BBVA | Research

Country Risk Report

A Quarterly Guide to Country Risks

December 2017

Summary

Country Risk

Ratings agencies

- Argentina was upgraded by Moody's and S&P. India was improved by Moody's, Italy and Portugal by S&P. China and UK were downgraded by S&P and Moody's respectively.

Financial Markets

- **Global risk aversion stabilizes at historically low levels.** Despite recent geopolitical tensions, all indicators remain virtually unchanged. Continued decline in **sovereign CDS** over the past year has led many countries **to reach new historical lows**
- As a consequence, **the gaps between CDS implicit ratings and the ratings from the agencies have strongly widened up**, with particular intensity in EM Europe and Asia

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- **Overall, the net aggregate of macroeconomic vulnerabilities remain stable** or decreasing across different regions with the exception of increase of political and geopolitical risks.
- **Deleveraging continues across the board**, with some exceptions in Developed Markets (e.g. Canada, Sweden, HK) and in Emerging (e.g. Turkey, Philippines), and **with a noticeable slowdown in China**. However, there seems to be some decoupling with housing prices, which are growing strongly in several countries including many which are clearly deleveraging.

Special Topic

- We present the results of an empirical exercise in which we seek to explain the deleveraging process that follows the burst of a credit bubble following a systemic banking crisis.
- We have built up two new databases and have estimated a SUR regression model to jointly explain and predict how strong and how fast the private leverage level of a country falls after the onset of these type of events.
- According to our results, the main determinants of the severity and speed of a deleveraging process are the speed of the preceding credit boom and the fiscal position of the country at the peak of the boom, measured by the public expenditure level and the fiscal balance.

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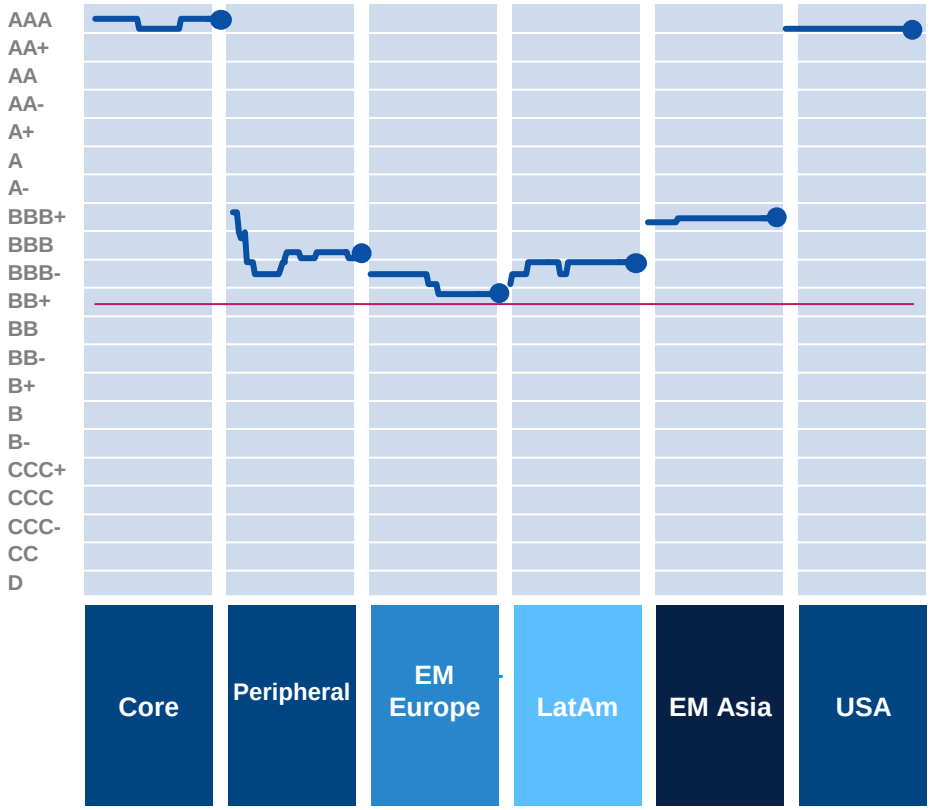
01

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



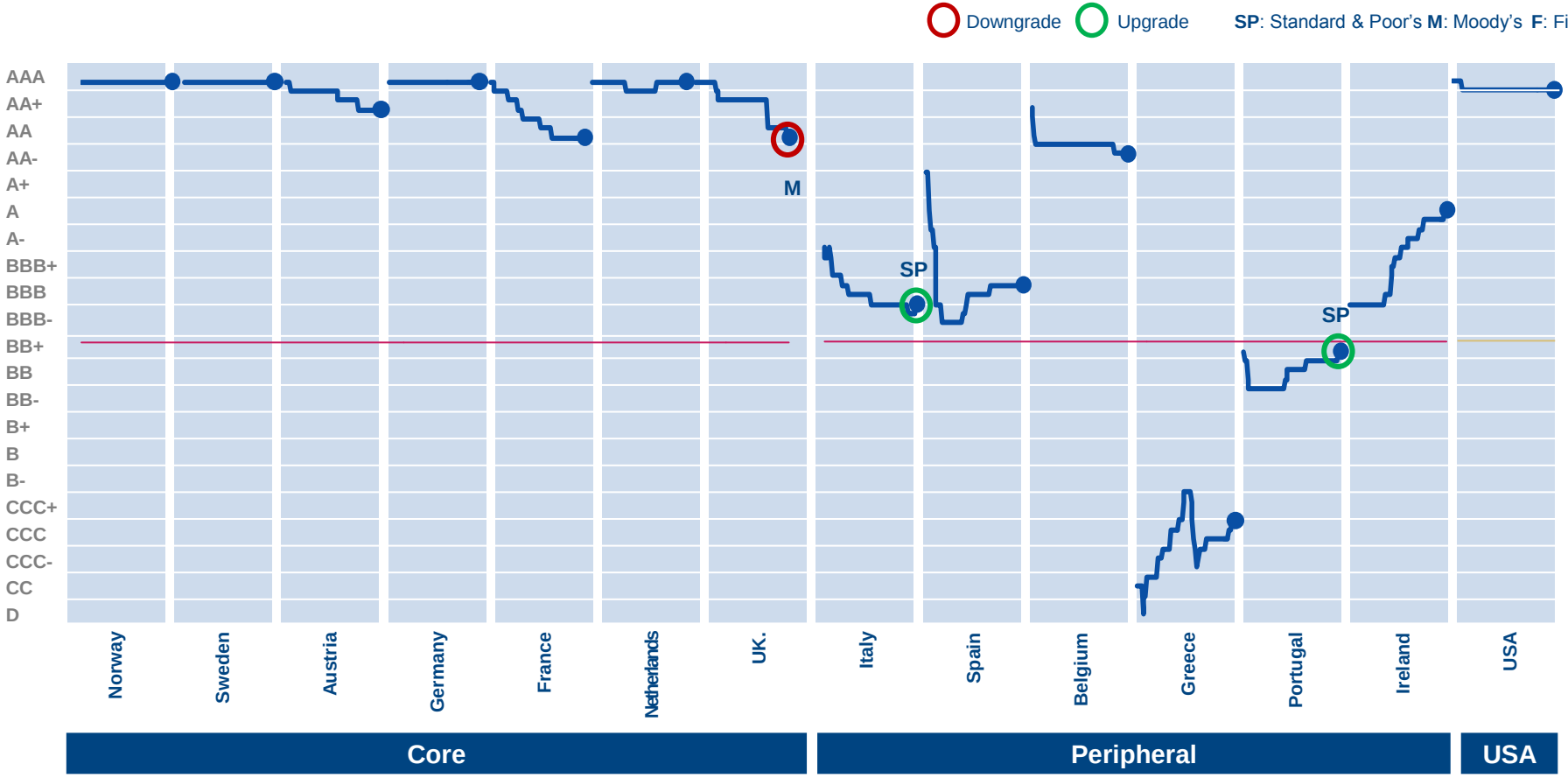
- No major changes in the median rating of the main economic areas
- **Argentina** was improved by Moody's and S&P. **Slovenia and India** were also improved by Moody's, and **Italy and Portugal** by S&P.
- **UK** was downgraded by Moody's. **China and South Africa** were downgraded by S&P.

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 2011-17: Developed Markets



Source: BBVA Research

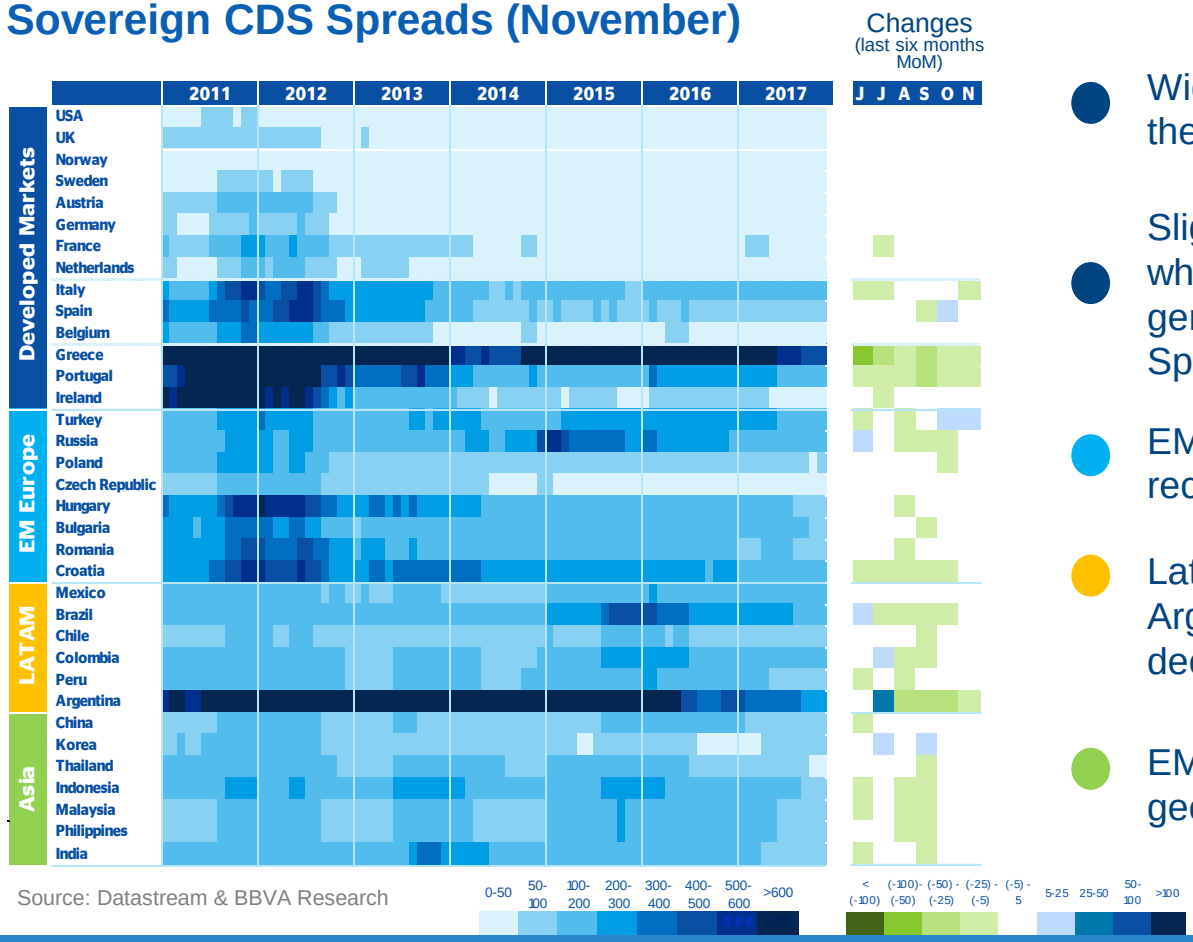
Sovereign markets and rating agencies update

Sovereign Rating Index 2011-17: Emerging Markets

Source: BBVA Research

Sovereign Markets and Rating Agency Update

Sovereign CDS Spreads (November)



Source: Datastream & BBVA Research

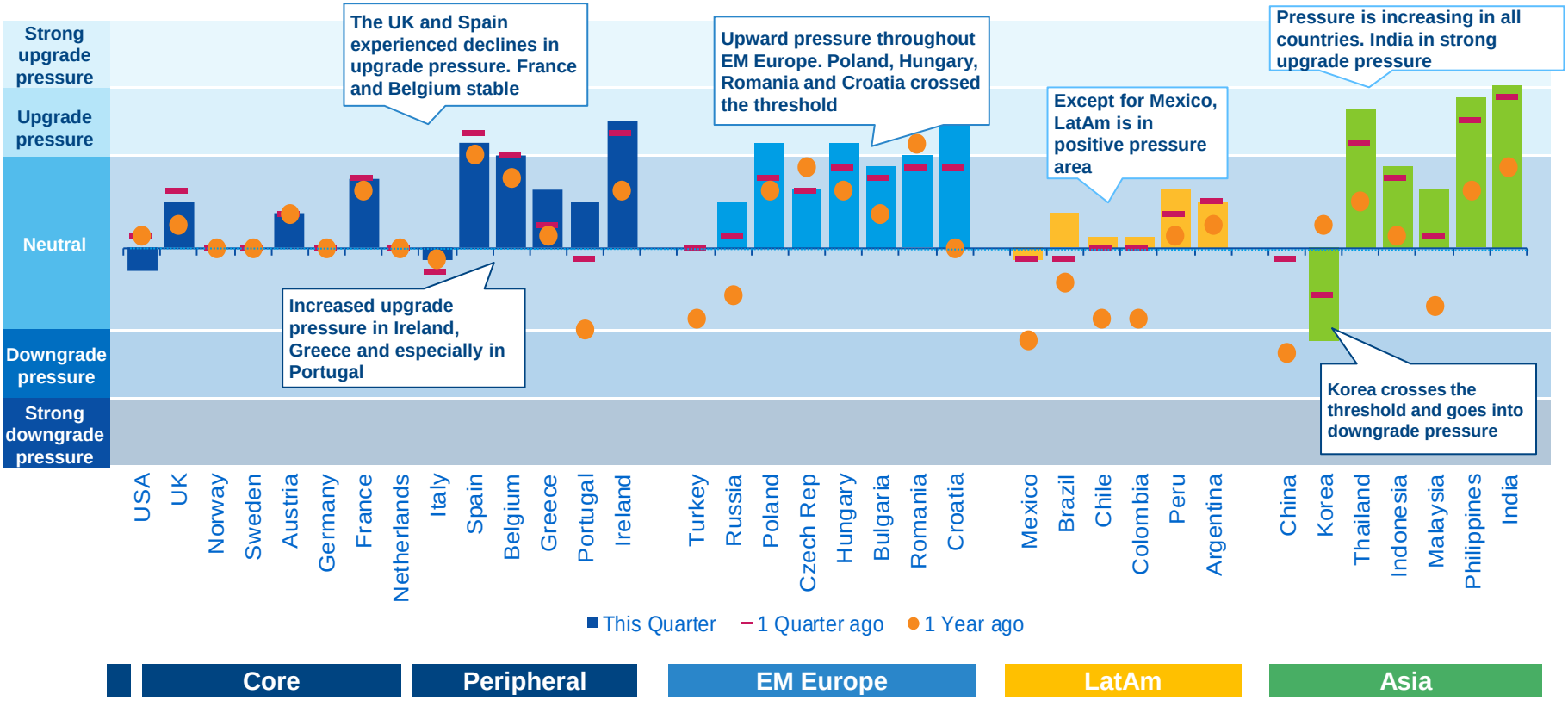
- Widespread and continued stability in the CDS of Advanced Economies.
- Slight decreases in the EU periphery, while political tensions in Catalonia generated only a minor increase in Spanish premium.
- EM Europe remains stable except for recent increases in Turkey.
- LatAm with no relevant changes. Argentina continues with slight decreases.
- EM Asia remains stable despite Korean geopolitical conflicts.

Very stable behavior of sovereign CDS markets with the exception of specific geopolitical conflicts (Turkey, Korea). Continued decline in premiums over the past year has led many countries to reach new historical lows

Sovereign markets and agency ratings update

Agencies' rating downgrade pressure gap (November 2017)

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



Source: BBVA Research

In line with movements in sovereign CDS spreads, several countries reached the upgrade pressure area, with particular intensity in EM Europe and Asia

02

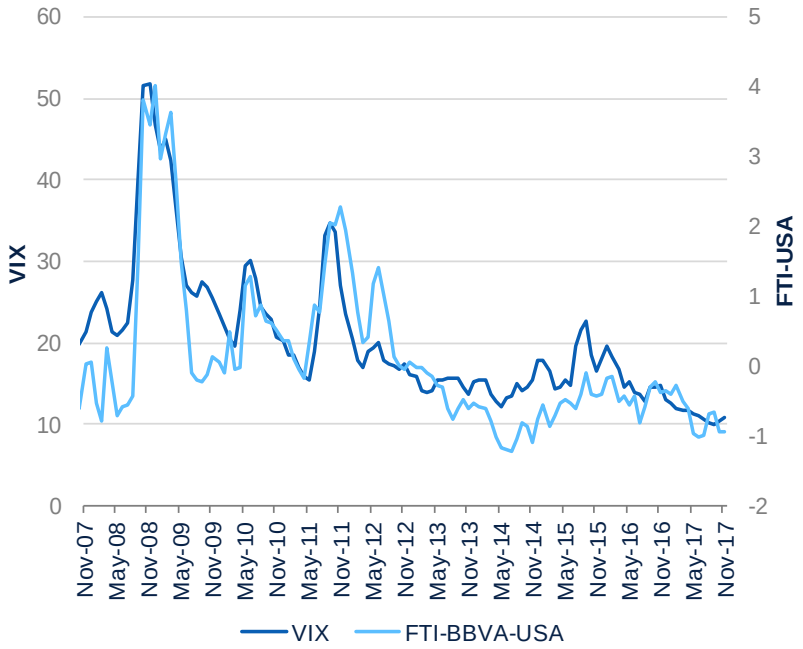
Financial Tensions and Global Risk Aversion

Financial Tensions
Global Risk Aversion Evolution according to Different Measures

Financial Tensions and global risk aversion

Global risk aversion indicators: VIX & FTI

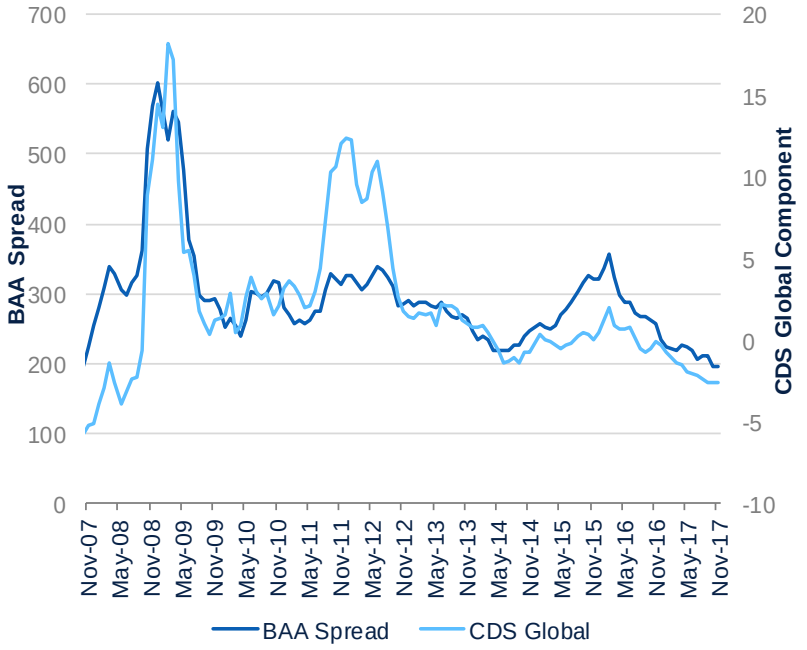
(Monthly average)



Source: Bloomberg and BBVA Research

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

(Monthly Average)

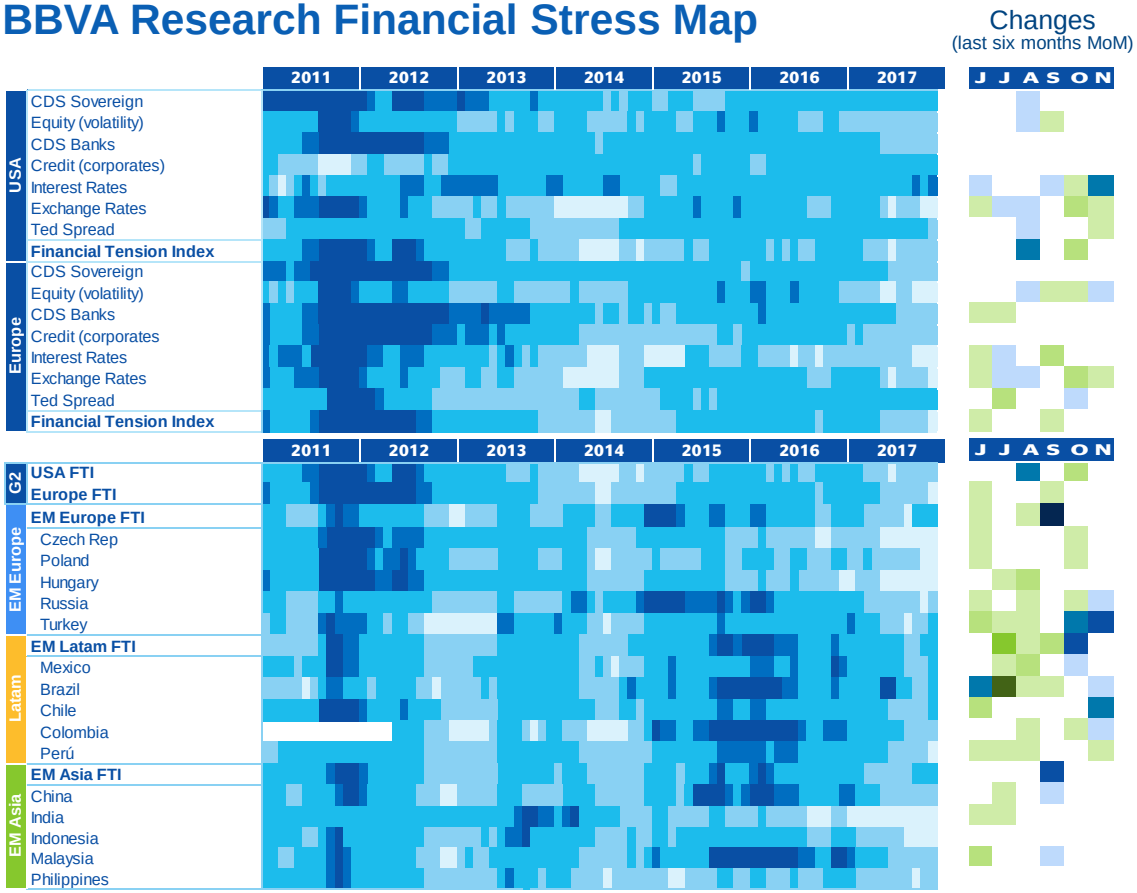


Source: FED and BBVA Research

Global risk aversion stabilizes at historically low levels. Despite recent geopolitical tensions, all indicators remain virtually unchanged

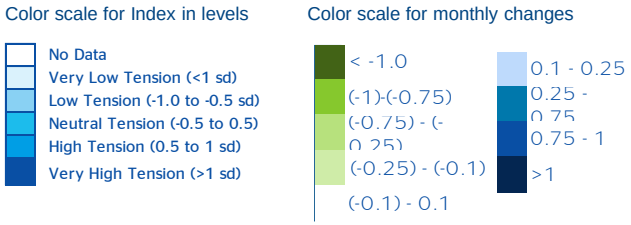
Financial tensions and global risk aversion

BBVA Research Financial Stress Map



Source: BBVA Research

- USA and Europe remain stable with some volatility in USA interest rates and a slight reduction in exchange rate tensions.
- EM Europe remains stable despite rising tensions in Turkey
- In LatAm there are no major changes in FTs. The increase in September was offset in November.
- Slight easing of tensions in EM Asia.



The stability of financial tensions in Europe and the USA adds to the reduction in EM, LatAm, EM Asia and EM Europe.

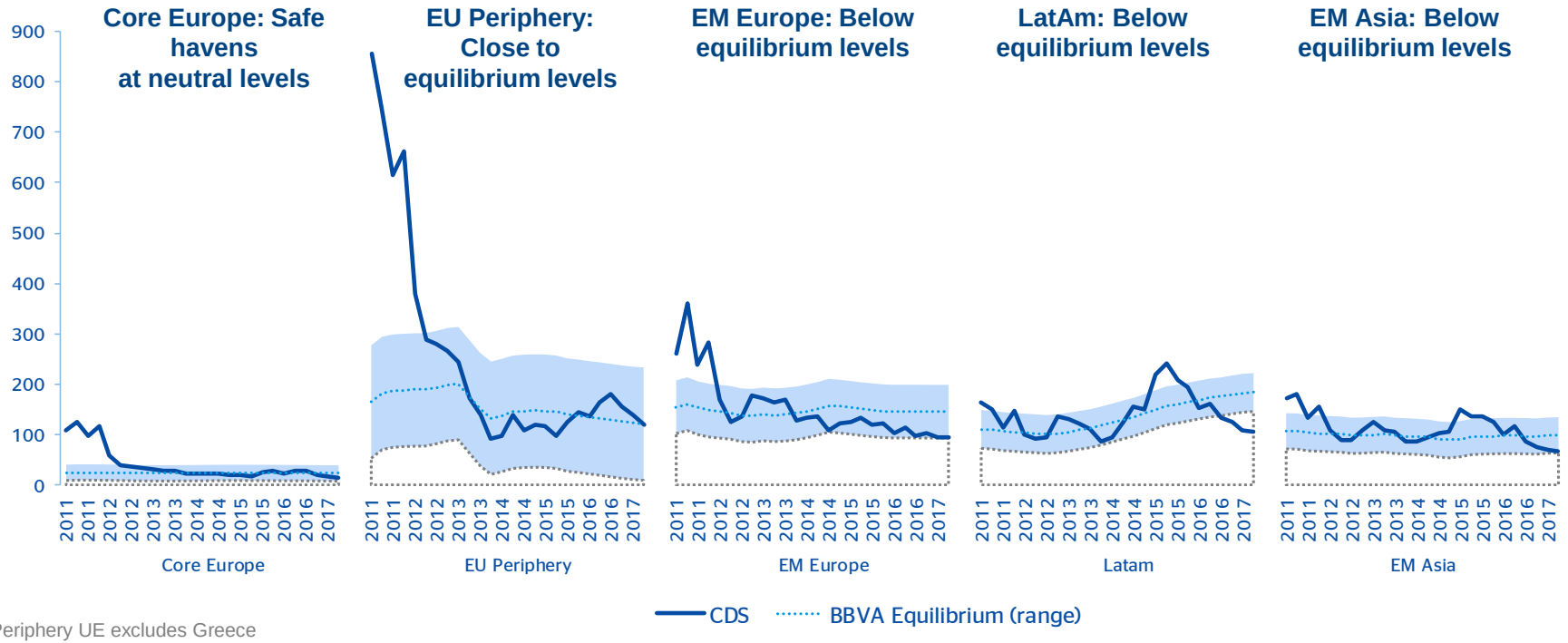
03

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

CDS and equilibrium risk premium: November 2017



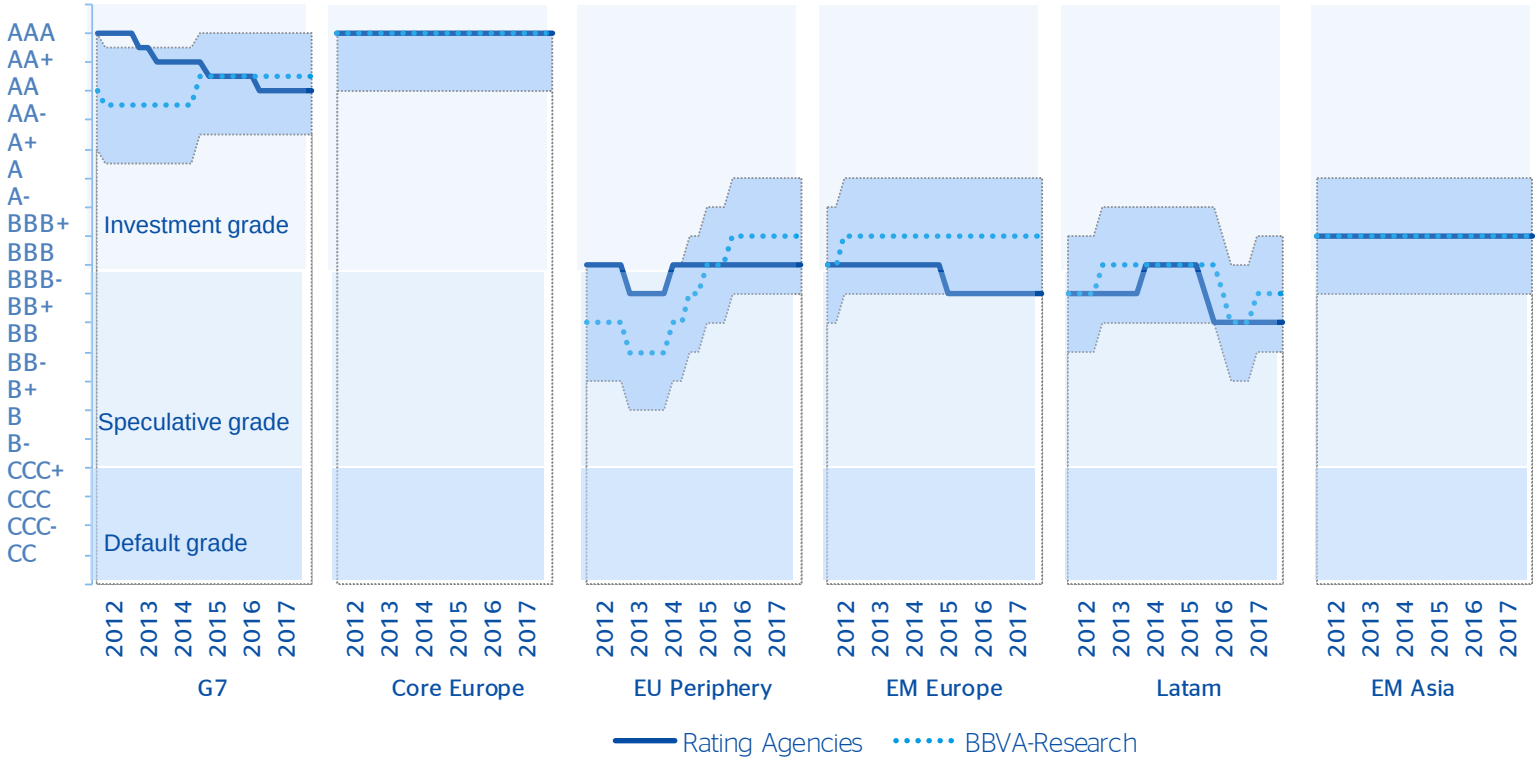
Periphery UE excludes Greece
Source: BBVA Research and Datastream

Historical minimum levels in several countries' CDS translate into significant gaps with respect to their "equilibrium" levels (according to long-term fundamentals), especially visible in EM Europe, LatAm and Asia EM.

Macroeconomic Vulnerability and Risk Assessment

Agencies' Sovereign Rating vs. BBVA Research

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



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

Except in EM Asia and Core Europe, the average rating of the agencies continues to fall below our fundamentals-based rating (BBVA Research), in line with the upgrade pressures seen in CDS sovereign markets

Macroeconomic Vulnerability and Risk Assessment

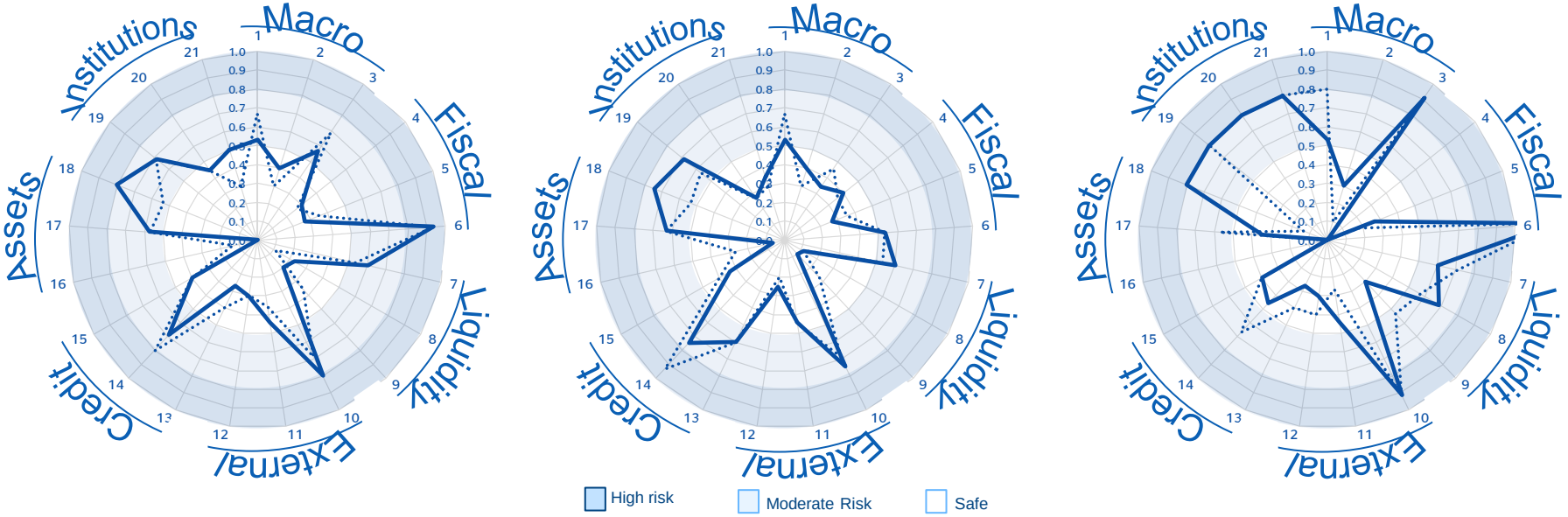
Developed markets: vulnerability radar 2017

(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: Increased vulnerability in external factors and in the stock market. It decreases in credit and liquidity indicators. High vulnerability remains in public debt

Core Europe: Increasing vulnerability in the stock market and political instability. All other risks contained in moderate levels with a decrease in corporate leverage

Periphery EU: Unemployment, public debt and stock market levels remain high, as do institutional levels. Credit related vulnerabilities fall



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

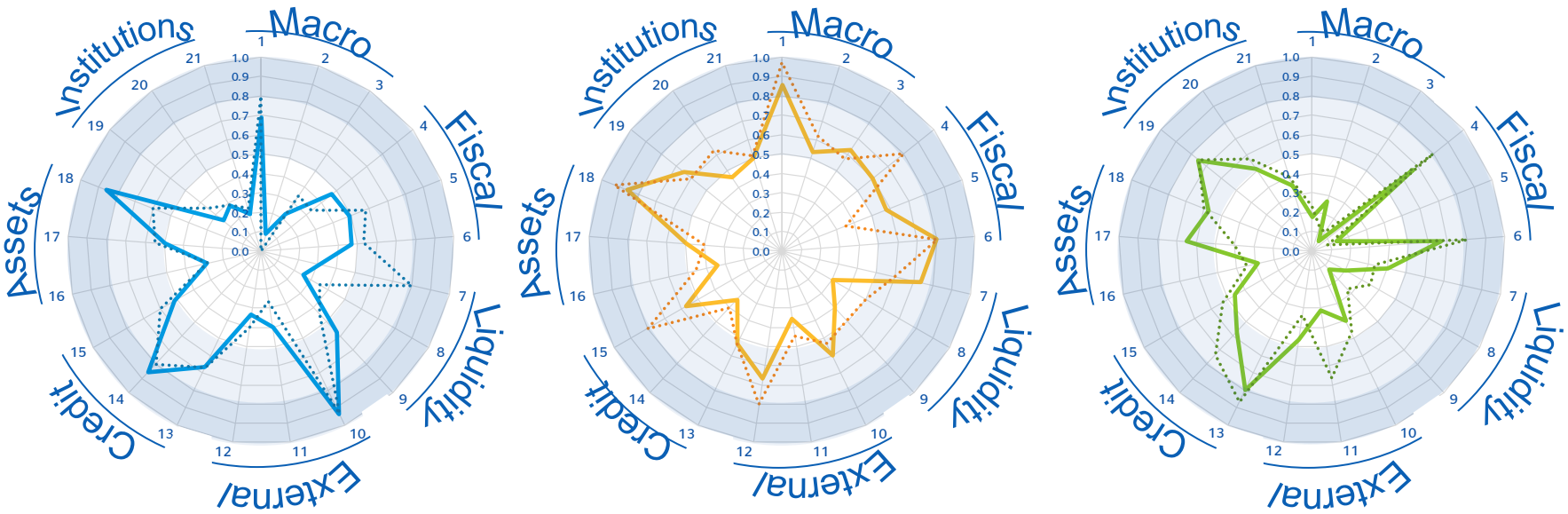
Emerging markets: vulnerability radar 2017

(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 stock markets, high corporate indebtedness and accumulated external debt. Decrease in fiscal and liquidity risks.

LatAm: Most vulnerabilities are at medium or low levels. The stock market, GDP growth and public debt levels stand out with high vulnerability.

EM Asia: Vulnerabilities related to credit and fiscal indicators have lessen, although household indebtedness remain high. The rest at medium or low levels.



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04

Special Topic: Deleveraging after the burst of a credit-bubble

Special Topic: Deleveraging after the burst of a credit-bubble

- **What happens to private leverage after the burst of a banking-crisis-inducing credit-bubble?** The obvious answer would be simply that it falls. But the international experience shows that the process and consequences of a systemic banking crisis (including those preceded or accompanied by credit bubbles) are actually quite heterogeneous. (Link to document: bit.ly/2A57uga)

- **How hard private leverage falls, how fast and what factors determine how severe is such a deleveraging process?** In a recent study we explore some tentative answers to these questions. We assemblage a rich database on the macro-financial dynamic preceding and following events of simultaneous occurrence of credit-bubbles and systemic banking crises, and used it in the estimation of a simultaneous equation econometric model able to explain and forecast the deleveraging dynamic following such kind of events.

Table 4.1. Summary of Credit Cycles' Characteristics around Banking Crises

		Mean	Median	Standard Deviation
Duration	Total	9.3	9.0	4.9
	Boom to Peak	5.0	4.5	3.1
	Peak to Trough	4.3	3.5	3.1
C/Y Change	Total	7	2	19
	Boom to Peak	29	18	36
	Peak to Trough	-22	-13	32
(C/Y at Trough)/(C/Y at Peak)		0.69	0.75	0.23
Speed Rate of Drop in C/Y		-6.0	-3.2	10.6

- We first build a database of private credit-to-GDP series from 1960 onwards in 88 countries, complementing the data from the IMF-IFS with data from the BIS series.

- We then construct a second database containing the timing and other characteristics of 113 banking credit-bubbles associated to a systemic banking crisis that has occurred in these countries, taking as reference the crises defined by Leuven & Valencia.

- The timing of these crises refers to the dates at which a credit boom starts, the date at which it peaks, and the date at which the burst ends, as well as the timing of the banking crisis itself. Based on these moments, we were able to account for several other characteristics of each crisis, such as the variation of the credit ratio during boom and bust cycles of a bubble, along with the duration, speed and severities of said cycles.

- The main descriptive statistics derived from this analysis are shown in Table 4.1.

Special Topic: Deleveraging after the burst of a credit-bubble

Regression Analysis

- We want to estimate a model able to predict the path of the Credit-to-GDP that follows the bursting of a credit bubble linked to a systemic banking crisis, given the macroeconomic and financial conditions prevalent in a country at the onset of the deleveraging process or at the peak of the bubble. Therefore, we perform a SUR regression analysis to estimate the effect of a group of explanatory variables on the following two dependent variables:
    i. Severity: The ratio between the credit-to-GDP ratio at the trough and the ratio at the peak of the crisis (C/Y Ratio (at Trough)/(at Peak)
    ii. Speed: The speed rate at which the credit-to-GDP ratio drops during the years of the credit boom (Speed Rate of Drop in C/Y)

- The final explanatory variables and their estimated effects on the dependent variables are listed in the Table 4.2, although several other variables were considered in different robustness exercises.

- According to our results, the main determinants of the severity and speed of a deleveraging process are the growth rate of the credit ratio during preceding boom (its speed) and the fiscal position of the country at the peak of the credit boom, measured by the public expenditure level and the fiscal balance.

Table 4.2. SUR Regression Analysis Results: Determinants of the severity and speed of a deleveraging process

	C/Y Ratio (at Trough)/(at Peak)	Speed Rate of Drop in C/Y
Speed Rate of Boom in C/Y	-0.0260***	0.5220***
Credit-to-GDP (at Peak)	0.0007	0.0215*
Public Expenditure (at Peak)	0.0047**	-0.1257***
Change in Reserves-to-Imports (Boom to Peak)	0.0175*	0.1367
Fiscal Balance-to-GDP (at Peak)	0.0130**	-0.4482***
Current Account-to-GDP (at Peak)	0.0063	-0.1870**
R-squared	**0.46**	**0.60**
Number of Observations	**51**	**51**

Note: ***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively.
Source: BBVA Research

Special Topic: Deleveraging after the burst of a credit-bubble

What if a systemic banking crisis had occurred in Canada or in Thailand in 2017?

- We use the results of the regression to estimate the expected amount and speed of the fall in the credit-to-GDP ratio after a hypothetical and banking-crisis-inducing burst of the credit-bubbles experienced by Canada and Thailand in the past years, assuming the respective bursts had started in 2015 in Thailand and 2016 in Canada. With our estimates we can also calculate the duration in years of the deleveraging.

- The results show a smaller contraction in the case of Canada, but with a higher speed, reflecting a slightly lower speed of the boom period, a higher public expenditure and a better accumulation of international reserves during the boom period in Canada than in Thailand, but a much worse external position (current account).

Figure 4.1. Canada: Predicted behavior of banking credit-to-GDP in the case a systemic banking crisis had burst in 2017

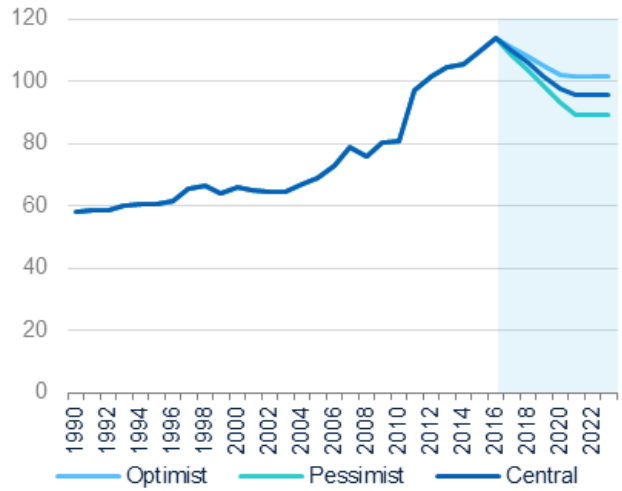
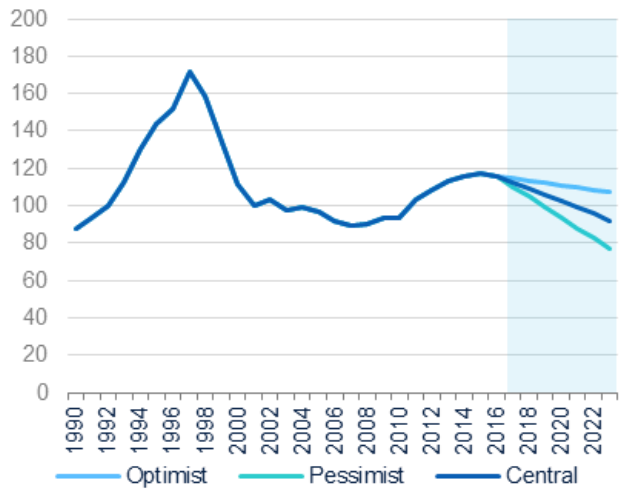


Figure 4.2. Thailand: Predicted behavior of banking credit-to-GDP in the case a systemic banking crisis had burst in 2017



05

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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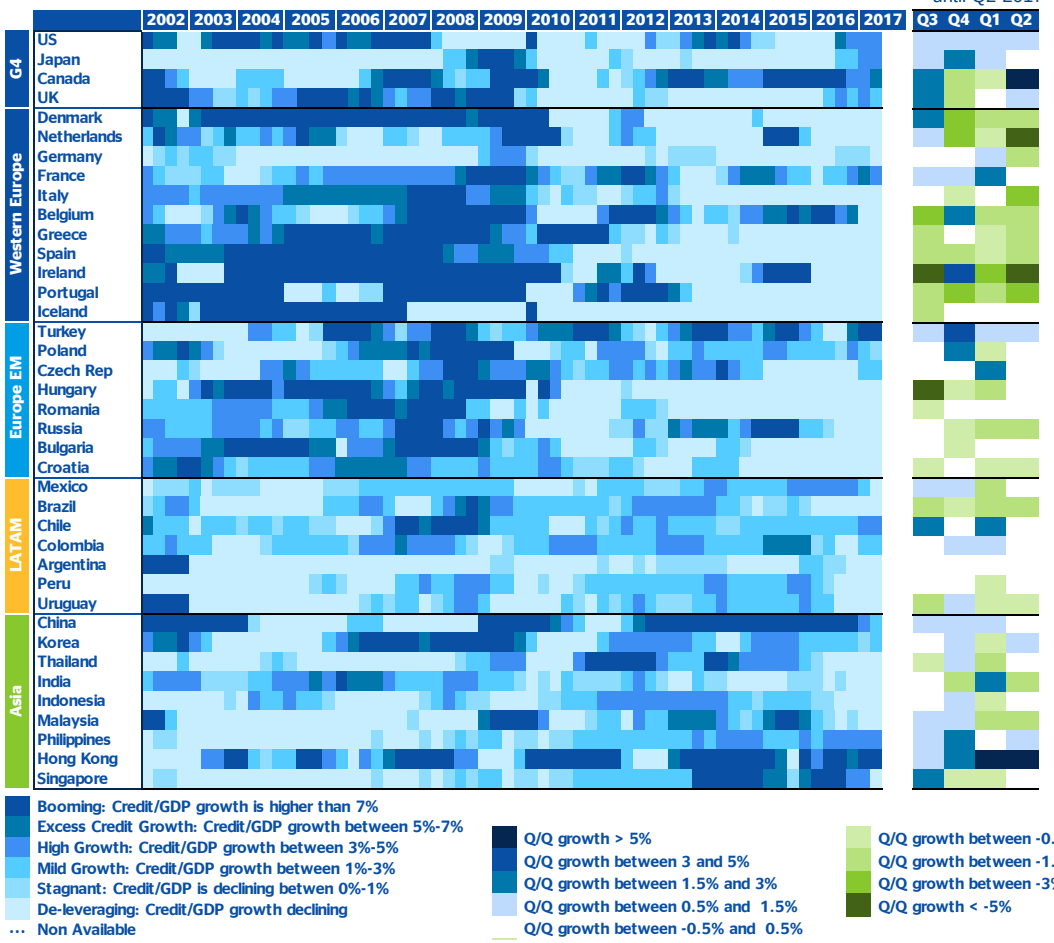
Assessment of financial and external disequilibria

SUMMARY INDEX

Mixed behavior of leverage by geographical areas. It continues declining in Western Europe and parts of Emerging Europe. It is increasing in the G4 economies and part of Asia. China's leveraging continues slowing down.

Private credit color map (2002-2017 Q2)

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



- Overall reduction of leverage levels in Western Europe. In contrast, the US, UK and Canada are on the rise.
- With the exception of Turkey, which is still growing, the rest of Europe's emerging economies are following a stable or declining pattern of leverage.
- Credit growth rates moderating in LatAm. Brazil and Uruguay continue their deleveraging process
- Leverage growth in China continued to slow down. Hong-Kong stands out with high growth rates during the last two quarters. Thailand, India and Malaysia remain stable.

Source: IFS, BIS & BBVA Research,

Assessment of financial and external disequilibria

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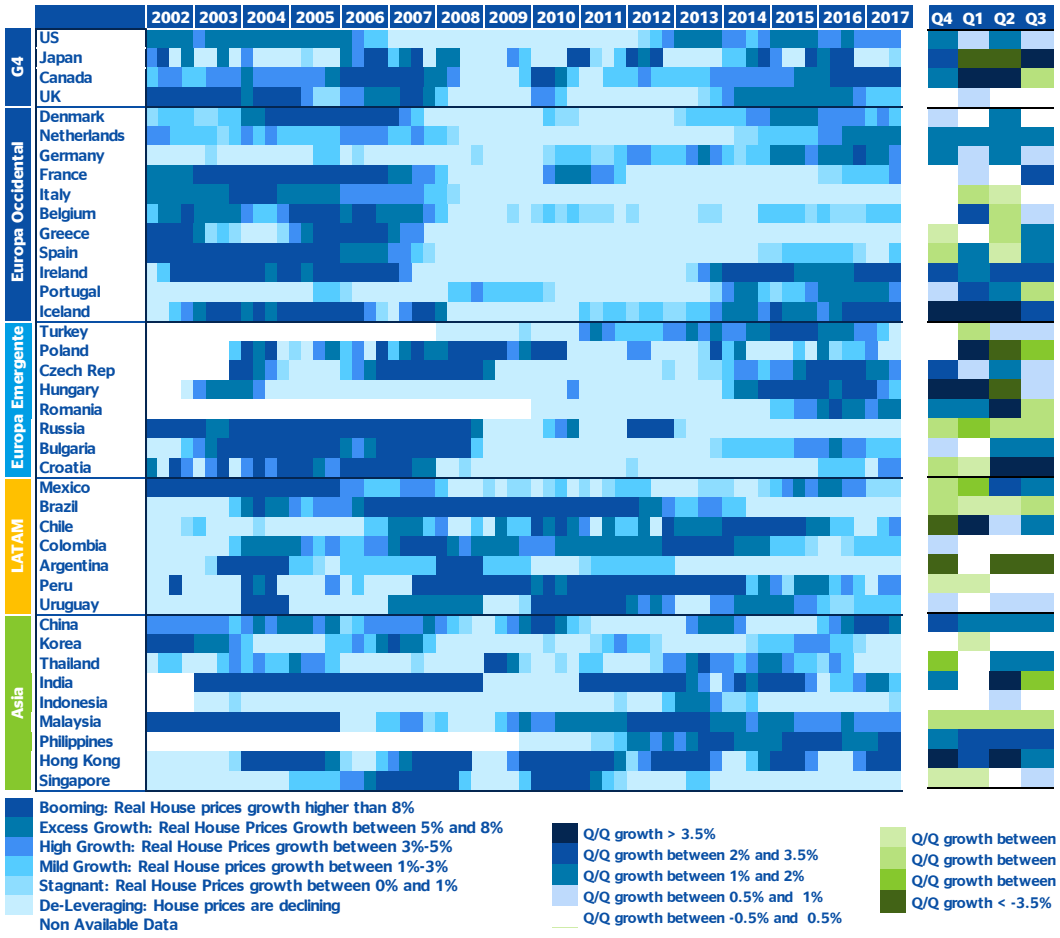
Housing prices continue to rise in most DMs. A mixed growth pattern is observed in the rest of the geographical areas and EMs.

Real housing prices color map (2002-2017 Q3)

(yearly change of real housing prices YoY)



- Strong housing price growth in most developed economies. Japan, Ireland and Iceland stand out.
- Less coordinated growth in Emerging Europe. It grows in Turkey, Czech Republic, Hungary, Bulgaria and Croatia. Decreases in Poland, Romania and Russia.
- Similar situation in LatAm. Price growth in Mexico, Chile and Uruguay. It is decreasing in Brazil and Argentina.
- Sustained growth in China, the Philippines and Hong Kong. Slight drop in India and Malaysia.

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

Assessment of financial and external disequilibria

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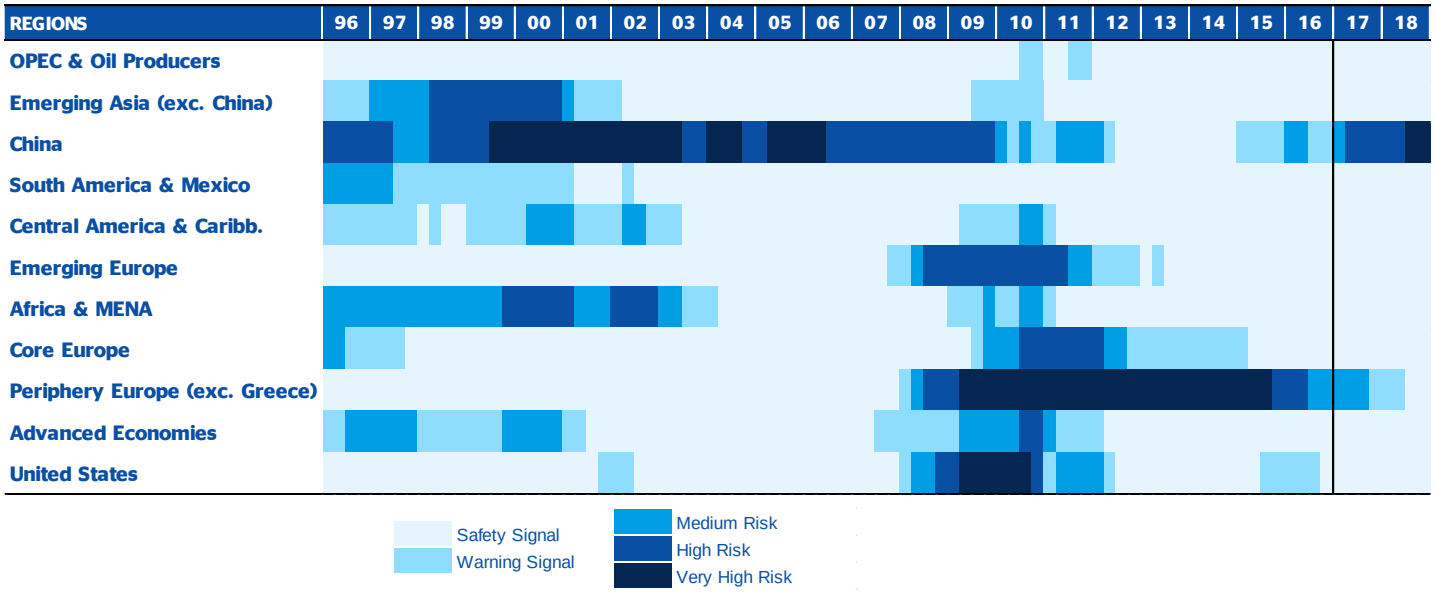
Early warning system (EWS) of Banking Crises (1996Q1-2018Q4)

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



- Despite the nascent slowdown in debt in China, there is still a significant risk of a banking crisis in the country.
- European periphery (excluding Greece) shows slight signs of banking stress
- The probability of a US crisis decreases slightly, the warning signal disappears.

- 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

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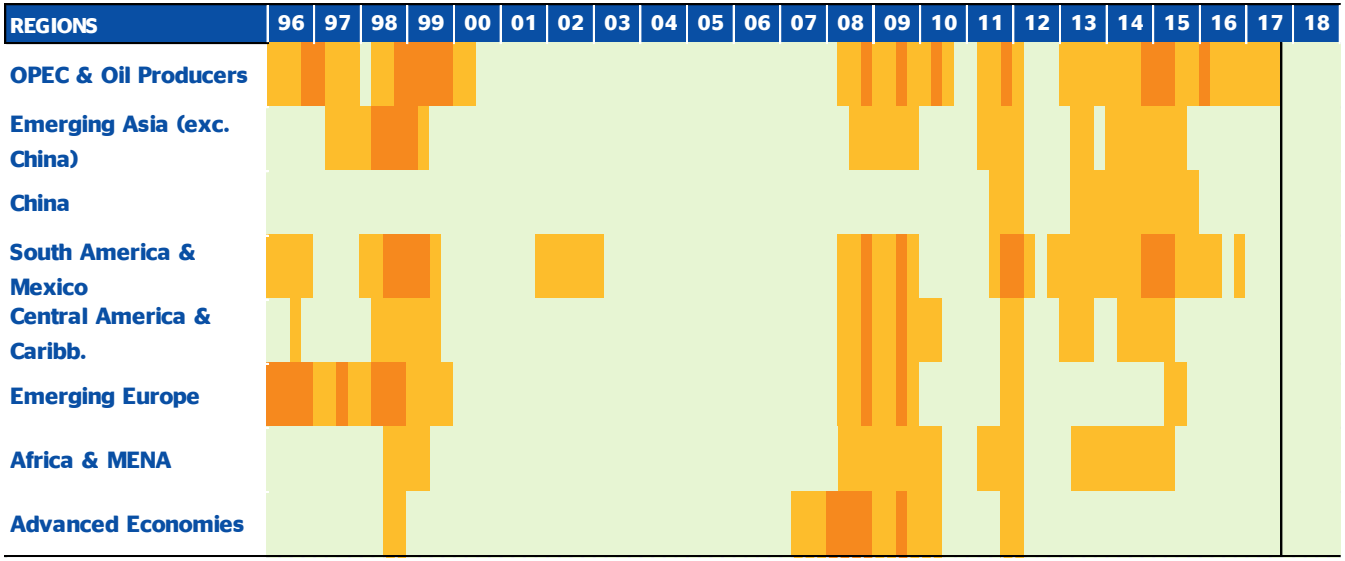
Early warning system (EWS) of Currency Crisis Risk: probability of currency tensions

The probability of a crisis is based on 4-quarters lagged data, e.g. Probability in Q4-2016 is based on Q4-2015 data



According to our currency crisis early warning system, we do not expect significant risks in any of the regions analyzed during the coming months.

Safe
Warning
High Risk
Very High Risk

- 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

The likelihood of exchange rate tensions in some OPEC countries and oil producers has significantly decreased for the coming quarters. We do not anticipate serious tensions in the coming months in these regions as a whole, although there may be tensions in countries within each region.

Vulnerability Indicators table by country

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Vulnerability Indicators Table

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Vulnerability indicators* 2017: 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	-2.3	-0.8	108	-2.4	98	0.0	16	10	30	2.2	1.8	4.4	4.0	4.7	22.4	79	74	64	-0.4	-1.3	-1.7
Canada	-1.4	-0.6	90	-3.4	116	-0.1	8	6	23	3.0	1.6	6.5	5.8	-6.8	6.2	101	105	135	-1.2	-2.0	-1.8
Japan	-3.8	-1.0	240	3.6	71	-1.1	30	11	10	1.5	0.1	2.9	4.3	16.4	23.7	57	102	49	-1.0	-1.5	-1.4
Australia	-0.5	-1.4	42	-1.6	111	1.4	3	1	40	2.2	2.0	5.6	-5.1	9.2	4.0	121	80	132	-1.0	-1.8	-1.8
Korea	0.7	-1.9	38	5.6	27	-1.7	1	4	13	3.0	1.9	3.8	1.2	-0.6	17.2	95	100	100	-0.2	-0.4	-1.1
Norway	-11.1	-1.4	33	5.5	161	-0.9	-9	8	56	1.4	1.9	4.0	-4.9	4.8	29.2	101	146	137	-1.2	-2.2	-2.0
Sweden	0.4	-2.7	39	3.9	191	-1.2	3	10	39	3.1	1.8	6.6	11.5	7.5	13.8	85	153	180	-1.0	-2.2	-2.0
Denmark	-1.2	-0.1	38	7.3	160	0.3	5	9	32	1.9	1.2	5.8	-5.4	4.2	14.2	118	108	301	-0.8	-2.2	-1.9
Finland	-0.8	-2.0	63	0.4	160	-0.8	6	7	69	2.8	0.5	8.7	-9.5	-2.3	11.9	67	112	133	-1.0	-2.3	-2.0
UK	-1.0	-0.6	89	-3.6	313	-9.3	7	5	32	1.7	2.8	4.4	1.4	1.9	6.9	86	75	55	-0.4	-1.9	-1.6
Austria	0.7	-1.2	80	2.1	176	1.3	4	4	73	2.3	1.7	5.4	-0.4	1.7	37.9	51	92	94	-0.8	-1.5	-1.8
France	-0.5	-1.3	97	-1.1	224	-0.4	10	7	56	1.6	1.1	9.5	4.0	2.4	19.8	59	127	107	0.1	-1.4	-1.4
Germany	1.2	-1.7	65	8.1	152	0.8	1	3	52	2.1	1.1	3.8	-1.1	5.7	22.1	53	53	87	-0.8	-1.8	-1.6
Netherlands	1.3	-1.8	57	10.0	569	0.6	1	3	48	3.1	1.4	5.1	-11.1	6.4	18.7	108	123	96	-0.9	-2.0	-1.9
Belgium	0.4	-1.1	104	-0.3	281	1.6	28	25	60	1.6	1.4	7.5	-6.2	1.6	7.9	59	161	55	-0.5	-1.6	-1.4
Italy	2.2	0.8	133	2.8	126	-0.5	9	5	32	1.5	0.9	11.4	-4.1	-2.7	38.4	42	77	99	-0.4	0.0	-0.3
Spain	-0.2	-1.3	85	1.8	176	0.1	19	16	45	3.1	1.9	17.1	-8.7	-0.4	18.2	63	100	102	-0.5	-0.5	-1.0
Ireland	1.1	-1.9	69	3.4	742	0.3	6	7	60	4.1	0.9	6.4	-32.8	11.1	14.0	50	215	49	-0.9	-1.6	-1.5
Portugal	2.7	-0.1	126	0.4	224	0.2	16	12	58	2.5	2.3	9.7	-12.1	6.6	20.8	70	114	117	-1.0	-1.0	-1.1
Greece	3.4	-1.8	180	-0.2	251	-1.0	15	9	82	1.8	1.0	22.3	-4.8	-2.6	33.6	60	63	146	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* 2017: 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	25	2.5	70	0.5	4	1.9	44	3.6	1.3	6.6	-0.7	2.2	36.4	21	78	81	0.0	0.2	0.0
Czech Rep	0.8	-1.5	35	0.6	98	6.3	4	14	66	3.5	2.1	2.8	2.4	5.8	21.0	31	57	84	-1.0	-0.5	-1.1
Croatia	1.6	0.2	82	3.8	84	1.2	15	2.9	38	2.9	1.0	13.9	-2.5	3.2	-6.7	33	28	94	-0.7	-0.2	-0.4
Hungary	0.2	-1.7	73	4.8	110	2.0	16	1.0	46	3.2	2.7	4.4	-9.7	4.1	34.8	20	80	87	-0.7	-0.1	-0.5
Poland	-1.2	-1.8	54	-1.0	71	-0.1	9	1.7	48	3.8	1.9	4.8	0.5	-3.1	36.5	36	89	110	-0.5	-0.7	-0.7
Romania	-2.2	-3.7	39	-3.0	48	-3.4	8	2.3	44	5.5	2.0	5.3	-1.4	6.5	13.6	16	37	86	-0.3	0.0	-0.3
Russia	-1.6	0.0	17	2.8	32	-0.1	4	4.8	18	1.8	4.0	5.5	-5.3	-7.9	5.0	16	50	106	0.9	0.9	0.8
Turkey	-1.8	-2.1	28	-4.5	52	0.6	7	1.1	37	6.0	10.0	11.3	7.1	1.2	34.5	18	68	126	2.0	0.2	0.2
Argentina	-3.9	-10.2	53	-4.6	38	-3.6	11	1.0	39	2.8	23.1	8.8	-0.5	-19.4	56.4	7	12	62	-0.2	0.3	0.3
Brazil	-1.4	3.5	83	-0.5	34	1.6	13	4.4	9	0.6	3.2	12.8	-5.8	-5.5	27.3	23	41	95	0.4	0.4	0.1
Chile	-0.4	-1.4	25	-2.3	65	2.6	4	1.9	18	1.5	2.1	6.8	4.8	2.1	33.0	35	52	153	-0.5	-1.1	-1.1
Colombia	0.1	0.4	49	-3.8	40	-23.8	5	3.4	31	1.7	4.0	9.3	1.3	2.4	12.7	21	26	114	1.0	0.3	0.3
Mexico	0.4	-1.2	54	-1.8	38	-6.2	9	3.0	33	2.2	6.5	3.6	-0.4	0.8	9.6	16	26	83	0.8	0.8	0.5
Peru	-1.2	-2.2	27	-1.3	38	-5.5	6	7.9	46	2.4	1.9	6.7	-1.6	3.9	21.2	15	25	99	0.2	0.4	0.5
China	-2.8	-5.6	66	1.4	11	-2.3	4	3.9	..	6.8	2.3	4.0	2.9	9.0	4.9	46	165	86	0.5	0.3	0.2
India	-1.3	-3.8	69	-1.4	19	7.3	11	4.2	6	6.7	4.5	3.4	-3.0	6.6	12.3	11	46	77	1.0	0.3	0.1
Indonesia	-1.0	-2.6	29	-1.7	33	2.1	4	2.7	59	5.2	4.0	5.4	-0.7	-1.1	10.0	17	22	97	0.4	0.4	0.4
Malaysia	-1.1	-3.0	55	2.4	60	-5.9	11	1.2	23	5.4	3.8	3.4	-2.1	3.8	6.2	90	--	110	-0.1	-0.1	-0.5
Philippines	0.9	-3.5	34	-0.1	21	-6.9	7	4.8	28	6.6	2.9	6.0	4.0	8.3	7.1	3	39	66	1.3	0.5	0.4
Thailand	-0.9	-1.5	41	10.1	32	0.9	7	3.3	12	3.7	0.6	0.7	-2.3	-3.2	12.8	70	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. 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

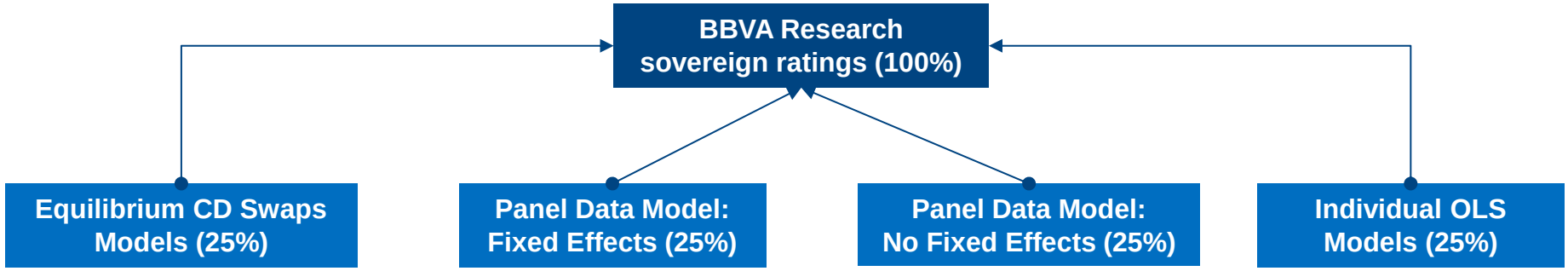
Appendix
Methodology: models and BBVA country risk

- 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



Fuente: 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.

This report has been prepared by the unit of Global Modelling & Long Term Analysis

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