

# Country Risk Report 2020

November 2020  
(Data as of October 31)

# Summary

## SOVEREIGN RATINGS AND SPREADS:

- **Agencies' sovereign ratings have remained relatively stable in the last year despite the ongoing pandemic crisis.** The changes we have observed are mostly downgrades, and mainly concentrated in emerging economies. →
- **In comparison, our own estimated BBVA-Research ratings have worsened more than Agencies' ratings,** especially in G7, Peripheral Europe and LatAm, due to the strong deterioration of fiscal vulnerabilities and economic activity. →
- **Government balances and public debt levels across the board have soared to levels that would normally signal a highly vulnerable position,** mainly due to the unprecedented fiscal stimuli required by the public policy measures that have been implemented across the world in order to reduce the economic harm caused by the pandemic. →
- **We estimate that rating agencies have reacted differently to the COVID shock than how they have historically reacted.** They have not downgraded or they have maintained ratings despite the great deterioration of the macro and fiscal outlook, probably because they have been weighing up the increase in vulnerability vs. the benefits and support from the fiscal stimuli, and also because of the transitory nature of the COVID shock. →
- However, if the public policies do not have the expected effects or the economic activity recovers more slowly, rating agencies will have to evaluate the risks in the same way as in the past. **In such case, we estimate that (on average) ratings should be at least one notch lower across most geographies.** →
- **Similarly to Rating Agencies, sovereign spreads in CDS markets also seem to have reacted differently than what they should normally have done.** Sovereign spreads saw a strong widening across geographies due to COVID shock in March, but however, they quickly recovered to previous levels in most geographies (with some exceptions such as LatAm and Turkey). →

# Summary

- **Conversely, our estimated equilibrium levels have also widened strongly across the board** due to the fiscal and macro consequences of the COVID shock and our estimations suggest such widening should persist in the coming years. →
- In this sense, **we have also found evidence that financial markets have priced the macro and fiscal deterioration due to COVID differently this year than in the past**, either because they expect more monetary or fiscal stimuli in the future, or because they also believe that the extraordinary policy measures translate into a lower risk than what the hard data would suggest otherwise. →
- **We estimate that spreads should have been significantly higher than what we have observed:** For instance, our estimates suggest that Italian CDS would have been 59 bps higher in Q2-2020 had it not been for the central banks' balance sheet expansion (29 bps) and other effects probably related to public support measures (30 bps). →

## FINANCIAL AND PRIVATE SECTOR VULNERABILITIES:

- **On the private sector side, our estimated debt gaps (debt ratio vs. equilibrium) levels have surged in multiple countries during the COVID crisis**, due to a combination of higher Debt-to-GDP ratios and a highly deteriorated macro-outlook that reduces equilibrium levels (e.g. lower GDP per capita). →
- **Similarly, the COVID shock has worsened the housing prices gaps in several geographies that were already showing warning levels**, due to the decline of income per capita and other determinants of the estimated equilibrium. →
- **Consequently, the likelihood of future systemic banking crises have surged in several countries**, mainly in Core Europe and other Advanced Economies, and it has exacerbated Chinese private leverage vulnerability, which was previously improving. →
- **On the bright side, external vulnerabilities have not surged in the same manner, and consequently, currency tensions have been relatively muted** and we also expect them to continue to be so in the coming months. → →

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

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- Financial Tensions

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# 01

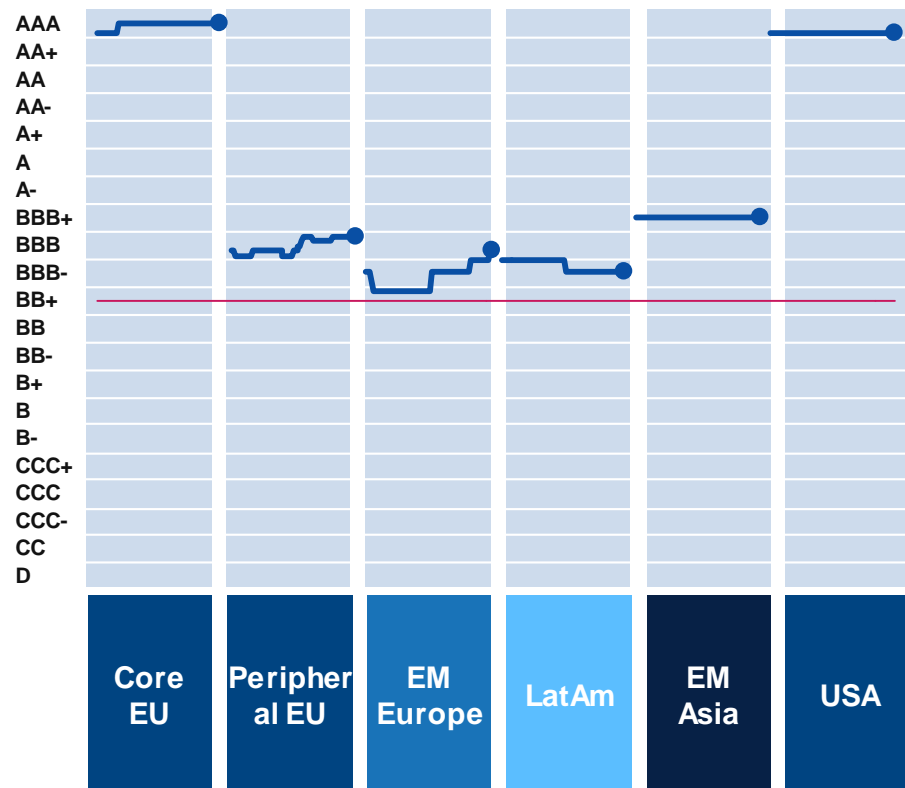
## Sovereign Markets and Ratings Update

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

# Sovereign markets and rating agencies update

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## SOVEREIGN RATING INDEX 2014-2020



- Agencies' Ratings have remained relative stable despite the ongoing pandemic, and the changes we have observed are mostly downgrades, and mainly concentrated in emerging economies.
- Among Developed Countries, **UK** was downgraded by Moody's and Fitch. This latter agency also worsened Italy but improved Greece
- **LATAM** ratings were mostly revised downward by Fitch, namely Mexico, Chile and Colombia. **Turkey's** instability was considered by Moody's to continue the downgrade trend to B1
- **Argentina entered into a selective default** at the beginning of the year, but reached a debt restructuring agreement with most of its private creditors, which took the country back to a similar rating than the one it had a year ago

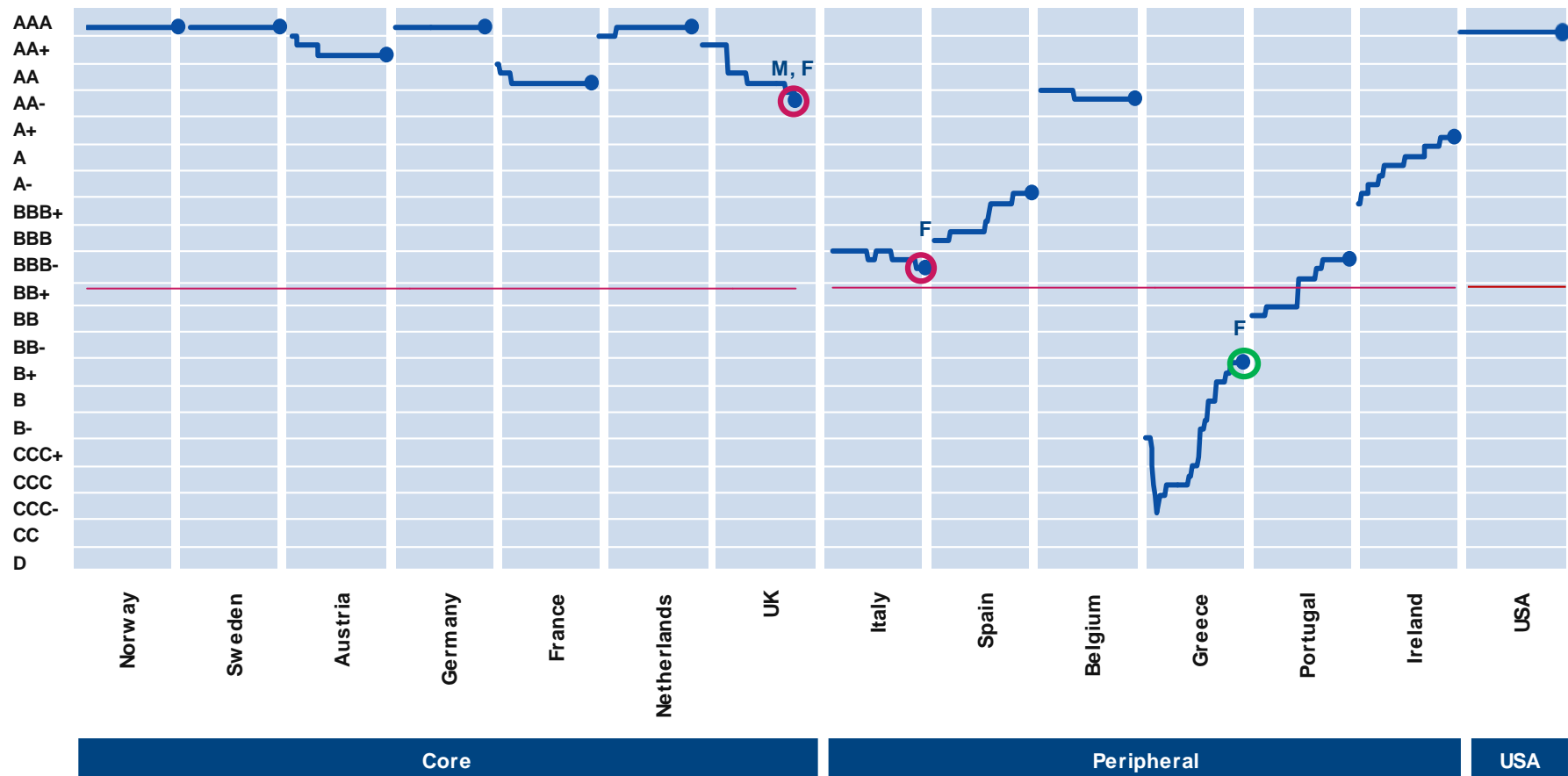
Sovereign Rating Index: An index that translates the three important rating agencies ratings letters codes (Moody's, Standard & Poors and Fitch) to numerical positions from 20 (AAA) to 0 (default). The index shows the average of the three rescaled numerical ratings.

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

# Sovereign markets and rating agencies update

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## SOVEREIGN RATING INDEX 2014-2020: DEVELOPED MARKETS

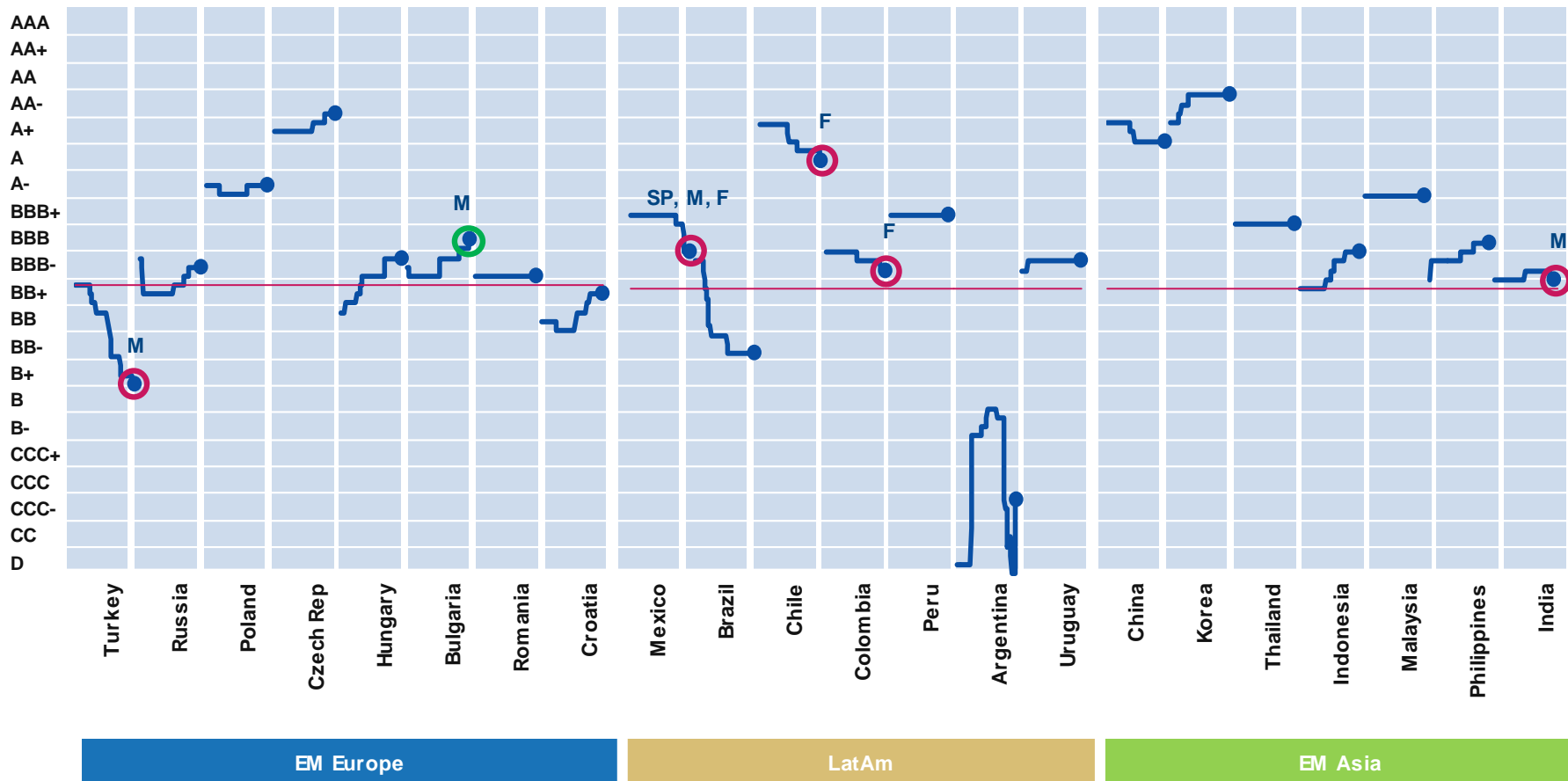


○ Downgrade ○ Upgrade **SP**: Standard & Poor's **M**: Moody's **F**: Fitch

# Sovereign markets and rating agencies update

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## SOVEREIGN RATING INDEX 2014-2020: EMERGING MARKETS



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

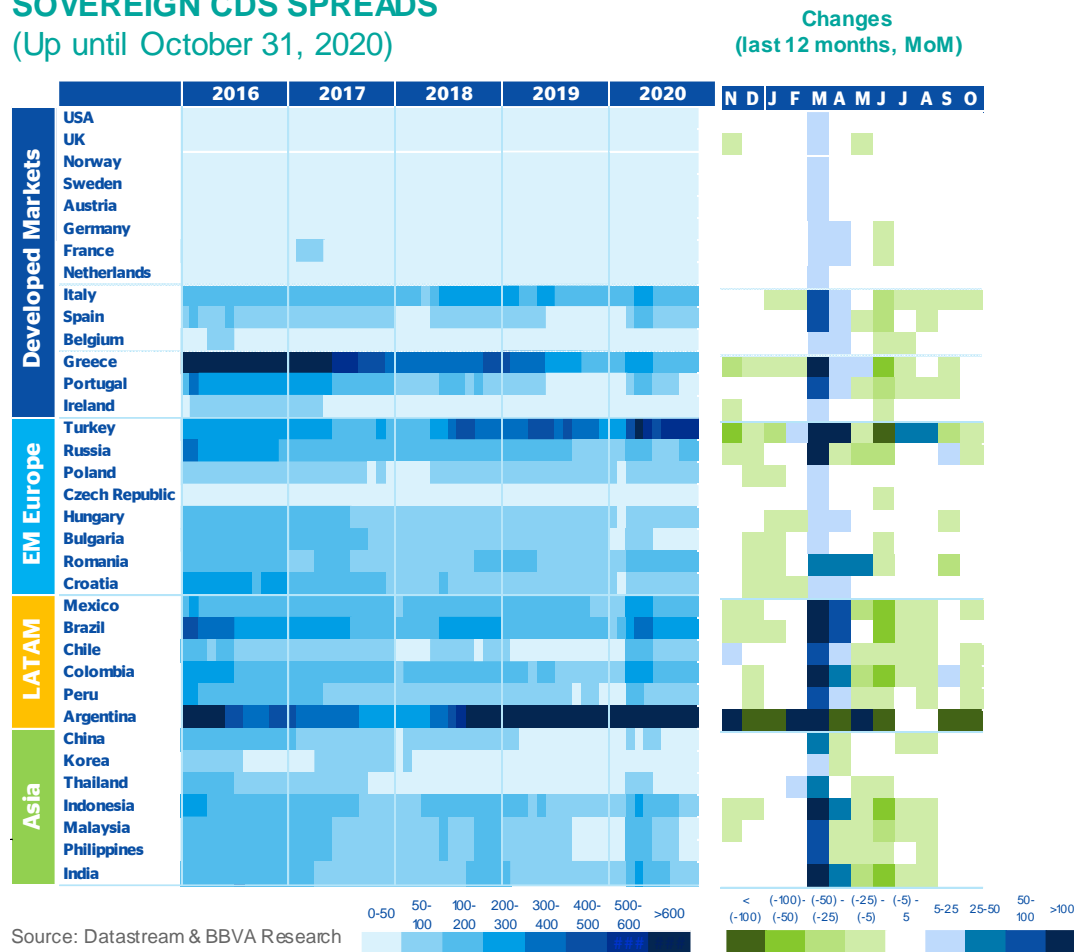


# Sovereign markets and rating agencies update

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## SOVEREIGN CDS SPREADS

(Up until October 31, 2020)



- Swift recovery to previous narrowing trend of CDS spread after coronavirus shock in March. More severe widening in March for peripherals
- Similar recovery reaction across EM Europe, except for Romania, Russia and especially for Turkey, with a wider spread change also after March
- Stronger widening spread in LatAm, not recovering to spread levels before COVID shock
- Similar to European peripherals, CDS spread strongly widened in March but quickly recover to spread levels before pandemic

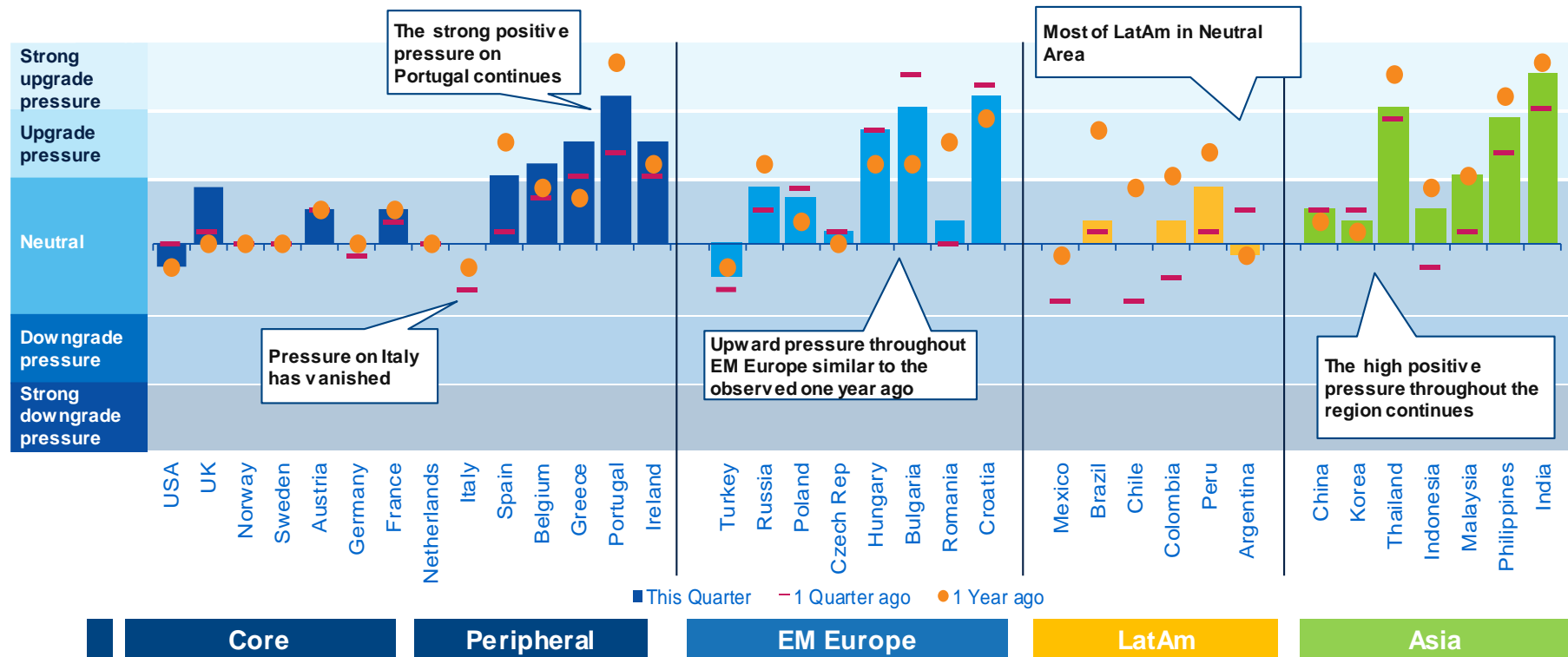
Strong widening of sovereign spreads in March-April across the board due to COVID shock. The recovery to spread levels before March 2020 is generalized, with the exception of LatAm and Turkey

# Sovereign markets and rating agencies update

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## MARKETS VS. RATINGS PRESSURE GAP (LAST DATE: OCTOBER 31, 2020)

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



Source: BBVA Research

Despite the strong widening of sovereign spreads in March 2020, upgrade pressures persist in 2020 in EU Periphery, EM Europe and EM Asia. The exceptions are Turkey and LATAM, where pressures are neutral

# 02

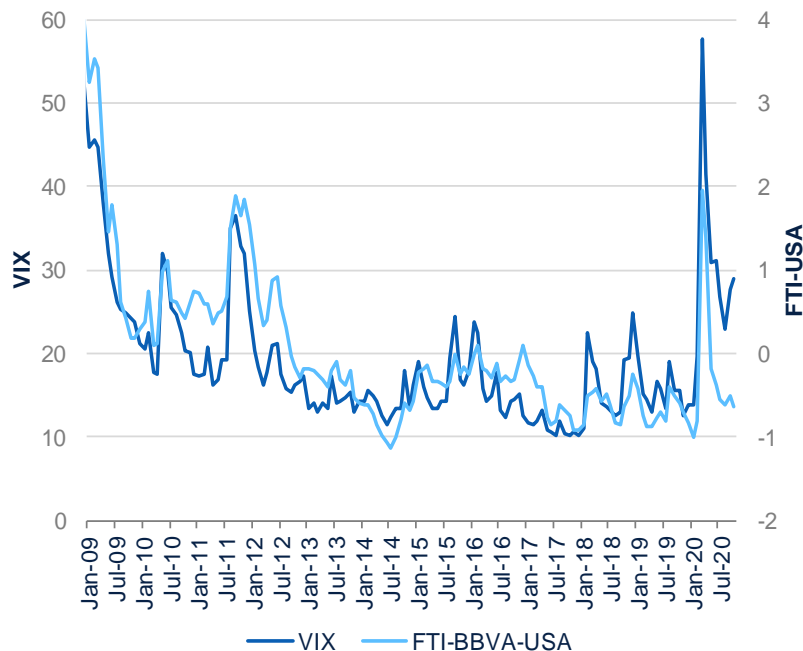
## Financial Markets, Financial Tensions and Global Risk Aversion

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

# Financial Tensions and Global Risk Aversion (GRA)

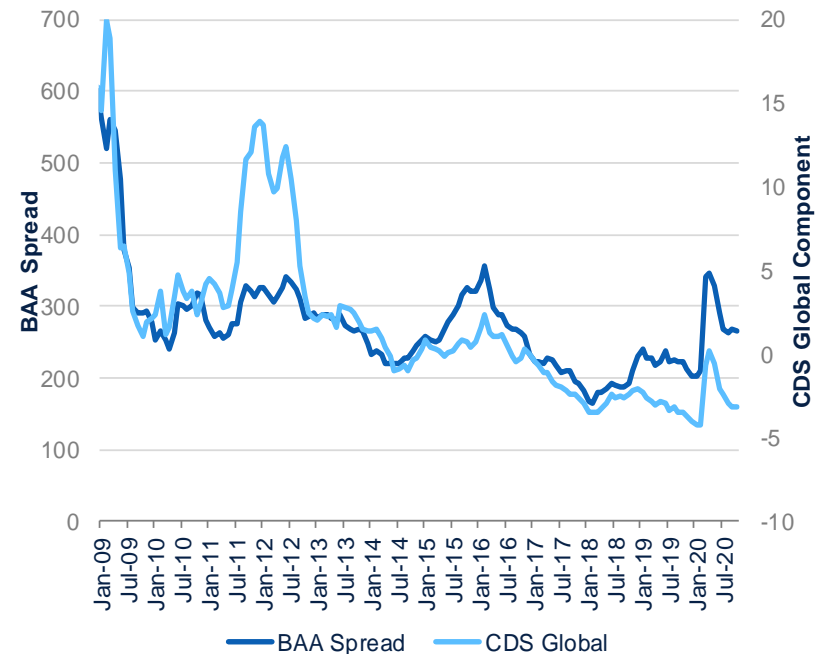
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## GLOBAL RISK AVERSION INDICATORS: VIX & FTI (Monthly Average)



Source: Bloomberg and BBVAResearch

## 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

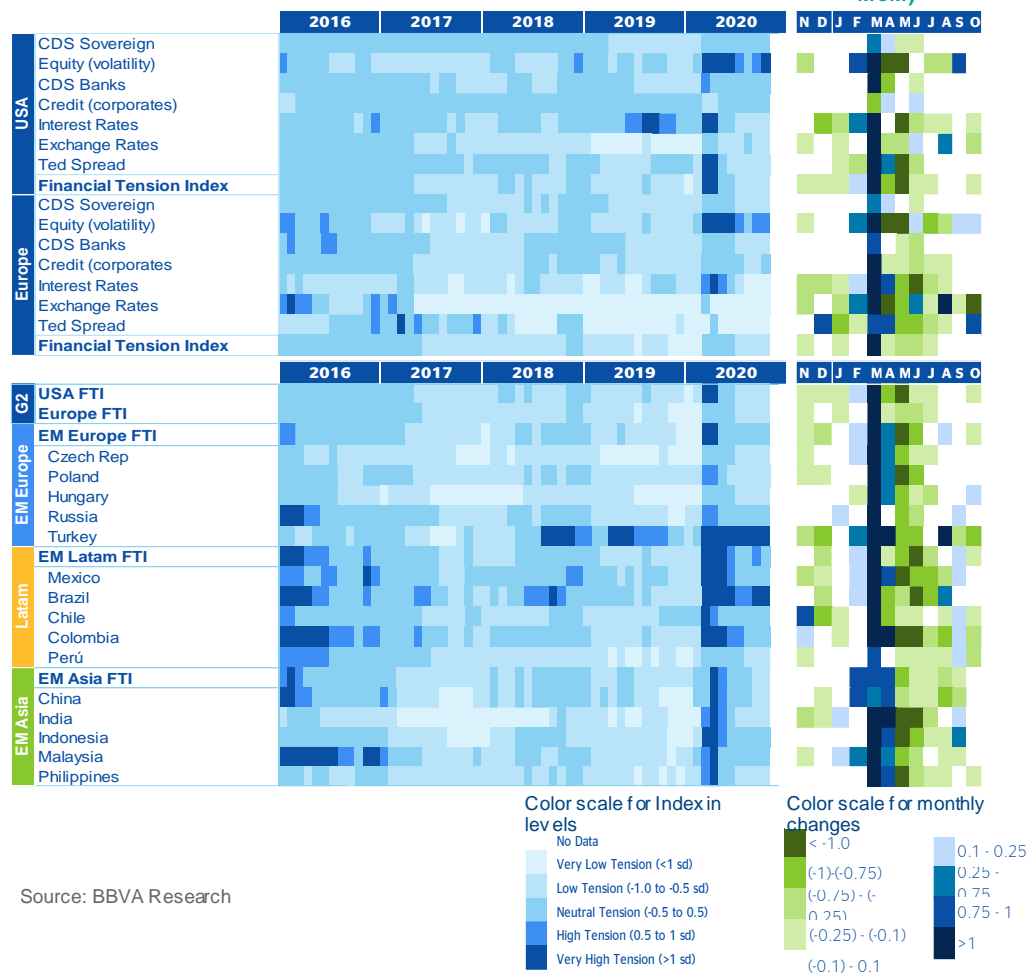
Global Risk Aversion indicators quickly restored levels priors to Q1-2020 spike, although VIX bounced again in October mainly due to US-Elections. The decoupling trend of CDS and BAA spread observed in 2019 continues

# Financial tensions (FT) and global risk aversion (GRA)

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## BBVA RESEARCH FINANCIAL STRESS MAP

(Monthly average, up until October 31)



Source: BBVA Research

- High level of FT in US and Europe in Q1-2020 led by volatility in equity, interest rates and Ted spread. Subsequent relaxation mainly thanks to relaxation of the two latter ones due to strong central banks' monetary responses
- FT peaked in Q1-2020 and relaxed afterwards except for Turkey, where tensions remain elevated
- Financial tensions have also remained high in Brazil and Colombia after the March peak
- Swift recovery to levels of tensions prior COVID-19 shock in EM Asia

FT soared in Q1-2020 across all regions and markets, with Equities and Interest Rates and Turkey and LatAm countries among the most stressed but relaxed quickly afterwards

# 03

## Macroeconomic vulnerability and in-house regional country risk assessment

BBVA-Research sovereign ratings by regions

Equilibrium CDS by regions

Vulnerability Radars by regions

# Macroeconomic Vulnerability and Risk Assessment

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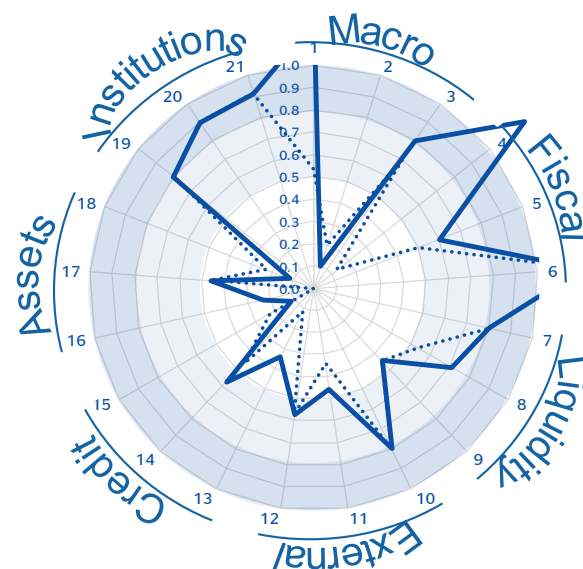
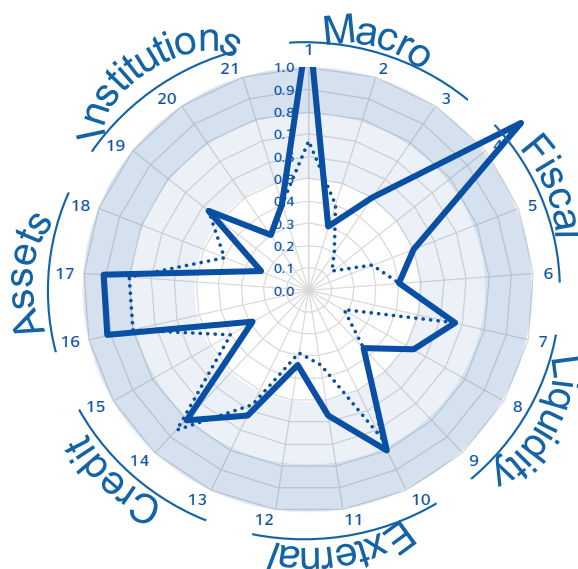
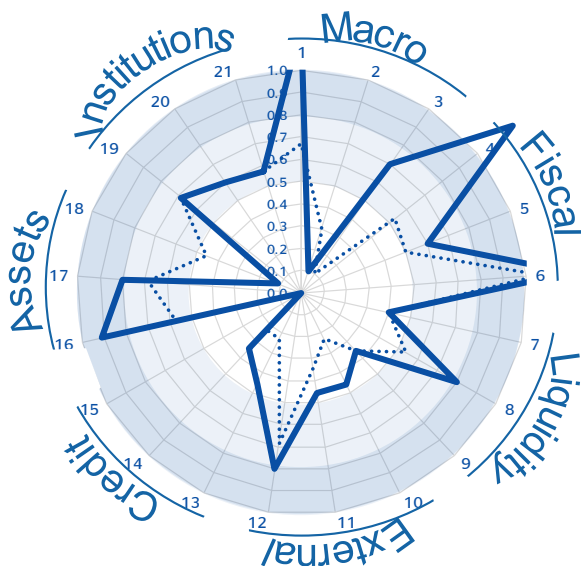
## DEVELOPED MARKETS: VULNERABILITY RADAR 2020

(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:** COVID shock has caused an upsurge in fiscal vulnerabilities, while also worsening private-debt and housing prices vulnerabilities to high risk levels

**Core Europe:** Sharp rise in fiscal vulnerabilities due to COVID shock, which has also pushed private-debt and housing prices gaps forward

**Periphery EU:** Strong shock to fiscal vulnerabilities that were previously improving. However, private leverage vulnerabilities remain remarkably low



**Macro:** (1) GDP (% YoY) (2) Prices (% YoY) (3) Unemployment (% LF).

**Fiscal:** (4) Government Balance (%GDP) (5) Interest rate – GDP %YoY (6) Public debt (% GDP).

**Liquidity:** (7) Debt by non-residents (%total) (8) Financial needs (%GDP) (9) Short-term External Debt (%).

**External:** (10) External debt (%GDP) (11) RER appreciation (% deviation) (12) CAC balance (%GDP).

**Private Debt:** (13) Household (%GDP) (14) Corporate (%GDP) (15) Credit-to-deposit (%).

**Assets:** (16) Private Debt Gap (%GDP) (17) Housing Prices Gap (%GDP) (18) Equity (%).

**Institutions\*:** (19) Political stability (20) Corruption (21) Rule of law. (\*relative position of each group vis-à-vis the Developed/Emerging regions as a whole)

High risk

Moderate Risk

Safe

# Macroeconomic Vulnerability and Risk Assessment

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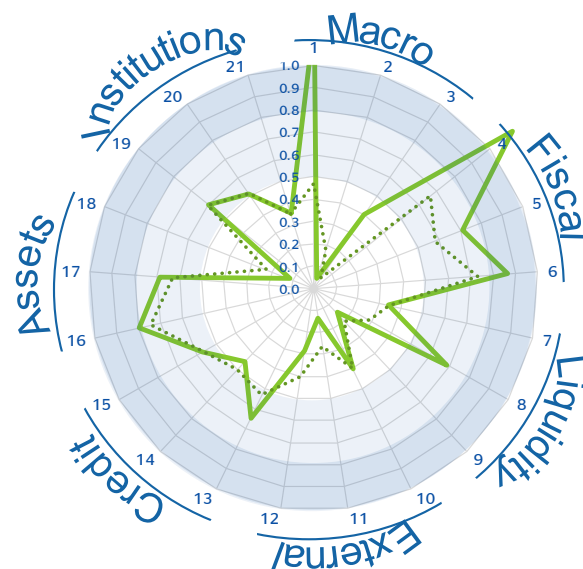
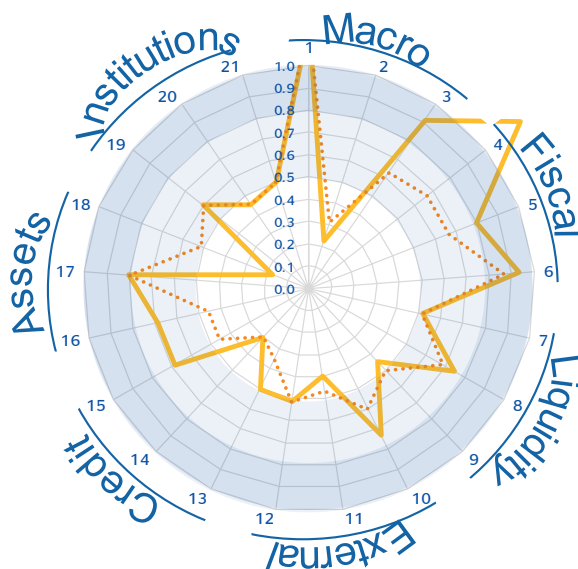
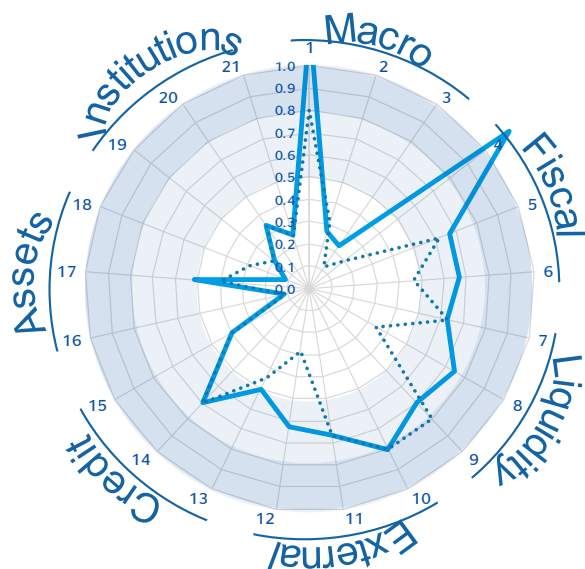
## EMERGING MARKETS: VULNERABILITY RADAR 2020

(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:** Upsurge in macro and fiscal vulnerabilities due to COVID crisis. Liquidity and external vulnerabilities are also rising

**LatAm:** COVID shock has exacerbated the already high macro and fiscal vulnerabilities. Housing price vulnerability remains high and private debt risk is worsening

**EM Asia:** Strong deterioration of fiscal vulnerabilities. Housing prices gaps are also rising



**Macro:** (1) GDP (% YoY) (2) Prices (% YoY) (3) Unemployment (% LF).

**Fiscal:** (4) Government balance (% GDP) (5) Interest rate – GDP %YoY (6) Public debt (% GDP).

**Liquidity:** (7) Debt by non-residents (%total) (8) Financial needs (%GDP) (9) Reserves to ST Ext. Debt (%)

**External:** (10) External debt (%GDP) (11) Reserves to ARA Metric (%) (12) CAC balance (%GDP).

**Private Debt:** (13) Household (%GDP) (14) Corporate (%GDP) (15) Credit-to-deposit (%).

**Assets:** (16) Private Debt Gap (%GDP) (17) Housing Prices Gap (%GDP) (18) Equity (%).

**Institutions\*:** (19) Political stability (20) Corruption (21) Rule of law. (\*relative position of each group vis-à-vis the Developed/Emerging regions as a whole)

High risk

Moderate Risk

Safe

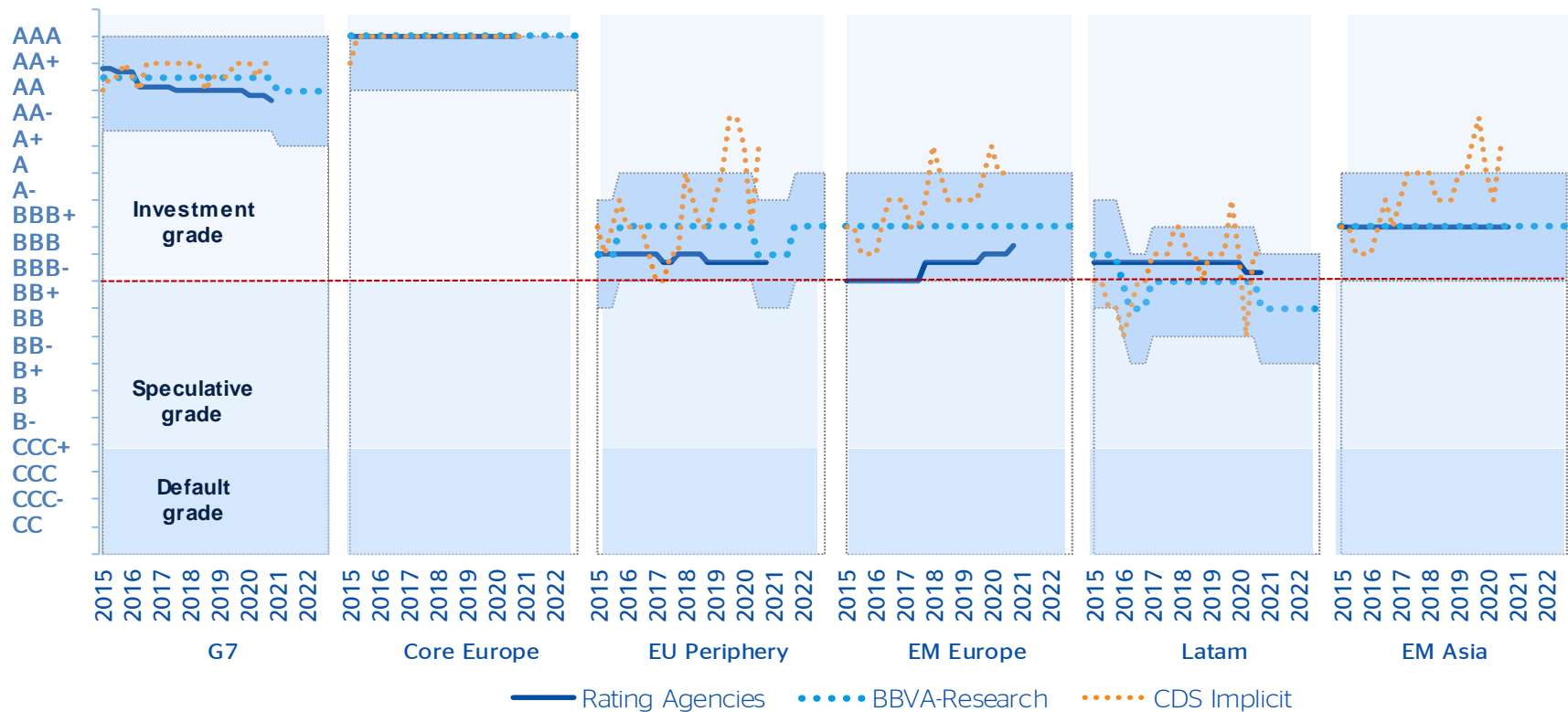


# Macroeconomic Vulnerability and Risk Assessment

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## AGENCIES' SOVEREIGN RATING VS. BBVA RESEARCH RATING AND MARKET'S IMPLICIT RATING

Median Agencies' Rating, BBVA's rating (+/-1 std. dev.) and CDS implicit rating



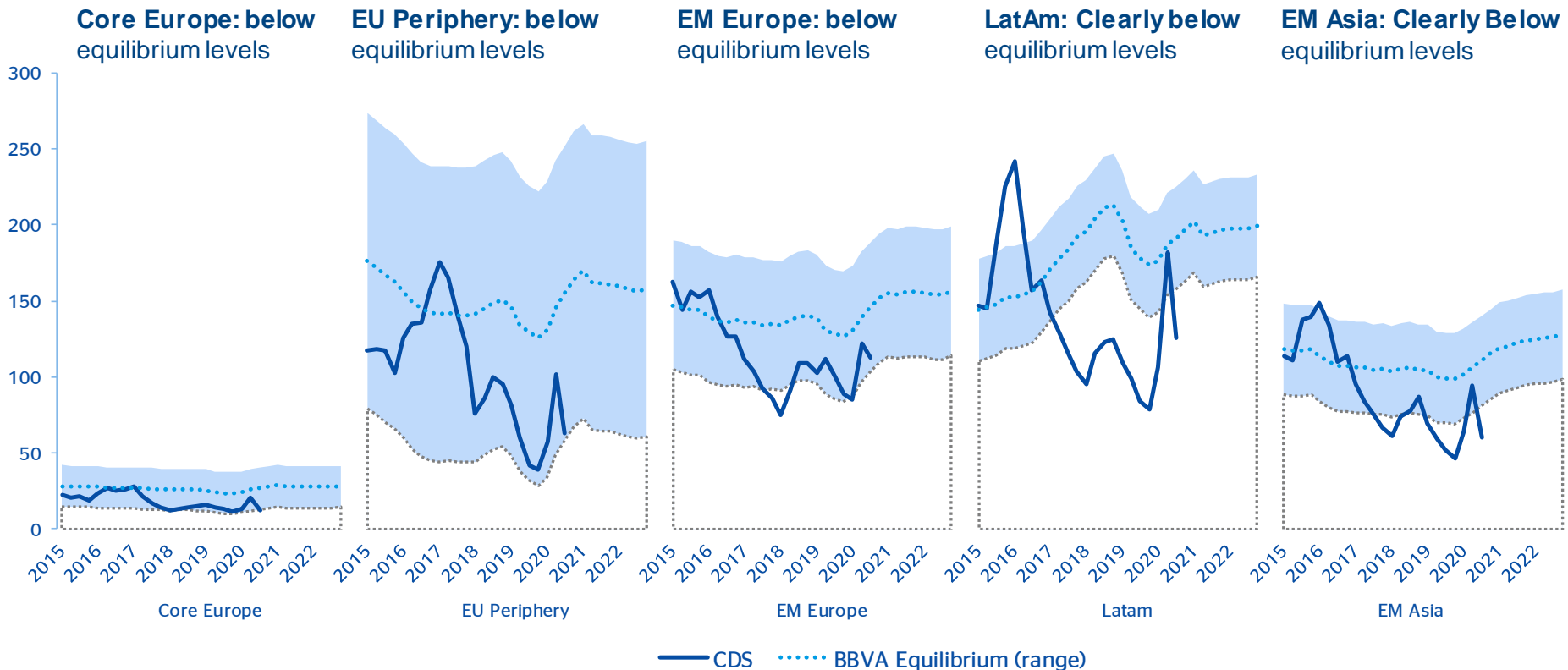
Latam includes: Argentina, Brazil, Chile, Colombia, Mexico, Paraguay, Peru, Uruguay and Venezuela. CDS implicit rating excludes Argentina and Venezuela.  
Source: Standard & Poor's, Moody's, Fitch & BBVA Research

**Agencies ratings have remained relatively stable despite the large COVID shock. The gap between markets' implicit ratings and those from agencies or BBVA Research kept widening, especially in EU Periphery, EM Europe and Asia. BBVA-Research rating worsens in G7, EM Europe and LatAm due to deterioration of fiscal vulnerabilities**

# Macroeconomic Vulnerability and Risk Assessment

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## CDS AND EQUILIBRIUM RISK PREMIUM: OCTOBER 2020



Periphery UE excludes Greece; Latam includes: Brazil, Chile, Colombia, Mexico and Peru. It excludes Argentina and Venezuela.  
Source: BBVA Research and Datastream

**Sovereign CDS spreads have widened their gaps with respect to our estimated equilibrium levels (especially LatAm) due to the rise in equilibrium levels after COVID shock, and the compression of CDS due to the growth of Central Banks balance sheets and other expansionary policy measures**

# 04

## Special Topic: Rating Agencies and Sovereign CDS Markets Reaction to COVID Crisis

# Rating Agencies and Sovereign CDS Markets Reaction to COVID Crisis

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- Given the seemingly muted reaction of Sovereign CDS markets and the contained one from Rating Agencies after the large macroeconomic and fiscal deterioration due to the Covid-19 shock, we wanted to explore if we can find evidence of such different reaction in our Sovereign Ratings and in our CDS Models (both described in the appendix), and if we can quantify it
- We have done this by simply including a set of dummy variables corresponding to each quarter of 2020
- These dummies are common to all countries and they intend to capture whether there were unobserved effects in those quarters that are not completely captured by the macroeconomic and fiscal variables that normally determined the behavior of rating agencies and of sovereign spreads.

# Rating Agencies and Sovereign CDS Markets Reaction to COVID Crisis

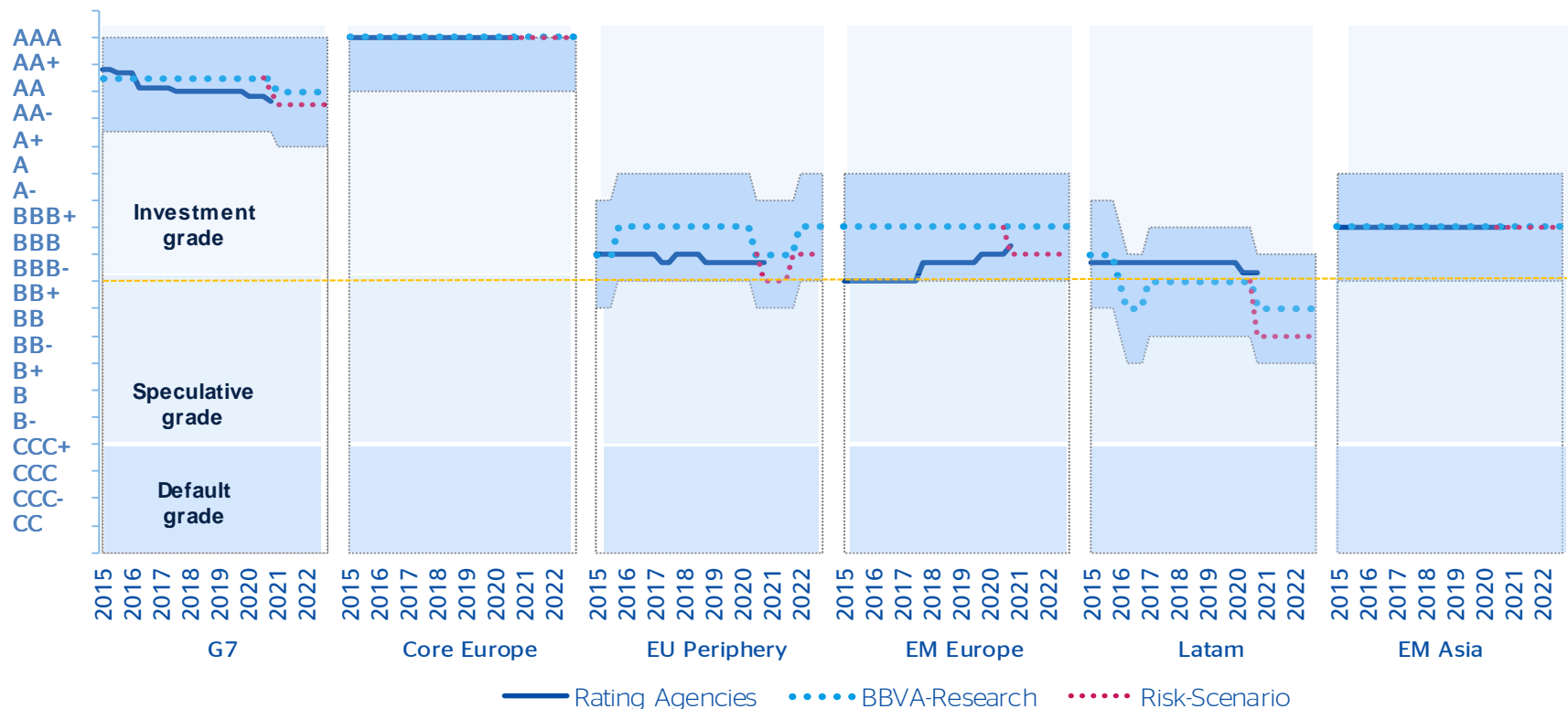
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1. In the case of the sovereign ratings model, the dummies offer an estimate of the possible effect of the Rating Agencies' forbearance or a greater tolerance to the huge changes in the macro and financial outlook that have occurred this year, making them less prone to possible rating downgrades. Indeed, the dummies for the quarters Q2 and Q3 turn out to be **positive and significant**, indicating that the agencies have been more positive than they should have been.
  2. On the other hand, the CDS model already includes an estimate of the effect of the balance sheet expansion of Central Banks (FED and ECB), that somewhat explains why the CDS have been so compressed in the recent years and in the current crisis. Additionally, the set of dummy variables for Q1 to Q3, also turn out to be **negative and significant**, indicating that the markets have also been more "optimistic" than they should have been, either because they expect more monetary or fiscal stimuli in the future, or for other reasons that are not well captured by the CBs balance sheet expansion.
- This different reaction of agencies and markets could be due to the extraordinary fiscal, monetary and financial measures that local authorities have been taking across the board, such as the NGEU project in EU, and could provide some evidence that rating agencies and/or financial markets believe these extraordinary policy response translates into a lower risk than what the hard data would suggest otherwise, and also because of the transitory nature of the COVID shock.

# Rating Agencies and Sovereign CDS Markets Reaction to COVID Crisis

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- In order to show the effect of the estimated dummies in the Sovereign Ratings case we compare two alternative scenarios going forward: A base scenario in which the agencies continue to maintain the "forbearance" they have made during this year, and an alternative "Risk" scenario in which that effect disappears, which correspond to the dotted blue and dotted red lines respectively.
- According to this exercise, going forward, regions should have on average a notch lower if the forbearance effect disappears



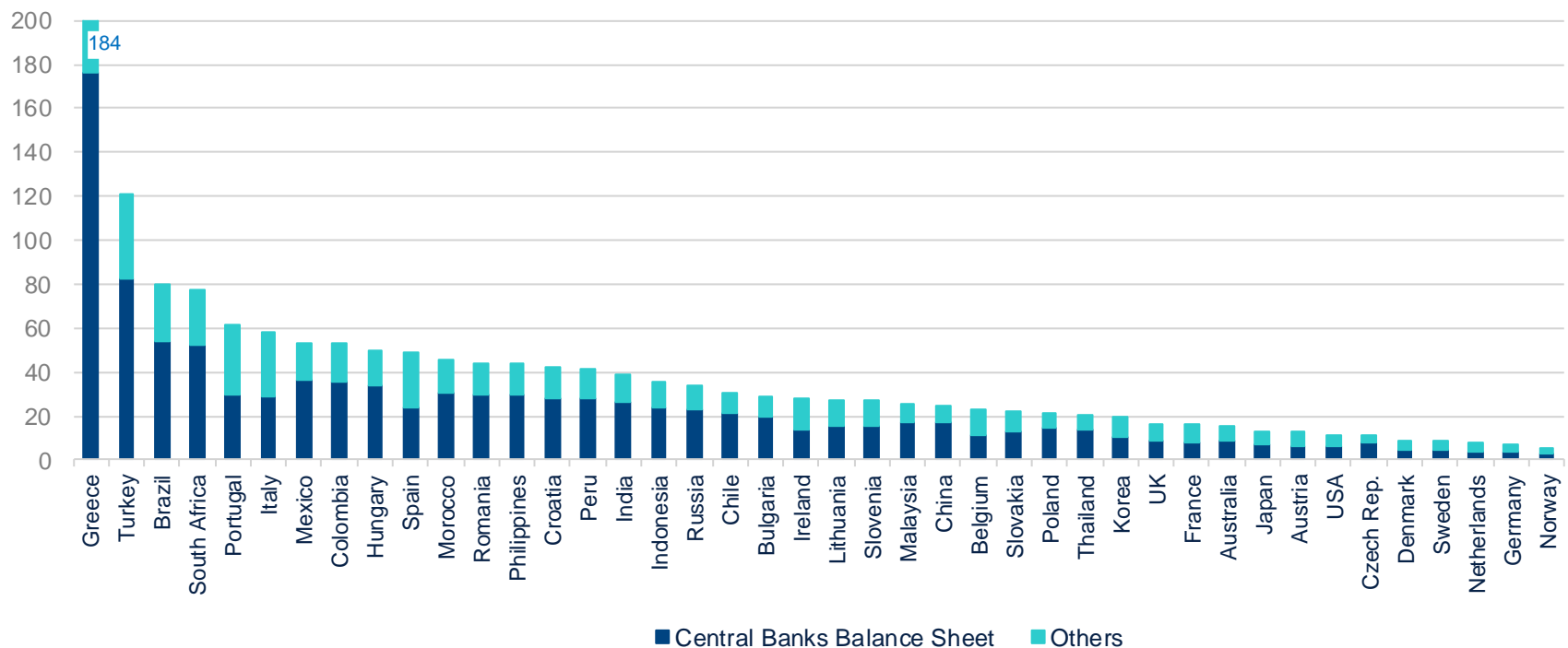
Latam includes: Argentina, Brazil, Chile, Colombia, Mexico, Paraguay, Peru, Uruguay and Venezuela.

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

# Rating Agencies and Sovereign CDS Markets Reaction to COVID Crisis

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- In the case of sovereign CDS markets, the model already offers an estimate of the effect of the expansion of the CBs' balance sheets, which has been remarkable during this year. But here we offer an estimate of all the other unobserved effects captured by the 2020 dummy variables, for instance the effect of all the policy measures implemented by governments across the board. The estimated effect is shown as "Others" in the following graph.
- In the case of Spain, for example, which in Q2 had a CDS of 101 bps, our estimates suggest that the CDS would have been 49 bps higher had it not been for the Central Banks (24) and the additional estimated effect (25); in Italy it would be some 59 bps in total (29 CBs and 30 others), and in Turkey 121 bps (82 and 39).



# 05

## Assessment of financial and external disequilibria

Private debt gaps by country  
Housing prices gaps by country  
Early warning system of banking crises by regions  
Early warning system of currency crises by regions



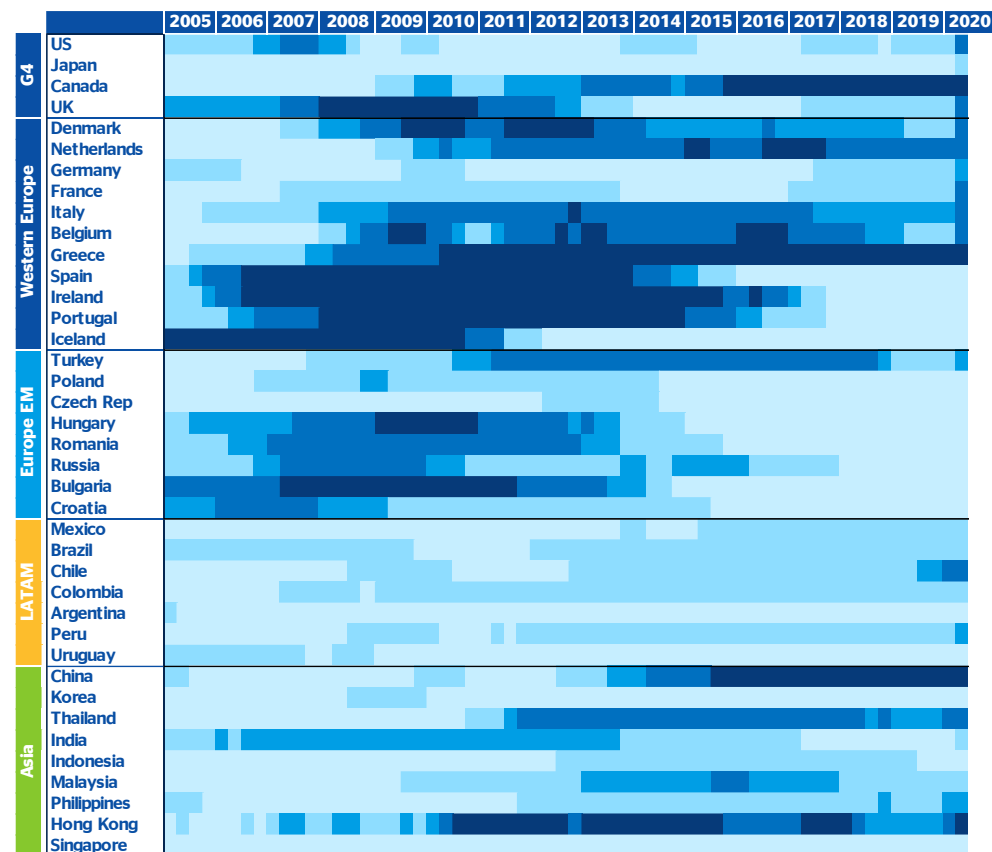
# Assessment of financial and external disequilibria

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Debt gaps (debt vs. equilibrium) levels have soared in multiple countries during the COVID crisis, due to a combination of higher Debt-to-GDP ratios and a highly deteriorated macro-outlook that reduces equilibrium levels (e.g. lower GDP per capita).

## PRIVATE DEBT GAPS COLOR MAP (2005-2020 Q2)

Gap between private debt-to-GDP ratio and its long-term structural trend



- Private leverage disequilibrium has increased further in Canada, while it has surged in USA and UK.
- COVID Crisis has triggered a surge in gaps in most countries in northern Europe, some of which were already highly indebted. Although debt-to-GDP ratios have also increased in Peripheral Europe, their levels are still well below equilibrium levels.
- Turkey just became the only country in EM Europe with a significant leverage gap, growing up strongly again after being close to equilibrium levels.
- Debt gaps have increased significantly above its structural level in Chile, while it's growing to some mild disequilibrium levels in Peru.
- COVID crisis has worsened China's gap again after several quarters in which was improving or stable. HK faces a very similar situation. New signs of disequilibria can be seen now in Thailand

The methodology for estimating debt gaps could be found at: <https://goo.gl/LTeTHD>.

<https://goo.gl/r0BLbl>

Source: IFS, BIS & BBVA Research

Excess: Private debt ratio higher than 20% above trend  
 High: Private debt ratio between 10%-20% above trend  
 Mild: Private debt ratio between 6%-10% above trend  
 Low: Private debt ratio between 0% and 6% above trend  
 De-Leveraging: Private debt ratio below its long-term trend  
 Non Available Data

# Assessment of financial and external disequilibria

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COVID crisis has worsened the housing prices gaps in several geographies that were already showing warning levels, due to the deterioration of GDP per capita levels and other determinants of the estimated equilibrium

## REAL HOUSING PRICES GAPS COLOR MAP (2005-2020 Q2)

Gap between housing prices and its long-term structural trend



- Housing prices gaps have further increased in Canada and UK and it's showing warning levels in US after the COVID crisis.
- The gap is also high in Belgium, Denmark, Netherlands, Germany and France and it is now in a clear excess level in Iceland, and in Portugal after COVID
- Real price levels appear to be at excessive levels in Czech Republic, while the gap is showing only low disequilibria in Turkey, Poland, Bulgaria and Croatia
- Prices gap in Colombia continue to signal a clear excess, and to a lesser extent in Chile, Mexico and Peru.
- COVID Crisis has taken China's property prices and its gap back to a high excess level. Hong Kong property price gap continues in a clearly excess level, while prices in Philippines have now grown up to an excess level too.

\* <https://goo.gl/xXj3Gm>

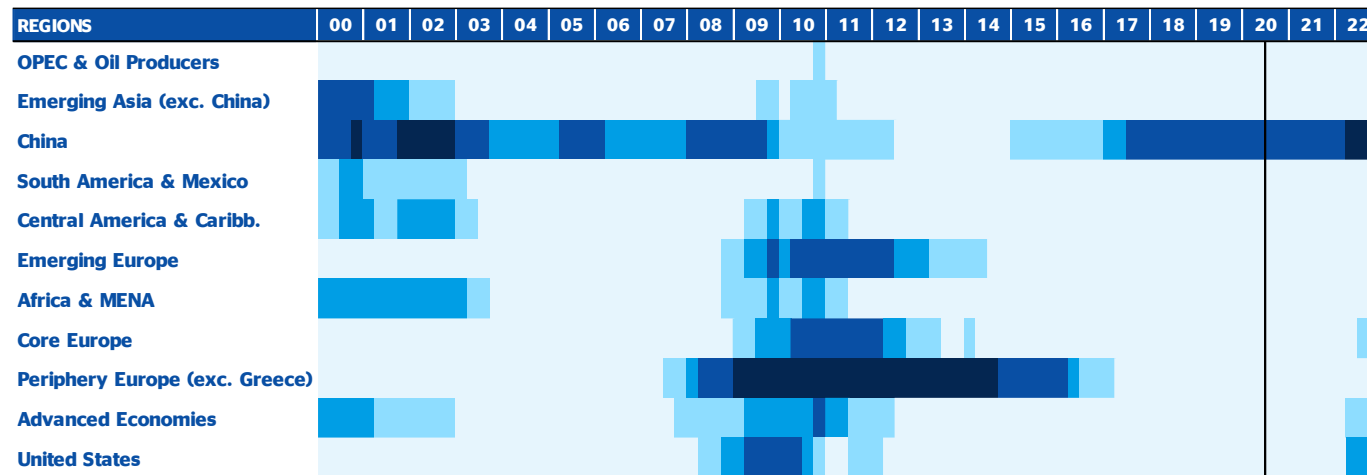
Source: BBVA Research, BIS, Haver and Oxford Economics

Excess: Real house prices higher than 20% above trend  
 High: Real house prices between 10%-20% above trend  
 Mild: Real house prices between 6%-10% above trend  
 Low: Real house prices between 0% and 6% above trend  
 De-Leveraging: Real house prices below its long-term trend  
 Non Available Data

# Assessment of financial and external disequilibria

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## EARLY WARNING SYSTEM (EWS) OF BANKING CRISES (2000Q1-2022Q4) (Probability of Systemic Banking Crisis (based on 8-quarters lagged data\*):



● The likelihood of a future banking crisis in has increased again in China and in several Advanced Economies, including USA

- 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

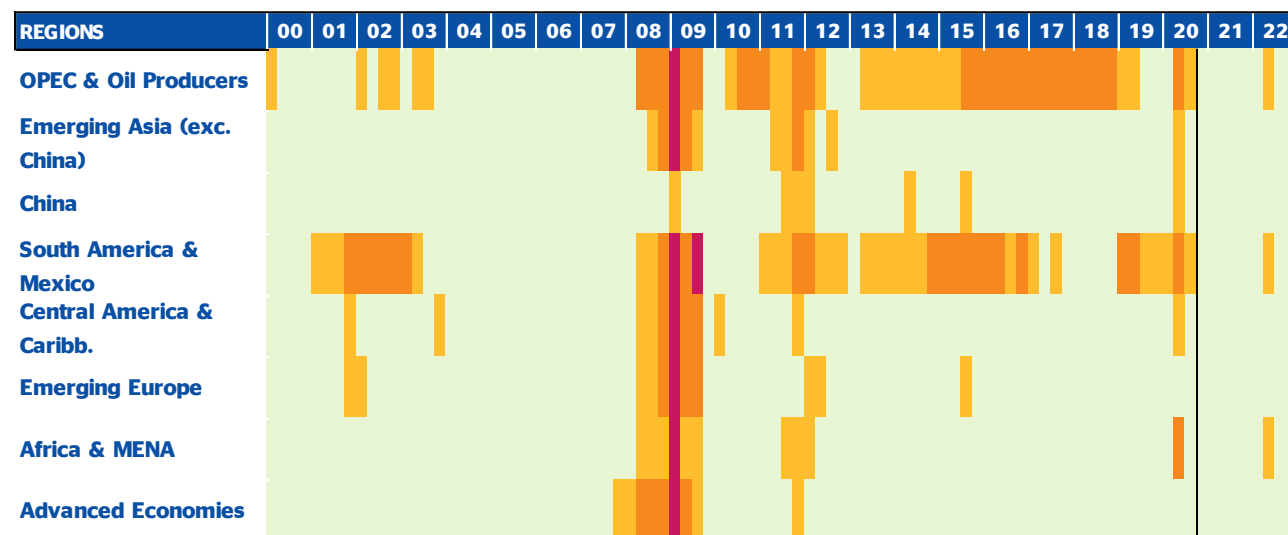
**The recent upsurge in debt gaps due to the COVID crisis has increased the likelihood of a banking crisis in several countries, mostly concentrated in Core Europe and other Advanced Economies, and it has exacerbated Chinese excess leverage vulnerability**

# 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



Our EWS does not anticipate any **generalized crisis** in any region as a whole

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

Exchange rate tensions increased significantly due to the pandemic, but extreme events (crises) were mainly concentrated in a handful of countries. Going forward, a significant likelihood of high tensions remain limited to a similar small group of countries

# Vulnerability Indicators table by country

# Vulnerability Indicators Table

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## VULNERABILITY INDICATORS\* 2020: DEVELOPED MARKETS

	Fiscal sustainability			External sustainability			Liquidity management			Macroeconomic performance			Credit and housing			Private debt			Institutional		
	Fiscal balance (1)	Interest rate GDP growth differential 2020-25	Gross public debt (1)	Current account balance (1)	External debt (1)	REER 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 gap (4)	Real housing prices gap (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	-15.7	-1.3	108.8	-2.9	100.7	0.6	41.2	16.4	29.1	-4.6	1.3	8.3	21.8	12.2	3.2	77.0	82.7	57.0	-0.3	-1.2	-1.5
Canada	-19.9	0.0	114.6	-2.0	126.9	-1.3	30.2	10.5	23.2	-7.1	0.3	9.2	30.9	28.4	-3.2	103.5	123.9	112.9	-1.0	-1.8	-1.8
Japan	-14.2	0.0	266.2	2.9	92.8	1.7	52.8	16.2	12.1	-4.1	-0.1	3.3	4.6	-21.8	6.6	61.6	107.8	48.4	-1.0	-1.5	-1.5
Australia	-10.1	-0.8	60.4	1.8	110.1	-1.8	12.9	4.2	40.9	-4.2	0.6	8.2	39.7	20.0	-11.6	121.5	73.9	161.1	-1.1	-1.8	-1.7
Korea	-3.2	-1.6	48.4	3.3	31.1	-4.9	5.7	7.3	13.4	-1.9	0.4	4.0	-19.6	-6.6	12.8	98.8	108.1	98.1	-0.5	-0.8	-1.2
Norway	-1.8	-1.8	40.0	2.8	174.1	-6.0	-8.7	8.1	51.2	-2.8	2.0	4.9	35.2	22.9	-8.3	110.0	147.9	151.1	-1.2	-2.1	-2.0
Sweden	-5.9	-1.5	41.9	3.2	174.2	0.6	9.9	10.3	31.7	-4.7	0.9	9.1	37.8	33.9	11.0	91.6	170.4	167.5	-1.1	-2.1	-1.9
Denmark	-4.0	-0.3	34.5	6.4	161.3	1.2	7.6	15.1	34.1	-4.5	0.4	5.0	18.5	14.2	31.5	114.6	110.3	275.2	-1.0	-2.1	-1.9
Finland	-6.8	-1.6	67.9	-1.8	245.1	1.2	15.7	10.8	95.2	-4.0	1.2	8.0	29.2	6.9	5.4	67.8	123.5	123.1	-0.9	-2.2	-2.0
UK	-16.5	-0.4	108.0	-2.0	332.0	-1.1	26.1	7.5	39.4	-9.8	0.4	9.3	16.7	18.2	-20.8	88.0	84.4	53.6	-0.5	-1.8	-1.6
Austria	-9.9	-1.2	84.8	2.4	169.1	2.4	16.5	8.4	79.3	-6.7	1.0	5.7	-1.5	24.7	-30.0	53.2	105.1	91.3	-1.0	-1.5	-1.9
France	-10.8	-0.7	118.7	-1.9	264.7	1.3	21.4	8.0	58.0	-9.8	-0.5	10.9	16.6	18.7	-15.4	65.3	166.7	98.3	-0.3	-1.3	-1.4
Germany	-8.2	-1.6	73.3	5.8	160.4	1.3	13.6	8.7	52.8	-6.0	0.3	6.2	10.0	12.0	2.7	56.8	66.8	85.8	-0.6	-1.9	-1.6
Netherlands	-8.8	-0.8	59.3	7.6	496.1	2.8	14.7	15.7	47.3	-5.4	1.3	6.0	20.3	19.6	-5.6	100.9	162.7	91.9	-0.9	-2.0	-1.8
Belgium	-11.4	-0.6	117.7	0.0	273.4	2.0	23.6	16.6	65.8	-8.3	0.6	6.9	19.1	13.9	-22.5	65.7	129.2	56.5	-0.5	-1.6	-1.4
Italy	-13.0	1.2	161.8	3.2	135.9	0.1	32.9	14.8	35.1	-10.6	0.1	10.1	22.7	-2.3	-14.0	41.7	72.5	81.6	-0.5	-0.2	-0.3
Spain	-12.9	0.4	123.0	0.1	190.8	0.4	27.6	15.0	55.6	-11.5	-0.2	17.0	-5.2	-4.8	-27.3	61.1	104.5	86.5	-0.3	-0.6	-1.0
Ireland	-6.0	-2.9	63.7	5.0	726.4	0.0	13.9	11.4	72.3	-3.0	0.7	5.7	-58.9	-1.5	2.2	38.9	202.4	34.5	-1.0	-1.5	-1.4
Portugal	-8.4	-0.3	137.2	-3.1	203.1	0.0	19.9	10.5	57.8	-8.5	-0.1	8.5	-20.7	23.6	-5.2	67.4	102.2	88.2	-1.1	-0.8	-1.1
Greece	-9.0	-1.8	205.2	-7.7	269.1	-1.3	14.5	8.3	81.5	-9.5	-1.1	21.0	44.7	5.9	-28.1	61.5	57.8	101.0	-0.3	0.0	-0.2

\*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.

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

# Vulnerability Indicators Table

[Summary](#) [Index](#)

## VULNERABILITY INDICATORS\* 2020: EMERGING MARKETS

	Fiscal sustainability			External sustainability			Liquidity management				Macroeconomic performance			Credit and housing		Private debt			Institutional		
	Fiscal balance (1)	Interest rate GDP growth differential 2020-25	Gross public debt (1)	Current account balance (1)	External debt (1)	Reserves to ARA Metric	Gross financial needs (1)	Reserves to short-term external debt (3)	Reserves to Imports	Debt held by non-residents (3)	GDP growth (4)	Consumer prices (4)	Unemployment rate (5)	Private credit to Gap (4)	Real housing prices Gap (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	-2.0	0.4	24.1	1.9	59.5	1.6	3.5	2.0	7.6	44.4	-6.1	1.9	5.6	-29.2	3.1	24.2	75.5	70.0	-0.5	0.2	0.0
Czech Rep	-7.3	-1.7	39.1	-0.7	76.2	2.1	10.7	1.3	10.5	40.2	-6.5	3.2	4.4	-3.8	23.9	33.1	57.8	79.5	-1.0	-0.5	-1.0
Croatia	-8.1	-0.7	87.7	-3.2	80.6	1.2	15.8	2.5	8.0	32.7	-9.0	0.5	10.7	-10.0	0.4	34.8	62.7	81.0	-0.8	-0.1	-0.4
Hungary	-8.3	-1.8	77.4	-1.6	133.4	1.0	22.4	0.8	2.8	33.9	-6.5	3.5	3.8	-14.1	-11.0	19.6	77.1	88.9	-0.7	0.0	-0.5
Poland	-10.5	-1.7	60.0	3.0	58.0	1.2	15.7	1.8	4.7	42.3	-3.6	3.3	6.1	-7.8	5.7	35.6	83.2	98.1	-0.5	-0.6	-0.5
Romania	-9.6	-1.8	44.8	-5.3	48.5	1.0	13.4	1.9	4.0	48.5	-5.1	2.4	7.6	-18.3	-2.9	15.8	29.1	72.8	-0.5	0.1	-0.4
Russia	-5.3	1.5	18.9	1.2	28.8	..	6.4	5.9	15.1	29.5	-4.9	3.3	6.0	-8.5	-26.4	20.1	84.3	105.9	0.5	0.8	0.7
Turkey	-5.3	-1.8	42.4	-5.1	56.8	0.8	13.2	0.4	4.2	39.7	0.0	11.8	14.0	12.8	4.1	17.7	77.4	104.0	1.3	0.3	0.3
Argentina	-10.3	0.0	108.1	2.3	67.0	0.8	16.0	0.7	7.4	43.0	-13.0	42.5	14.0	-5.8	2.9	5.0	17.1	101.4	0.1	0.1	0.4
Brazil	-16.8	1.3	101.4	0.3	38.6	1.5	28.7	2.9	15.8	10.8	-1.5	3.0	13.4	5.4	1.6	31.2	46.1	91.3	0.5	0.3	0.2
Chile	-8.7	-2.3	32.8	-1.6	78.9	0.9	10.0	1.4	6.0	36.1	-1.0	2.9	13.2	18.6	11.3	47.3	114.9	147.3	-0.2	-1.1	-1.1
Colombia	-8.2	1.2	65.0	-3.9	49.3	1.4	11.1	2.9	9.2	30.6	-7.5	2.6	18.2	4.2	21.9	28.9	38.1	116.4	0.9	0.2	0.4
Mexico	-3.0	2.8	55.6	-0.2	39.0	1.2	15.1	3.7	4.3	30.1	-9.3	3.5	4.6	9.6	17.1	17.0	27.7	86.6	0.7	0.8	0.7
Peru	-9.8	1.4	33.7	-0.1	30.7	2.8	11.7	6.7	15.3	26.4	-13.0	1.7	12.8	10.5	13.9	18.2	45.5	134.4	0.1	0.4	0.5
China	-11.9	-5.4	77.5	1.5	14.4	..	4.4	3.2	15.1	..	2.2	3.0	5.6	42.4	10.4	58.0	161.2	101.9	0.2	0.3	0.3
India	-13.1	-0.5	89.3	0.3	20.7	1.7	17.5	4.2	8.4	5.3	-10.3	5.4	10.8	0.5	8.3	13.1	45.6	77.1	0.7	0.2	0.0
Indonesia	-6.3	-1.4	38.5	-1.3	38.5	1.1	8.9	2.7	7.1	58.5	-3.6	1.9	7.9	-2.0	-25.1	16.6	23.1	97.0	0.5	0.4	0.3
Malaysia	-6.5	-1.4	67.6	0.9	66.8	1.1	13.9	1.1	5.8	24.3	-4.6	-1.1	4.7	8.7	26.6	95.9	72.7	113.1	-0.1	-0.2	-0.6
Philippines	-8.1	-1.4	48.9	1.6	23.1	2.0	13.6	7.6	6.3	25.9	-7.3	1.5	9.8	10.4	27.3	4.8	42.8	70.8	0.9	0.6	0.5
Thailand	-5.2	0.0	50.4	4.2	32.6	2.2	11.5	4.0	9.5	15.4	-6.3	-0.9	1.8	18.7	8.0	72.8	50.4	94.4	0.5	0.4	-0.1

\*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. ARA Metric: see <https://www.imf.org/external/np/pp/eng/2011/021411b.pdf>  
Source: BBVA Research, Haver, BIS, IMF and World Bank

# Methodological Appendix



# Appendix

## Methodology: indicators and maps

- **Financial Stress Map:** It stresses levels of stress according to the normalized 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 & Poor's 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 2019 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

# Appendix

## Methodology: indicators and maps

### Risk Thresholds Table

\* (ARA Metric = 10% × Exports + 10% × Broad Money + 30% × Short-term Debt + 20% × Other Liabilities)

Vulnerability Dimensions	Risk Thresholds Developed Economies	Risk Thresholds Emerging Economies	Risk Direction	Source
<b>Macroeconomics</b>				
GDP	1.0	3.0	Lower	BBVA Research (based on historical percentiles)
Inflation	4.0	10.0	Higher	BBVA Research (based on historical percentiles)
Unemployment	10.0	10.0	Higher	BBVA Research (based on historical percentiles)
<b>Fiscal Vulnerability</b>				
Government fiscal balance (% GDP)	-4.0	-4.0	Lower	Baldacci et Al (2011). Assessing Fiscal Stress. IMF WP 11/100
Expected Interest rate GDP growth differential 5 years ahead	0.8	0.0	Higher	Baldacci et Al (2011). Assessing Fiscal Stress. IMF WP 11/100
Gross Public Debt (%GDP)	60.0	40.0	Higher	IMF Public Debt Sustainability Analysis (DSA) in Market-Access Countries, 2013
<b>External Vulnerability</b>				
Current Account Balance (% GDP)	-5.0	-3.0	Lower	BBVA Research (based on historical percentiles)
External Debt (% GDP)	200.0	60.0	Higher	BBVA Research (based on historical percentiles)
Real Exchange Rate (Deviation from 4 yr average) (Developed)	5.0		Higher	EU Commission (2012) and BBVA Research (based on historical percentiles)
Reserves to ARA Metric (Emerging)		0.8	Lower	Baldacci et Al (2011). Assessing Fiscal Stress. IMF WP 11/100
<b>Liquidity Problems</b>				
Gross Financial Needs	25.0	15.0	Higher	IMF Public Debt Sustainability Analysis (DSA) in Market-Access Countries, 2013
Debt Held by Non Residents	55.0	45.0	Higher	IMF Public Debt Sustainability Analysis (DSA) in Market-Access Countries, 2013
Short Term Debt Pressure				
Public Short-Term Debt as % of Total Public Debt (Developed)	15.0		Higher	Baldacci et Al (2011). Assessing Fiscal Stress. IMF WP 11/100
Reserves to Imports (Emerging)		3.0	Lower	BBVA Research (based on historical percentiles)
Reserves to Short-Term Ext. Debt (Emerging)		1.0	Lower	Baldacci et Al (2011). Assessing Fiscal Stress. IMF WP 11/100
<b>Private Balance Sheets</b>				
Household Debt (% GDP)	84.0	54.0	Higher	BBVA Research (based on historical percentiles)
Non Financial Corporate Debt (% GDP)	120.0	80.0	Higher	BBVA Research (based on historical percentiles)
Financial liquidity (Credit/Deposits)	130.0	110.0	Higher	EU Commission (2012) and BBVA Research
<b>Excess Credit and Assets</b>				
Private Credit to GDP (annual Change)	12.0	12.0	Higher	BBVA Research
Real Housing Prices growth (% yoy)	12.0	12.0	Higher	BBVA Research
Equity growth (% yoy)	20.0	20.0	Higher	IMF Global Financial Stability Report
<b>Institutions</b>				
Political Stability	1 (9th percentil)	-0.6 (8th percentil)	Lower	World Bank Governance Indicators
Control of Corruption	1 (9th percentil)	-0.6 (8th percentil )	Lower	World Bank Governance Indicators
Rule of Law	1 (8th percentil)	-1 (8 th percentil)	Lower	World Bank Governance Indicators

# Appendix

## Methodology: Sovereign Rating Index Model

The dependent variable is the average of the three rating agencies (Moody's, Standard & Poor's and Fitch) translated to numerical positions from 20 (AAA) to default (0).

The determinants of the sovereign ratings are estimated using an ordered-logit model with quarterly data from 51 countries and from 2000Q1 to the most recent quarter. The main determinants are the following:

- GDP per capita (real USD)
- Inflation
- Fiscal Balance to GDP
- Public Debt to GDP (local holders)
- Public Debt to GDP (external holders)
- Institutional Index (Rule of Law, Regulation Quality and Government Effectiveness)
- Composite indicator summarizing the *Number of Years since last Sovereign Default* (squared root) and the *Number of Historical Defaults* (over number of years since last default)
- Individual country dummies
- Time-specific dummies for 2020

The effects of the GDP per capita, inflation, and of Local and External Public Debts are decomposed into a global component (median of all 51 countries) and an idiosyncratic component (the deviation against the global component), allowing each component to have a separate effect on the rating.

Additionally, the effect of the fiscal balance is interacted with a categorical variable indicating different Public Debt levels, allowing different sensibilities depending on how indebted a country is.

# Appendix

## Methodology: Sovereign CDS Model

The dependent variable is the 5-year Sovereign CDS. The determinants of the sovereign CDS are estimated using a panel data model with quarterly data from 48 countries and from 2004Q1 to 2020Q3, using a random-effects linear model with an AR(1) disturbance. The main determinants are the following:

- BAA Spread
- GDP per capita (real USD)
- Inflation
- Fiscal Balance to GDP
- Public Debt to GDP (local holders)
- Public Debt to GDP (external holders)
- Institutions Index (Rule of Law, Regulation Quality and Government Effectiveness)
- Composite indicator summarizing the *Number of Years since last Sovereign Default* (squared root) and the *Number of Historical Defaults* (over number of years since last default)
- Percentage change in FED's and ECB's Balance Sheets.
- Reserves to Import Ratio
- Specific Default and time-specific dummies for 2020

Some variables (BAA Spread, GDP per capita, Inflation, Fiscal Balance and Public Debt levels) are decomposed into two different components, a long-term component (using a 5-years moving average) and a cyclical component (deviation from 5-y MA), allowing each component to have a different effect. The effects of the long-term components are the ones that determine the equilibrium level, together with the effect of the rest of variables which are not decomposed.

Moreover, the final CDS equilibrium level is estimated by leaving the BAA spread unchanged at its long-term median level (2003-2020).

# Appendix

## Methodology: Private Debt Equilibrium & Gaps (Debt-to-GDP)

**Debt Gaps (Debt-to-GDP):** The Debt-to-GDP gaps are the difference between the observed debt ratio and an estimated equilibrium level for every country.

The equilibrium level is estimated through non-linear regression that adjust a Gompertz-curve type of relationship between the debt ratio and income per capita, with a saturation level at the highest levels of income. The regression is estimated using a panel data model with annual data from 88 countries and from 1980 to the most recent year available

The determinants are the following:

- GDP per capita (in PPP adjusted USD)
- Short-term interest rate
- Investment-to-GDP ratio
- Inflation
- Bank spread (loans minus deposit interest rates)
- Index of quality of legal framework
- Gini index
- Regulatory capital to assets ratio
- Index of Information Sharing
- Banking Concentration

In the model we also allow different elasticities of the debt ratio to income per capita and to other explanatory variables in the long run versus the medium or the short run.

The full description of the methodology can be found in <https://goo.gl/LTeTHD> and <https://goo.gl/r0BLbl>

# Appendix

## Methodology: Housing Prices Equilibrium & Gaps

The housing price gaps are the difference between the observed real price and an estimated equilibrium level for every country. The equilibrium model is estimated through a panel data model in which the dependent variable is an index of real property prices, with annual data from 57 countries and from 1990 to the most recent year available, using a random-effects linear model with an AR(1) disturbance.

The determinants are the following:

- GDP per capita (real USD)
- Credit-to-GDP ratio
- Unemployment rate
- Short-term interest rate
- Urban population growth

The first four variables are decomposed into two different components, a long-term component (using a 10-years moving average) and a cyclical component (deviation from 10-y MA), allowing each component to have a different effect. The effects of the long-term components are the ones that determines the equilibrium level, together with the effect of the urban population growth that is not decomposed because it is already an structural variable.

# Appendix

## Methodology: Early Warning Systems

### EWS Banking Crises:

The complete description of the methodology can be found at <https://goo.gl/r0BLbl> 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 2017. 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):

- Debt-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 2020Q3, 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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