering across the board. The most volatile of the group were China and Malaysia.



Source: BBVA Research

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Macroeconomic vulnerability and in-house Regional country risk assessment

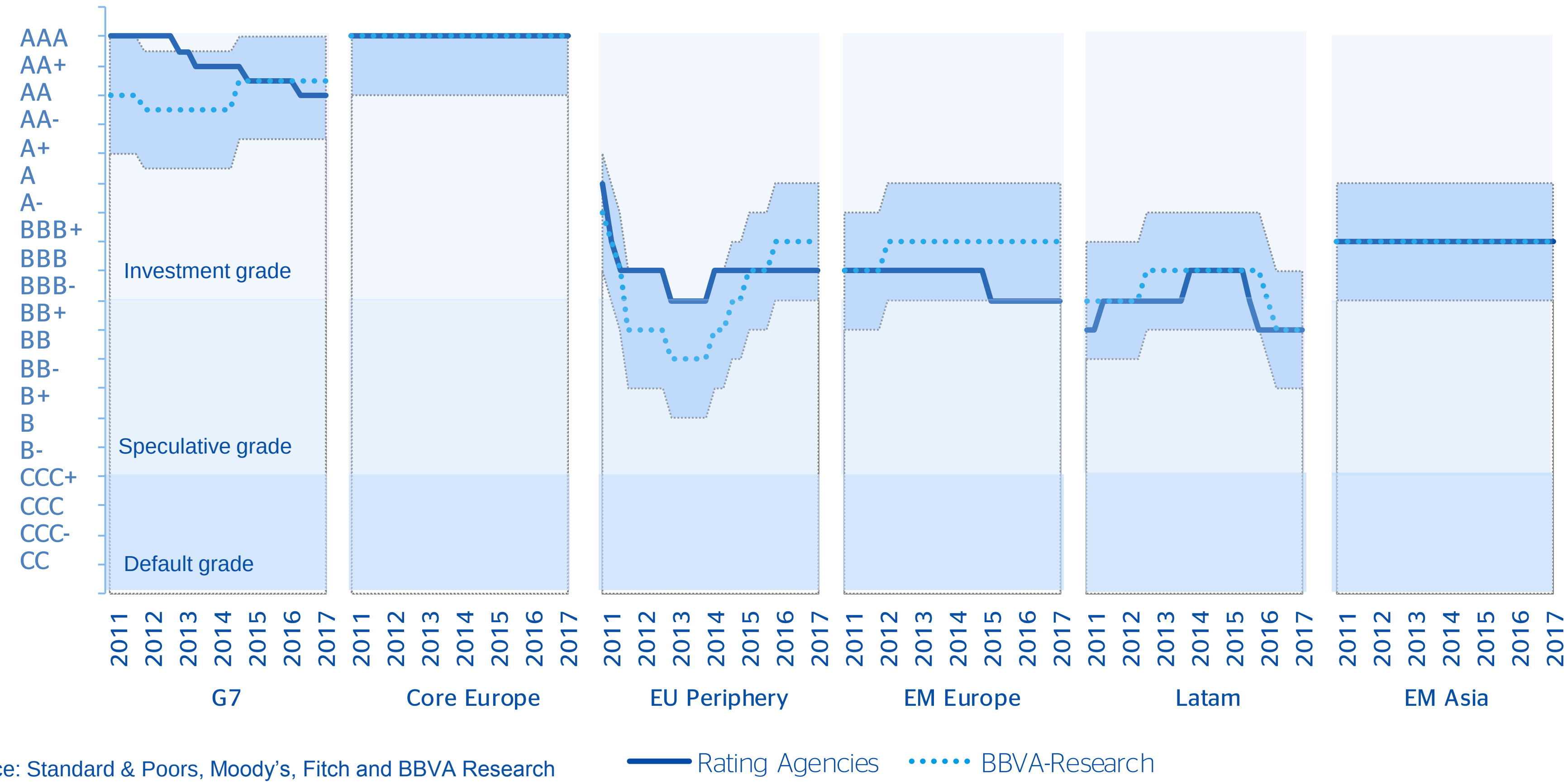
- BBVA-Research sovereign ratings by regions
- Equilibrium CDS by regions
- Vulnerability Radars by regions
- Public and private debt levels

Macroeconomic vulnerability and risk assessment

LatAm's average rating continues below investment grade threshold. EU Periphery Europe and EM Europe ratings still below fundamentals, in line with sovereign markets' pressure

Agencies' Sovereign rating vs. BBVA Research

(Agencies' Rating and BBVA scores +/-1 std dev)



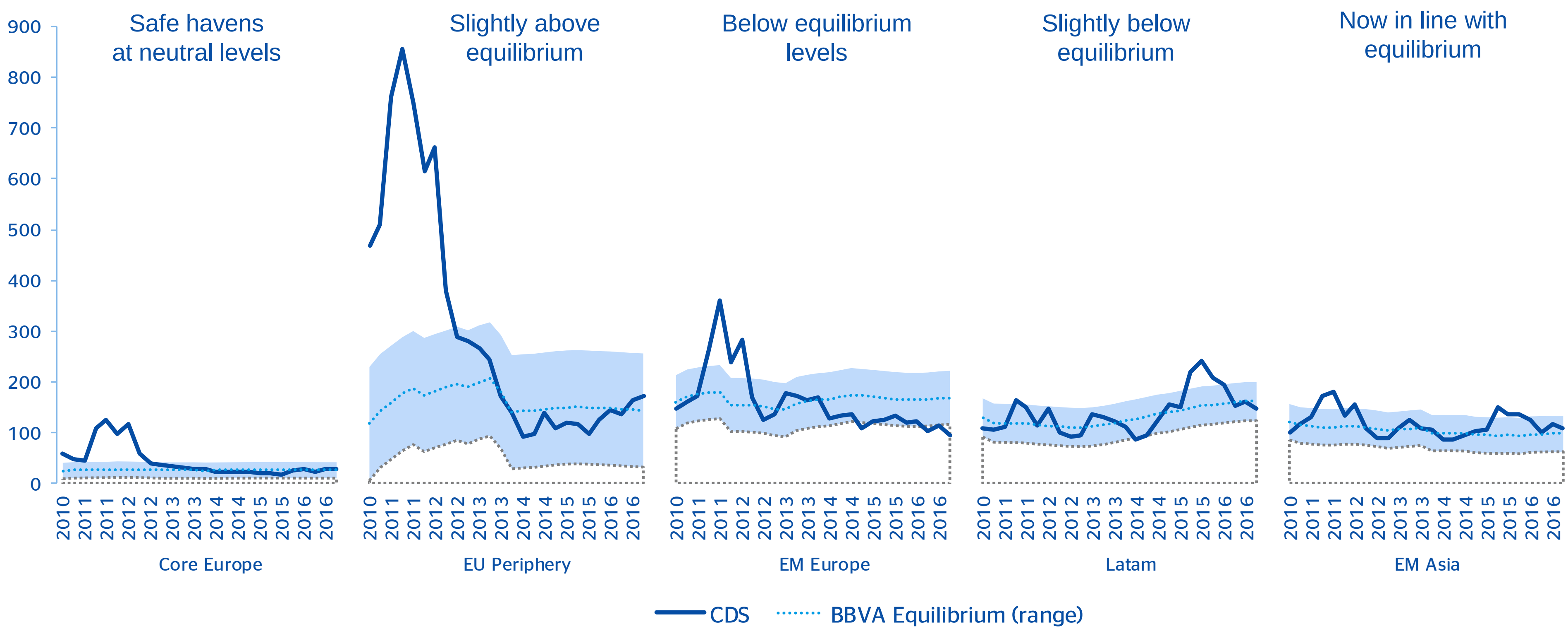
Source: Standard & Poors, Moody's, Fitch and BBVA Research

Macroeconomic vulnerability and risk assessment

EM Europe is the region with a higher deviation (on average) from its equilibrium level. All other regions are relatively close to its equilibrium levels

CDS and equilibrium risk premium February 2017

(equilibrium: average of four alternative models + 0.5 standard deviation)



*EU Periphery excludes Greece

Source: BBVA Research and Datastream

Macroeconomic vulnerability and risk assessment

Public debt levels have worsened even further in several developed economies, while risk related to private leverage has kept decreasing.

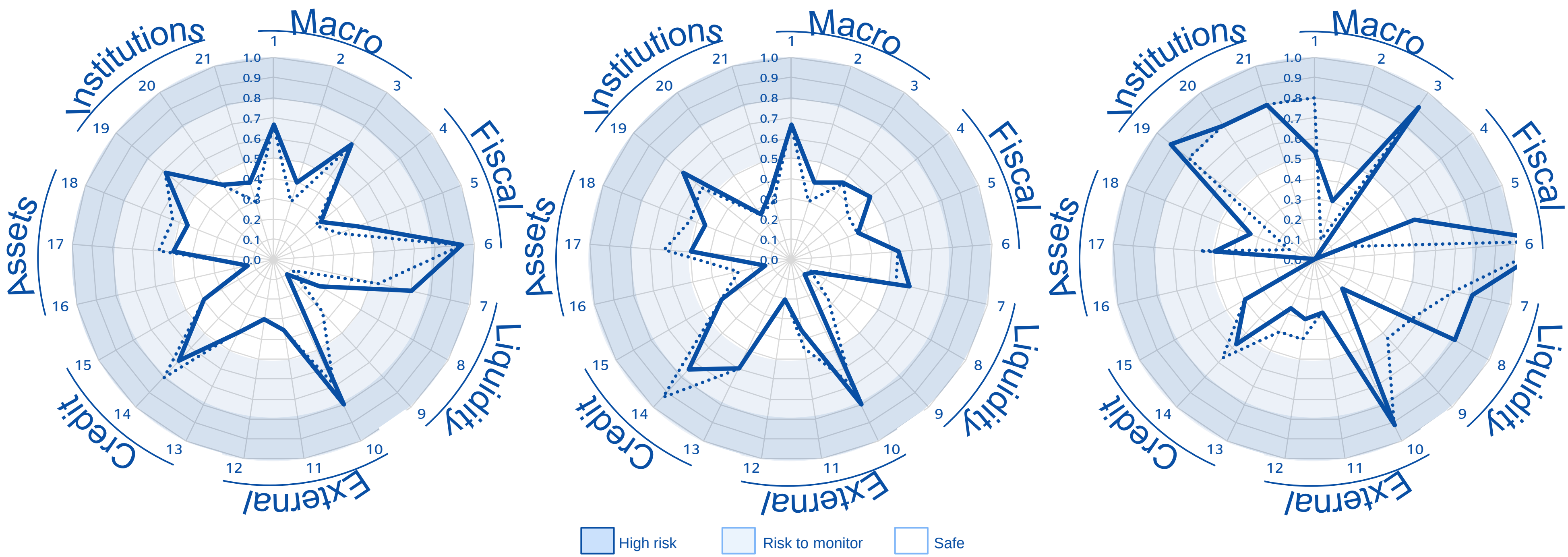
Developed countries: vulnerability radar 2017

Relative position for the emerging developed countries. Max risk=1, Min risk=0. Previous year data is shown as a dotted line.

G7: Public debt levels remain high while credit and housing price risks lower

Core Europe: Corporate leverage sees a slight decline while political instability sees a rise.

Periphery EU: Increasing public debt levels have kept fiscal vulnerability at a high, while political stability is also estimated as high risk.



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

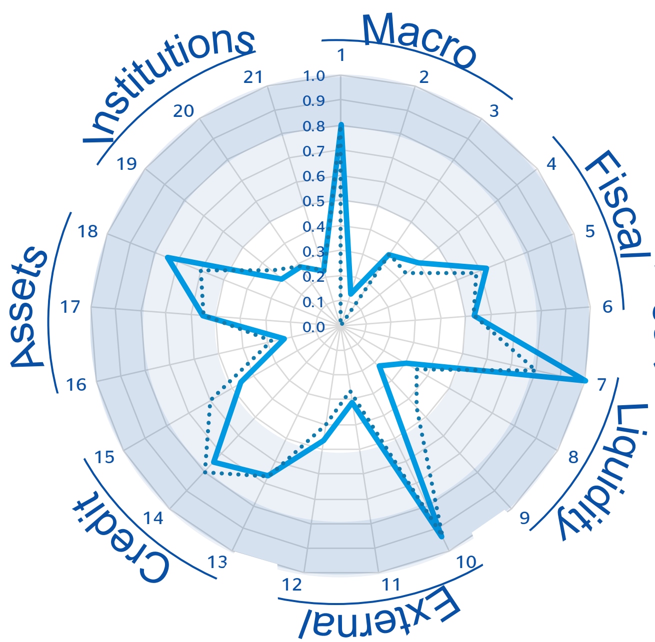
Macroeconomic vulnerability and risk assessment

External vulnerabilities and equity valuations risks are at high levels in EM Europe and LatAm. Fiscal vulnerability remains high in EM Asia

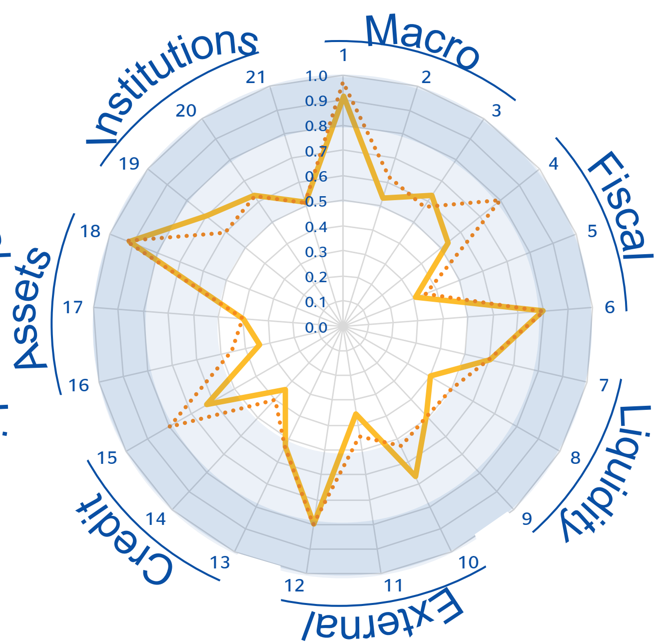
Emerging countries: vulnerability radar 2017

Relative position for the emerging developed countries. Max risk=1, Min risk=0. Previous year data is shown as a dotted line.

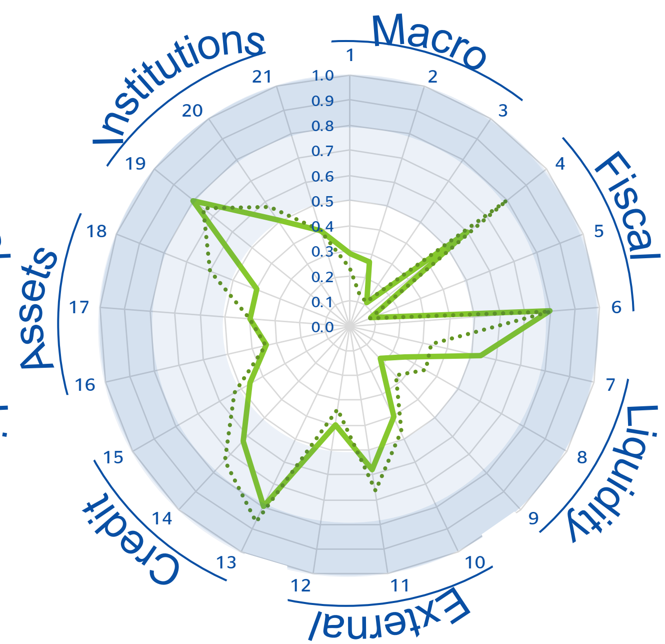
EM Europe: Significant increase in debt-held by non residents. High levels of corporate and external debt



LatAm: External debt worsening with respect to 2016. Rapid growth of equity markets (on average).



EM Asia: Public debt levels along with political instability are the main vulnerabilities



High risk | Risk to monitor | Safe

Macro: (1) GDP (% YoY) (2) Prices (% YoY) (3) Unemployment (% LF)
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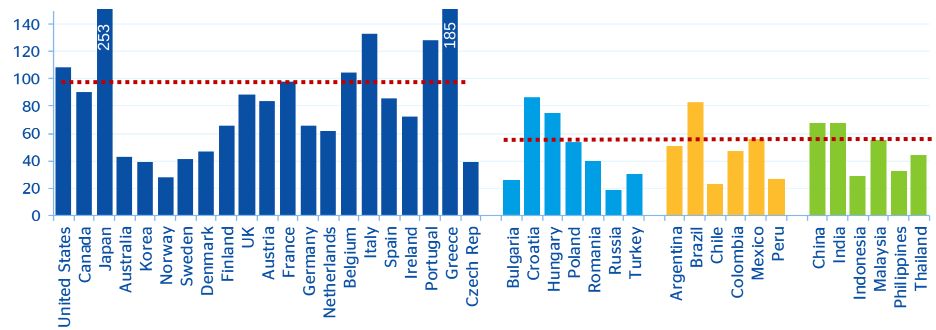
Macroeconomic vulnerability and risk assessment

Public and private debt ratios still high in some developed countries

Gross Public Debt 2017

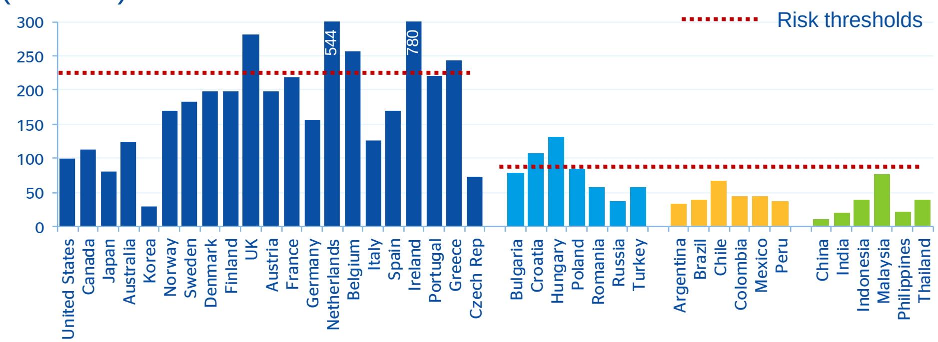
(% GDP)



Source: BBVA Research and IMF

External Debt 2017

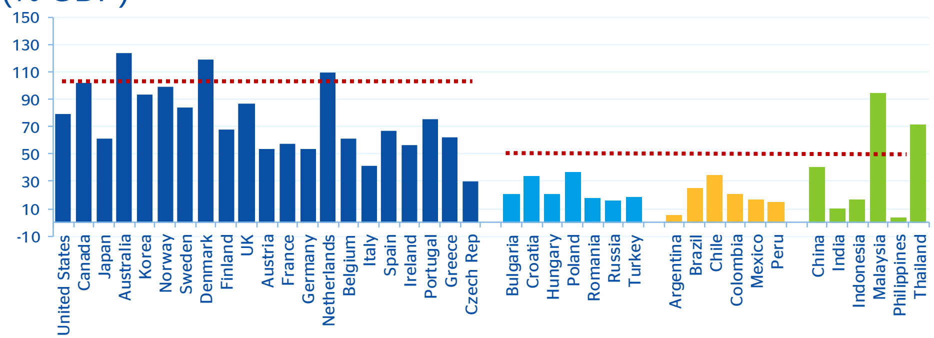
(% GDP)



Source: BBVA Research and IMF

Household Debt 2017

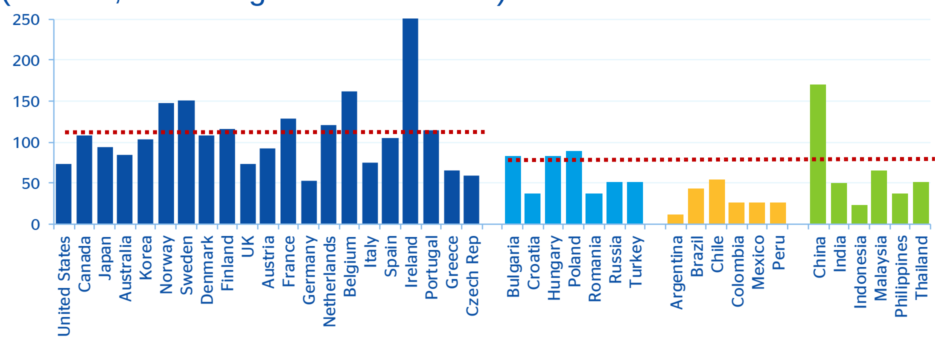
(% GDP)



Source: BBVA Research and BIS

Corporate Sector Debt 2017

(% GDP, excluding bond issuances)



Source: BBVA Research and BIS

4 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

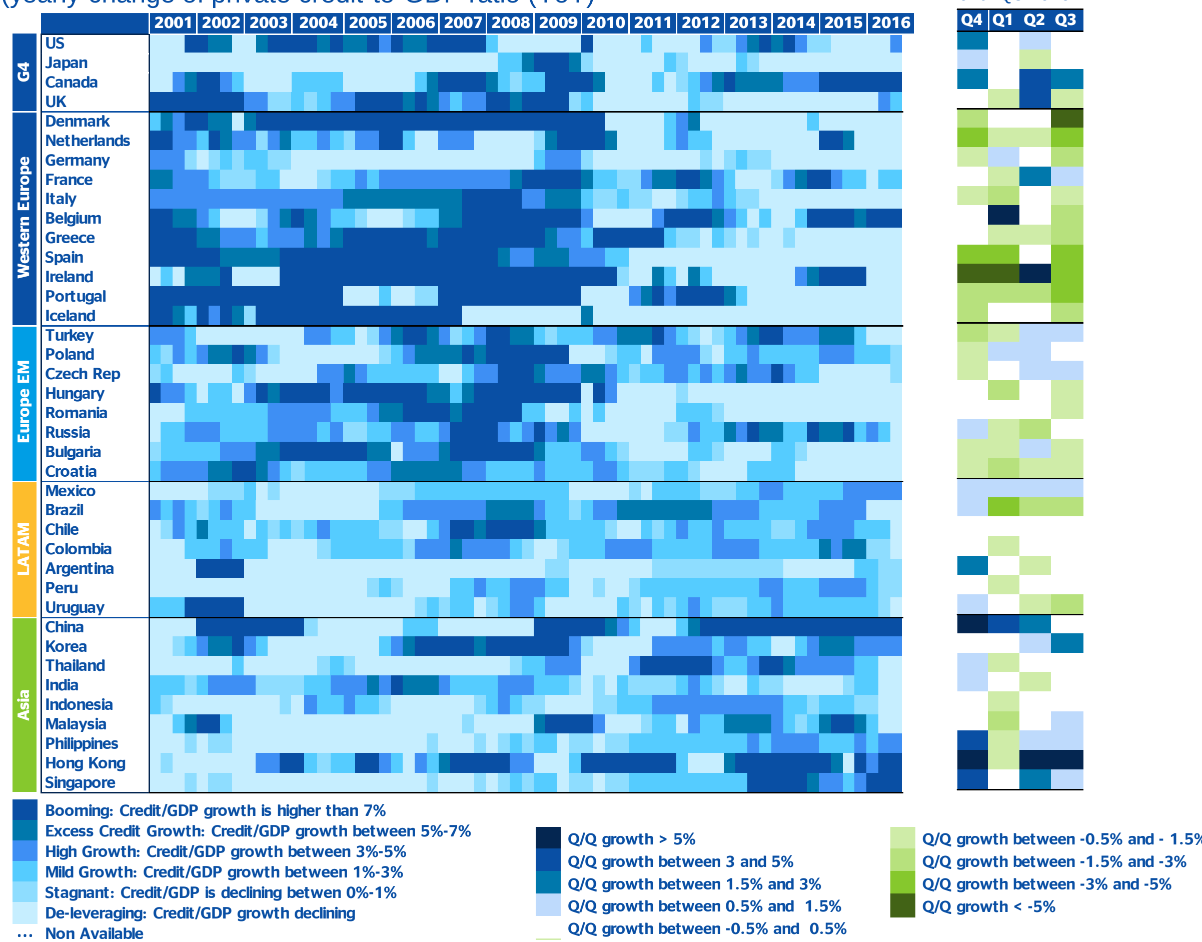
Assessment of financial and external disequilibria

Booming leverage growth in Canada has continued, while China and Belgium have shown signs of slowing in the last two quarters

Private credit color map (2001-2016 Q3)

(yearly change of private credit-to-GDP ratio (YoY))

QoQ growth
Last four quarters up until Q3-2016



Source: BBVA Research, IFS and BIS

- Canada continued to experience booming credit growth, while the U.K and Belgium began a slowdown process. Deleveraging continues across the board.
- Credit growth in EM Europe remained weak or negative overall. However, Turkey and Czech Rep. started to pick up.
- Credit growth in LatAm continued to decelerate. Mexico experienced low growth.
- Growth picked up in Korea, while Hong Kong kept seeing strong growth. China's leveraging process began to show signs of deceleration in quarterly terms.

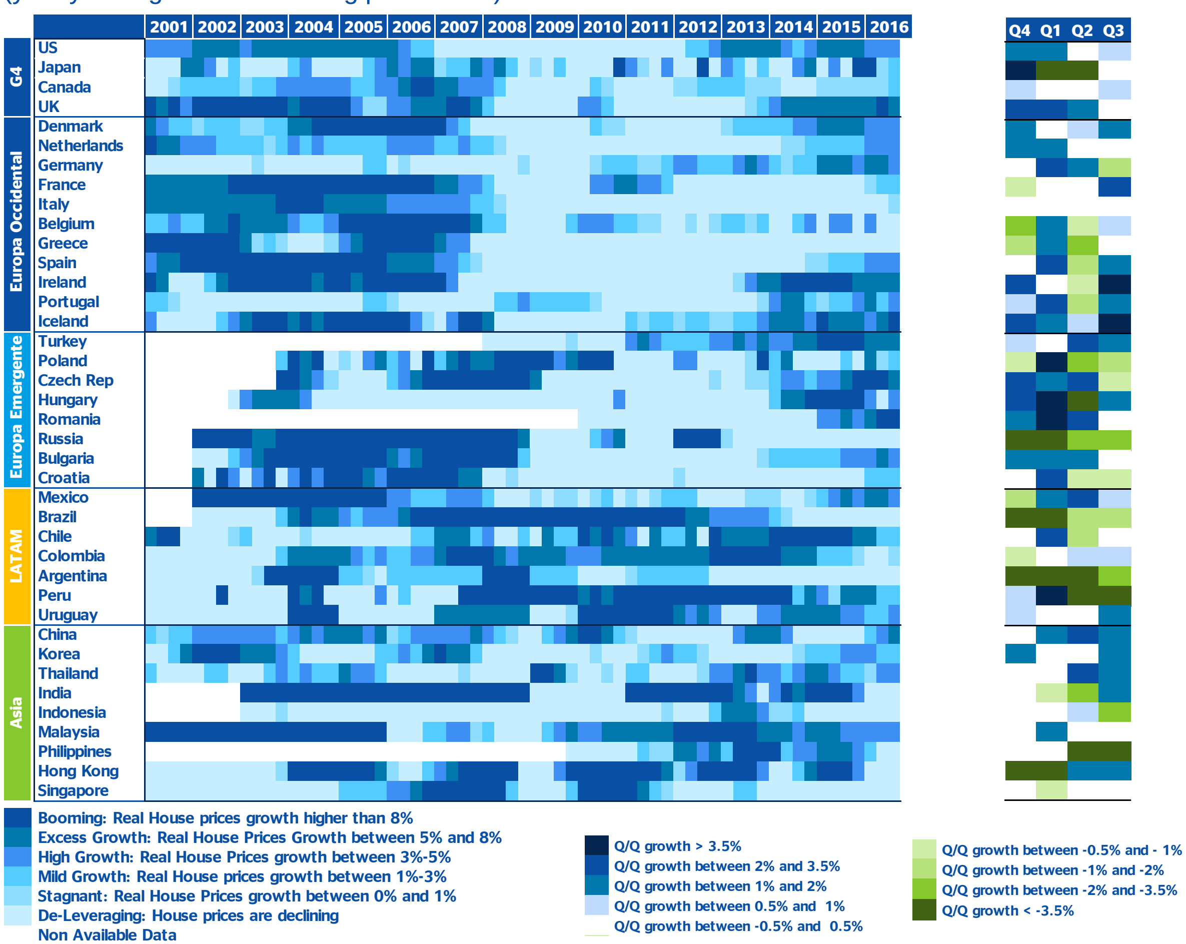
Assessment of financial and external disequilibria

Stronger growth seen in the last quarter in Western Europe and Asia. Moderate or negative growth seen in other Advanced Economies, EM Europe and LatAm

Real housing prices color map (2001-2016 Q3)

(yearly change of real housing prices YoY)

QoQ growth
Last four quarters up until Q3-2016



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

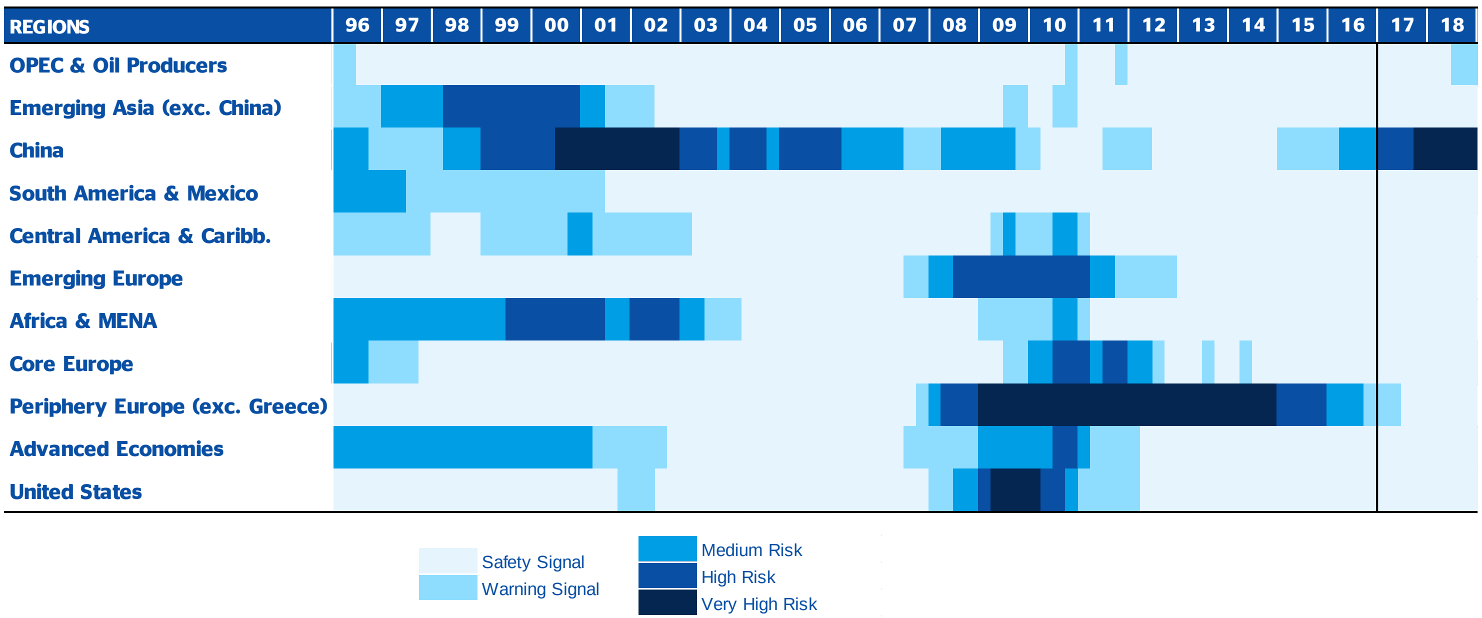
- Price growth picked up in Spain, Ireland, Portugal, and Iceland. Slowdown seen in the U.K. and Germany. Growth was seen in other countries , except for Belgium and Greece
- Another mix of quarterly data across EM Europe. Prices accelerated in Turkey and Hungary. Slowdown was seen in Czech Republic, Poland and Bulgaria, while the contraction in Russia continued.
- Slight pickup in price growth was seen in Uruguay and Colombia. A slowdown or decrease was seen across the rest of the board.
- High price growth and an acceleration was seen in all countries except Indonesia , Malaysia and the Philippines.

Assessment of financial and external disequilibria

Some oil exporters, China and some countries in the European Periphery keep showing signs of warning for the next couple of years

Early warning system (EWS) of Banking Crises (1996Q1-2018Q4)

Probability of Systemic Banking Crisis (based on 8-quarters lagged data*):



- The recent rebound in oil price has not eliminated the possibility of banking troubles in OPEC & Oil producers
- China's unbounded credit growth could likely cause a banking crisis in the coming years
- Some countries in Europe's periphery (ex. Greece) are showing renewed signs of banking stress.

- 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/r0BLbl 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.

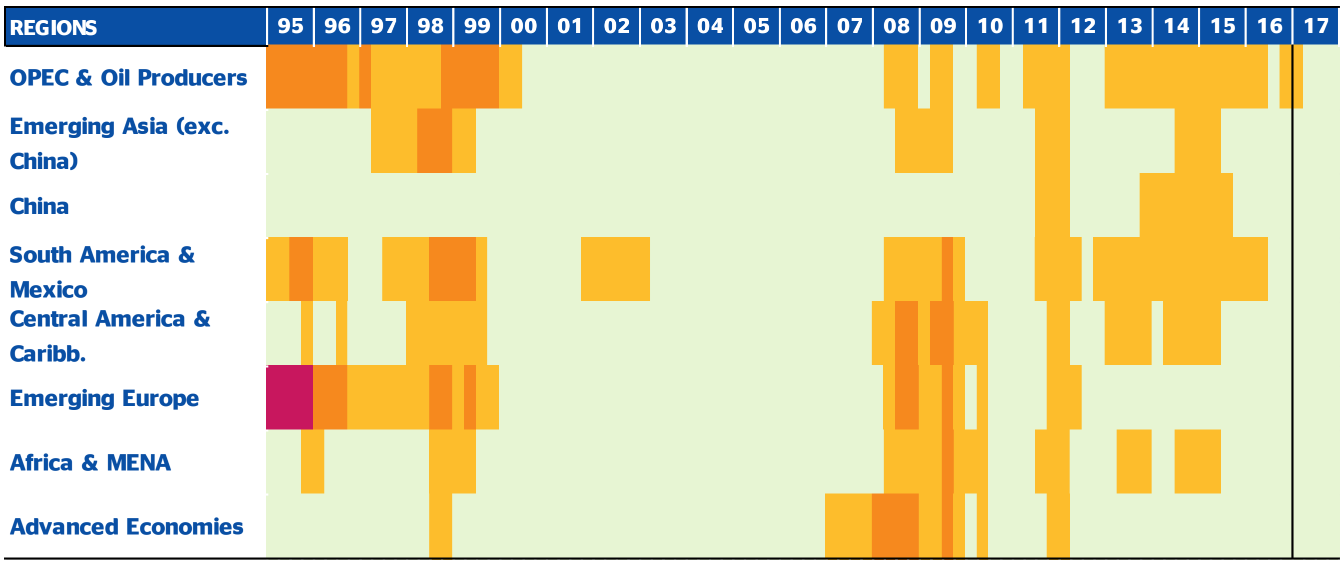
*The probability of a crisis in Q4-2016 is based on Q4-2014 data. Source: BBVA Research

Assessment of financial and external disequilibria

We do not envisage regional currency problems in the coming quarters (although there could be events in specific countries)

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



- As predicted in previous reports, several oil exporters (Angola, Azerbaijan, Nigeria & Venezuela) have suffered sharp devaluations in 2016
- Several countries in South America have also gone recently through events of significant devaluations, as warned by our EWS

- We have developed a similar Currency-Crises Early Warning System EWS that allow 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

Vulnerability Indicators table by country

Macroeconomic vulnerability and risk assessment

Vulnerability indicators: developed economies

Vulnerability indicators* 2017: developed countries

	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	-1.8	-1.3	108	-3.0	100	13.1	15	10	33	2.3	2.3	4.5	3.8	4.3	13.4	79	73	64	-0.7	-1.4	-1.6
Canada	-1.7	-0.6	90	-3.1	113	-8.4	9	7	22	1.9	2.1	7.1	8.6	2.7	17.5	102	107	131	-1.2	-1.9	-1.8
Japan	-5.0	-0.8	253	3.3	80	-0.5	33	11	10	0.6	0.7	3.2	-0.7	1.6	0.4	61	94	47	-1.0	-1.6	-1.5
Australia	-1.0	-0.7	43	-3.9	124	-3.1	3	1	46	2.7	2.0	5.7	2.8	2.0	7.0	124	84	134	-0.9	-1.9	-1.8
Korea	0.5	-1.8	39	5.9	30	0.8	1	5	13	3.0	2.2	3.3	3.5	2.3	3.3	93	103	97	-0.1	-0.5	-1.0
Norway	-11.3	-0.3	28	7.6	170	-2.3	-9	8	47	1.2	2.5	4.5	10.6	-0.5	14.6	99	147	131	-1.1	-2.3	-2.0
Sweden	-1.1	-2.5	41	5.3	182	-8.5	5	10	47	2.6	1.6	6.7	-5.6	6.1	4.9	84	151	194	-1.0	-2.2	-2.0
Denmark	-1.0	-0.6	46	6.6	198	-1.8	6	11	33	1.4	1.1	5.8	-7.8	3.6	-12.8	119	108	296	-0.9	-2.2	-2.0
Finland	-0.7	-1.2	65	0.2	198	-2.6	4	3	82	1.1	1.4	8.9	-5.7	4.9	3.6	68	116	133	-1.0	-2.3	-2.1
UK	-0.7	-0.7	89	-4.3	282	-8.8	9	6	31	1.1	2.5	5.2	1.4	6.3	14.4	87	73	57	-0.6	-1.9	-1.8
Austria	0.5	-0.5	84	2.7	198	-0.9	5	4	80	1.2	1.3	6.4	-1.6	7.5	9.2	54	93	96	-1.2	-1.5	-1.9
France	-0.7	-1.0	98	-0.4	219	-3.1	10	6	62	1.3	0.2	9.6	2.5	1.8	4.9	57	128	110	-0.3	-1.3	-1.4
Germany	0.8	-1.3	66	8.1	156	-2.5	2	3	59	1.4	1.6	4.5	-2.2	3.8	6.9	54	52	88	-0.7	-1.8	-1.8
Netherlands	0.5	-1.2	62	8.2	544	-2.0	4	4	54	1.6	1.0	6.5	-8.4	3.7	9.4	110	120	95	-0.9	-1.9	-1.9
Belgium	-0.1	-0.6	105	0.4	256	-0.9	18	14	61	1.4	1.2	8.3	9.0	-0.9	1.3	61	161	52	-0.6	-1.6	-1.4
Italy	2.2	1.0	133	1.9	126	-3.6	11	6	38	0.9	0.8	11.2	-3.6	0.0	-10.2	41	75	105	-0.3	0.0	-0.3
Spain	0.0	-0.5	85	1.9	169	-2.1	19	14	50	2.2	0.7	18.0	-12.1	3.3	-2.0	67	105	105	-0.3	-0.5	-0.9
Ireland	1.3	-2.1	73	9.1	780	-4.6	6	7	70	3.2	1.3	7.7	-24.4	6.9	-4.0	57	267	53	-0.9	-1.6	-1.8
Portugal	2.0	0.8	128	-0.7	221	-1.6	19	12	70	1.1	0.0	10.7	-9.4	3.5	-0.2	75	114	128	-0.9	-0.9	-1.1
Greece	2.6	-1.8	185	0.0	244	-4.0	15	6	82	2.8	1.1	21.5	-3.7	-0.9	1.9	62	66	147	0.2	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

Macroeconomic vulnerability and risk assessment

Vulnerability indicators: emerging economies

Vulnerability indicators* 2017: emerging countries

	Fiscal sustainability			External sustainability			Liquidity management			Macroeconomic performance			Credit and housing			Private debt			Institutional		
	Structural primary balance **(1)**	Interest rate GDP growth differential 2014-19	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	26	0.0	79	-3.2	4	2.9	44	2.8	1.4	7.1	-2.4	4.8	27.2	20	83	80	0.0	0.3	0.1
Czech Rep	-0.1	-1.4	39	1.1	73	-1.0	5	11	38	2.7	2.2	4.1	0.7	6.4	-3.6	30	59	87	-1.0	-0.4	-1.1
Croatia	0.8	0.5	86	2.2	107	-1.9	16	3.7	41	2.1	1.2	15.9	-4.6	2.9	18.1	34	37	93	-0.6	-0.2	-0.2
Hungary	0.3	-0.8	75	4.6	131	-3.0	18	1.8	55	2.5	2.6	5.8	-3.1	3.0	33.8	20	82	93	-0.7	-0.1	-0.4
Poland	-1.2	-1.3	53	-1.0	84	-6.7	9	2.4	56	3.4	1.5	6.2	0.3	1.7	11.4	37	88	110	-0.9	-0.6	-0.8
Romania	-1.7	-1.8	40	-2.8	57	-4.3	9	3.0	49	3.8	2.7	6.2	-1.9	10.1	1.2	18	37	87	-0.2	0.0	-0.2
Russia	-1.2	1.0	18	3.5	36	-2.3	6	5.7	14	1.1	4.9	5.9	-1.9	-13.4	26.8	16	51	106	1.0	0.9	0.7
Turkey	0.7	-0.6	31	-5.6	58	0.6	5	0.9	36	3.0	6.2	10.2	-0.3	5.9	8.9	18	52	124	1.3	0.1	0.1
Argentina	-4.2	-13.5	51	-2.8	32	-9.6	11	1.0	21	2.8	20.8	9.3	0.5	-39.7	44.9	6	12	65	0.1	0.6	0.8
Brazil	-1.2	4.1	82	-1.0	39	-0.3	19	6.5	14	0.9	4.5	11.8	-6.8	-16.1	38.9	25	43	104	0.4	0.4	0.2
Chile	-1.5	-1.8	23	-2.4	68	1.1	4	2.3	20	1.6	3.2	7.6	-0.3	1.5	12.8	34	54	149	-0.4	-1.3	-1.3
Colombia	1.0	0.2	47	-4.2	43	-30.5	5	3.5	28	2.7	3.7	9.6	-1.0	0.4	18.2	20	26	110	1.1	0.3	0.3
Mexico	0.3	0.4	56	-3.2	44	-22.3	7	1.8	32	1.0	6.0	4.4	3.5	3.3	7.6	17	26	82	0.9	0.7	0.5
Peru	-1.0	-2.3	27	-2.3	36	-5.5	3	12.4	38	3.5	2.7	6.6	0.0	1.6	58.1	15	26	98	0.5	0.6	0.5
China	-2.2	-4.7	68	1.6	10	-0.5	4	3.3	..	6.0	2.7	4.1	12.3	6.4	-19.6	41	169	86	0.6	0.3	0.3
India	-2.1	-4.3	67	-2.0	20	8.1	11	4.9	6	7.6	5.3	5.5	-0.1	-1.9	1.9	10	49	82	0.9	0.4	0.1
Indonesia	-1.0	-3.2	28	-2.3	38	5.6	4	2.2	59	5.3	4.4	5.7	-0.6	-2.0	15.3	17	23	100	0.6	0.5	0.4
Malaysia	-0.6	-2.6	56	1.5	76	-10.7	10	0.9	27	4.6	3.0	3.2	-1.1	3.4	-3.0	95	--	109	-0.2	-0.3	-0.6
Philippines	0.3	-3.9	32	1.4	21	-1.1	8	5.3	30	6.7	3.2	5.7	3.9	-2.6	-1.6	3	37	65	0.8	0.4	0.3
Thailand	0.3	-2.5	44	7.7	38	-1.2	6	2.8	11	3.3	1.7	0.7	-1.3	4.8	19.8	72	51	100	1.0	0.4	0.1

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 Llbour 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 Map: 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. 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.

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

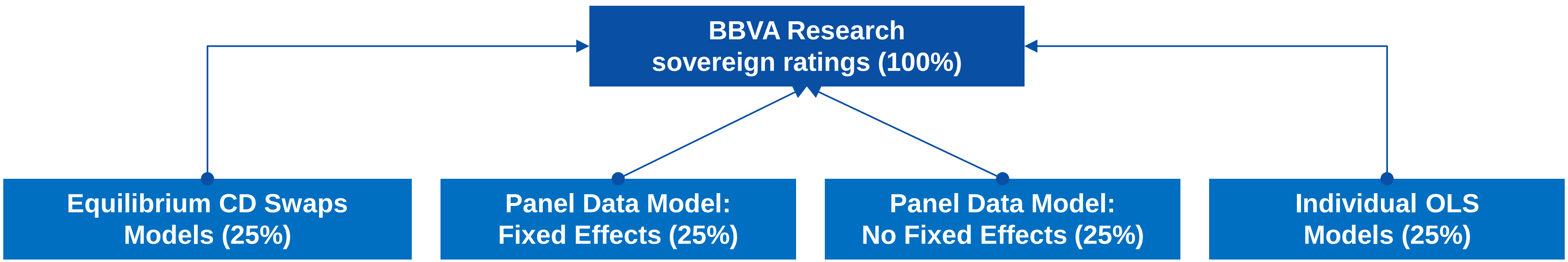
Methodology: models and BBVA country risk

- **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.

Appendix

Methodology: models and BBVA country risk

BBVA Research sovereign ratings methodology diagram



Source: BBVA Research

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

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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