

Country Risk Report 2021

December 2021

(Data as of October 31)

Summary

SOVEREIGN RATINGS AND SPREADS:

- **Agencies' Ratings have remained relative stable since the start of the COVID pandemic and through 2021. Changes have been mainly concentrated in Emerging Economies (EE).**
- **Sovereign spreads have been clearly influenced by the strong and coordinated reaction of Central Banks in both Advanced Economies (AE) and Emerging Economies (EE).** They remained at record low levels throughout most economies, although EE have seen a more differentiated and heterogeneous evolution during 2021.
- **Government balances and public debt levels have improved slightly with respect to last year, but continued to be highly deteriorated,** due to the extraordinary fiscal effort required by the public policy measures that have been implemented across the world in order to reduce the economic harm caused by the pandemic.

FINANCIAL AND PRIVATE SECTOR VULNERABILITIES:

- **On the private sector side, debt gaps (outstanding debt vs. estimated equilibrium debt) levels have decreased overall in 2021** thanks to the recovery of GDP levels (lower Debt-to-GDP ratios and higher equilibrium levels), but have remained elevated in several Advanced Economies and China.
- **Housing prices have surged across the board during 2021, specially in Advanced Economies (AE).** However, price gaps have evolved more heterogeneously, **being again in AE where they have widened more markedly, leaving some countries at record levels.**
- **The upsurge in debt disequilibria observed after COVID** (that has extended during 2021) **has increased the vulnerability of the banking system mainly in AE** (including core Europe and US) but also in China.
- **Currency tensions have been overall relatively muted** and we expect them to remain broadly contained, but likely to observe heterogeneity according to idiosyncratic vulnerabilities and policies.

Summary

SPECIAL TOPIC:

- **In a special section we want to take a novel and closer look at how private leverage, public leverage and housing prices have changed across a large and heterogeneous group of countries during the COVID crisis**, trying to elucidate whether the large changes observed in these variables have made countries more vulnerable or not, by analyzing how some structural indicators of sustainability have evolved as a result of such changes
- **Private leverage has strongly increased in the majority of AE and to a lesser extent in EE.** The increase in Debt-to-GDP has mainly taken place in the first phase of the crisis, but some of the countries where leverage has grown more like China, USA (and also Thailand in EE) have also had a significant increase in 2021. **Excess private leverage (disequilibria) continues to be concentrated in AE more than in EE, with the exception of China, and in many countries gaps have grown on top of already large existing gaps.** Largest gaps can be observed in Canada, China, Norway, Sweden and USA.
- In the case of housing prices, **strong real growth has been seen across the board in AE in 2020 and has accelerated in 2021**, while in EE the picture is more heterogeneous. **Similarly to the private leverage case, large disequilibria (gaps) are mainly concentrated on AE. Moreover, gaps have increased strongly in many places where gaps were already high** (e.g. Canada, Sweden, Australia, Austria, Netherlands, Portugal, Czech Republic, etc.). **In EE, gaps are smaller in general**, but it is important to highlight the case of China because it coincides with a large gap in private leverage, which undoubtedly increases the overall vulnerability.
- **Public leverage has increased significantly both in AE and EE (around 15 and 10% of GDP on average respectively).** However, at the moment, this has not translated into an immediate increase in fiscal sustainability issues, thanks to the increase in the projected nominal GDP growth rates and the so far limited growth in interest rates. However, if nominal interest rates start raising, the current higher levels of public leverage will be much more difficult to serve.

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- Evolution of sovereign spreads by country

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01

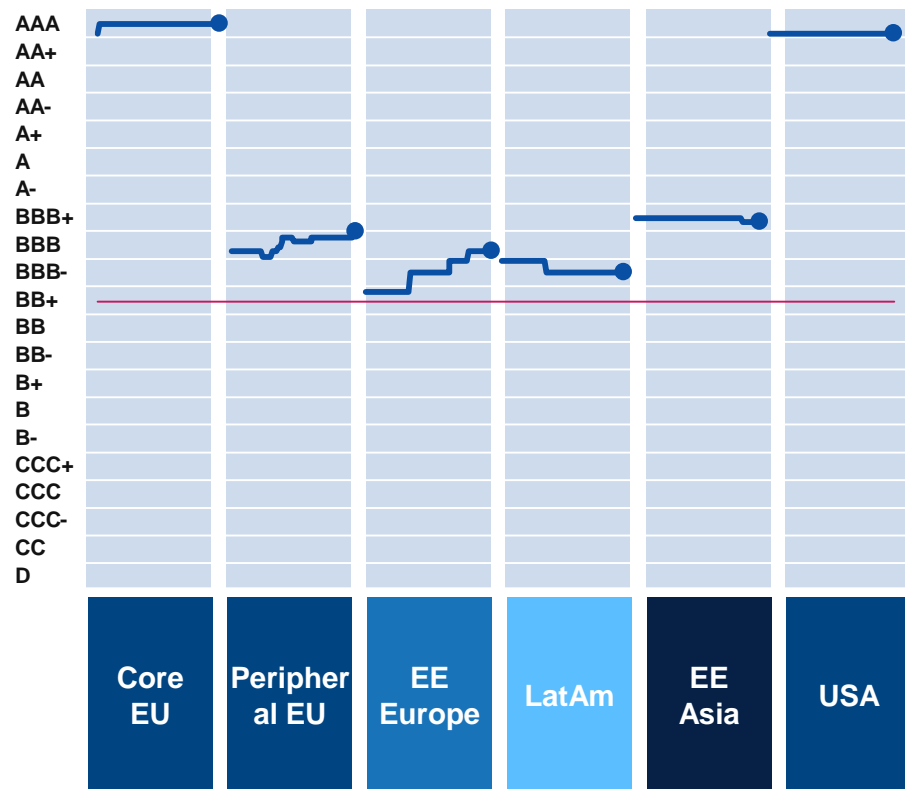
Sovereign Markets and Ratings Update

Evolution of sovereign ratings
Evolution of sovereign spreads by country

Sovereign markets and rating agencies update

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SOVEREIGN RATING INDEX 2015-2021



- Agencies' ratings have remained relative stable since the start of the COVID pandemic and through 2021. Changes have been mainly concentrated in emerging economies.
- During 2021 and among Developed Countries, **Greece and Portugal** were upgraded by S&P and Moody's respectively.
- **LATAM** ratings were mostly revised downward. **Chile, Colombia and Peru** were downgraded, causing Colombia to lose its investment grade.
- Despite some stress episodes seen in **Argentina and Turkey**, their ratings have not changed in 2021, although they are already below investment grade
- In other regions changes have been limited, Hungary and Lithuania were upgraded in EE Europe, Malaysia was downgraded in EE Asia, and Morocco and Tunisia were downgraded in Africa.

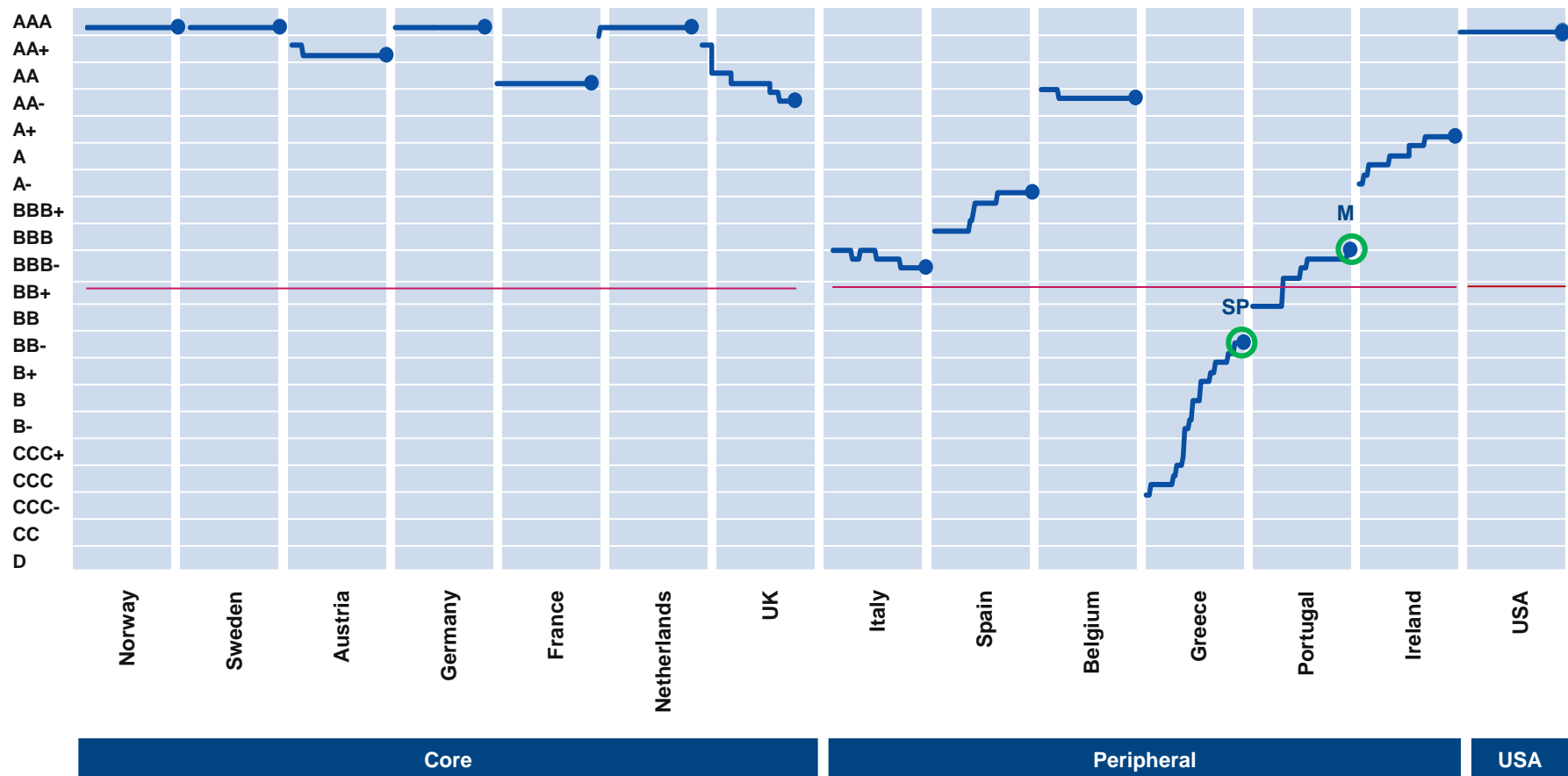
Sovereign Rating Index: An index that translates the three important rating agencies ratings letters codes (Moody's, Standard & Poors and Fitch) to numerical positions from 20 (AAA) to 0 (default). The index shows the average of the three rescaled numerical ratings.

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 2015-2021: DEVELOPED MARKETS

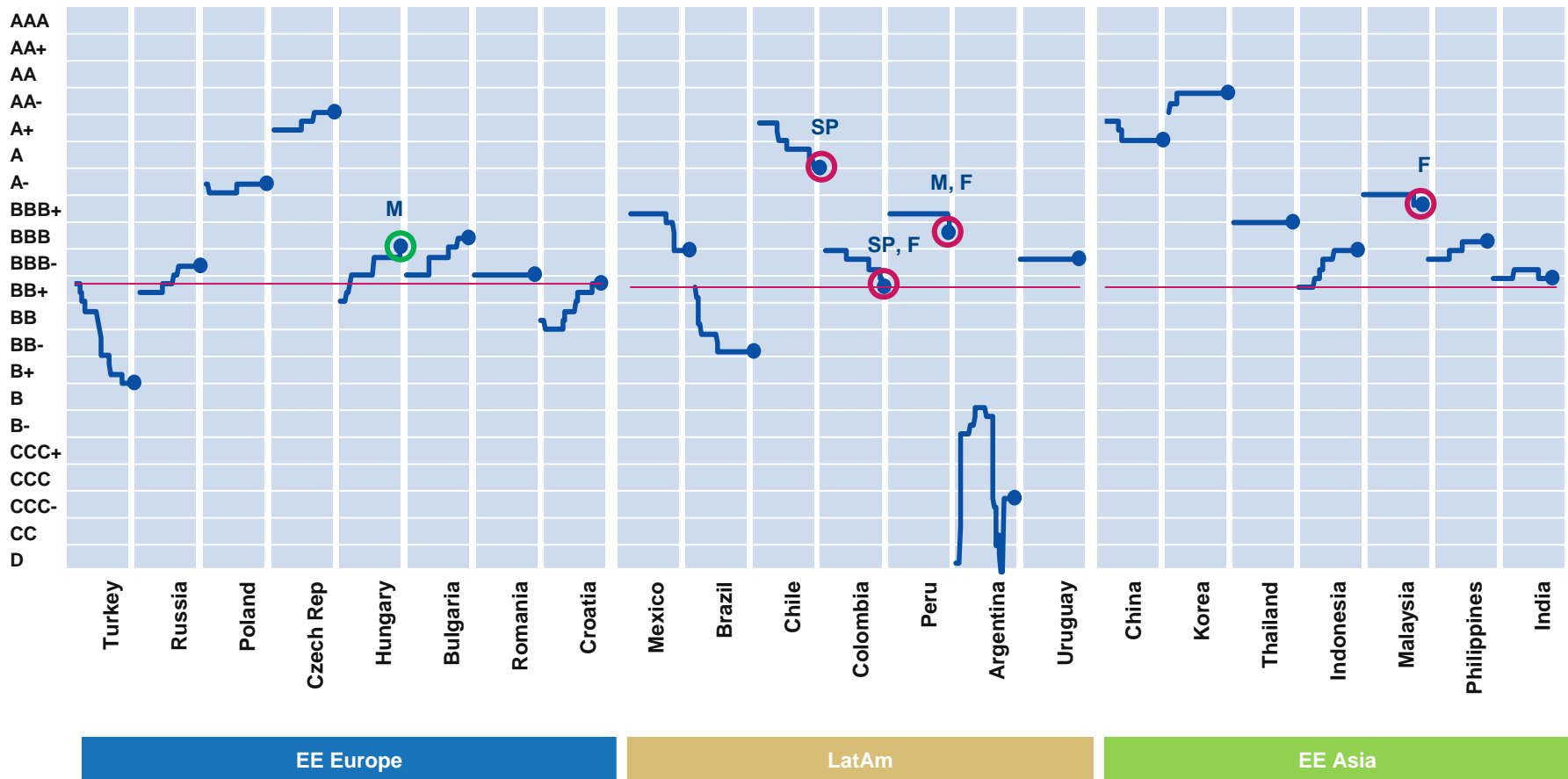


○ Downgrade ○ Upgrade **SP**: Standard & Poor's **M**: Moody's **F**: Fitch

Sovereign markets and rating agencies update

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SOVEREIGN RATING INDEX 2015-2021: EMERGING ECONOMIES



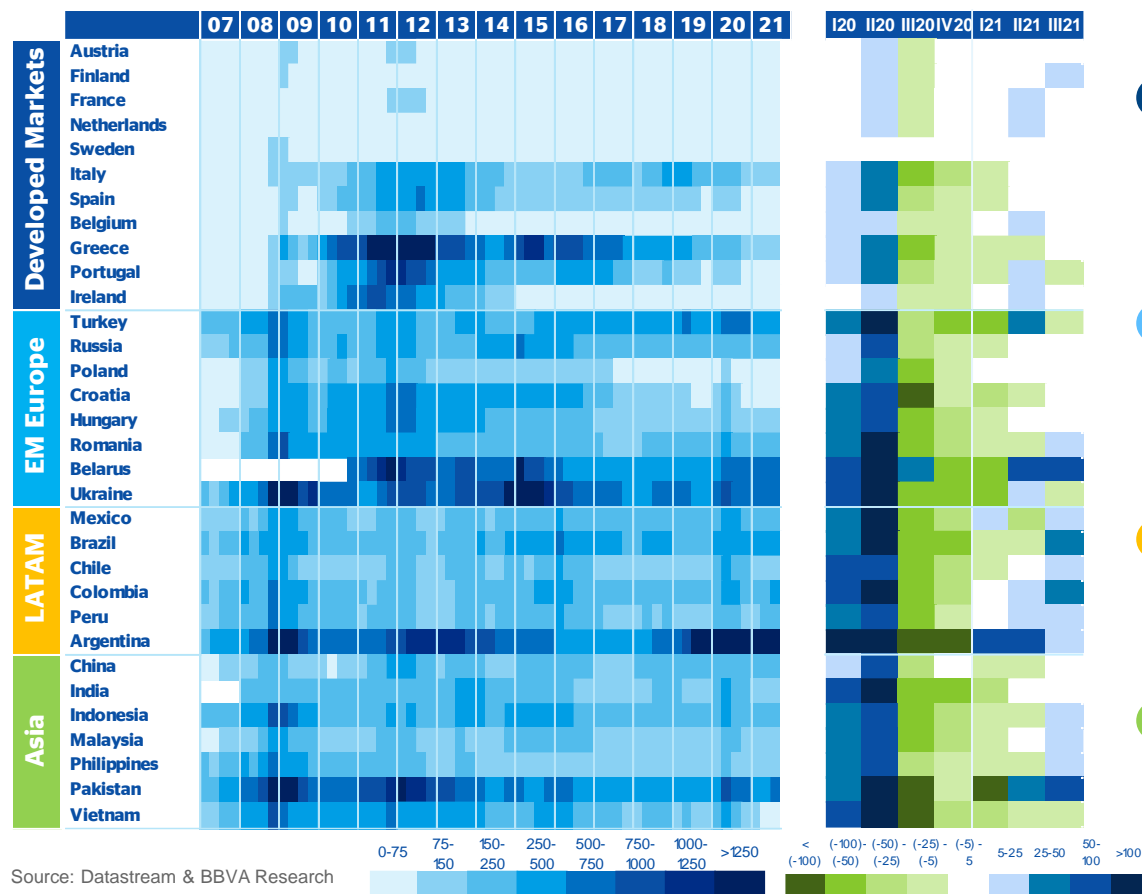
○ Downgrade ○ Upgrade **SP**: Standard & Poor's **M**: Moody's **F**: Fitch

Sovereign markets and rating agencies update

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SOVEREIGN SPREADS

10-year spread against Germany in Europe and EMBIs in EE



- Sovereign spreads have remained contained and compressed by the effect of the liquidity provided by Central Banks.
- In EE Europe, Turkey's spread saw a significant increase during the second quarter of 2021, with a new peak towards the end of the year.
- Spreads have widened across LatAm countries, specially in Argentina, Brazil and Colombia
- Spreads have remained stable overall in EE Asia, with some widening in the 3Q in some South-East countries. Vietnam has seen a remarkable compression of its spread in the last year.

Sovereign spreads have been clearly influenced by the strong and coordinated reaction of Central Banks in both AE and EE. They remained at record low levels throughout most AE and EE, although the latter ones have seen a more differentiated and heterogeneous evolution during 2021

02

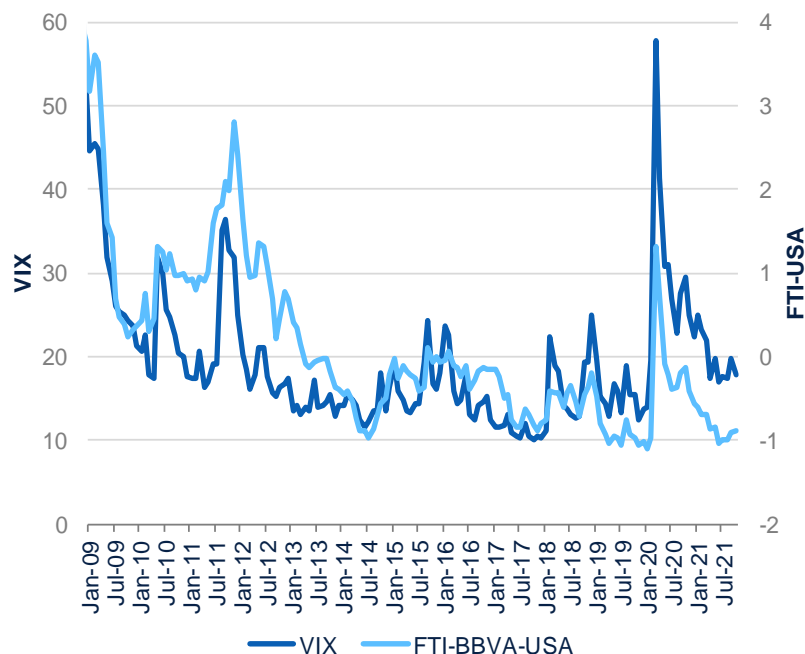
Financial Markets, Financial Tensions and Global Risk Aversion

Global Risk Aversion Evolution according to Different Measures
Financial Tensions Index

Financial Tensions and Global Risk Aversion (GRA)

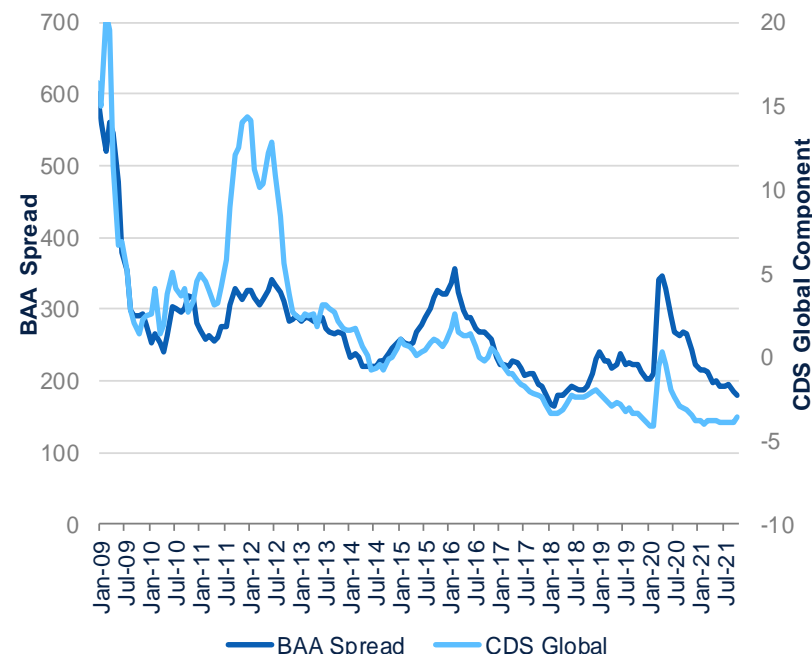
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GLOBAL RISK AVERSION INDICATORS: VIX & FTI (Monthly Average)



Source: Bloomberg and BBVA Research

GLOBAL RISK AVERSION INDICATORS: BAA SPREAD & GLOBAL COMPONENT IN SOVEREIGN CDS (Monthly Average)



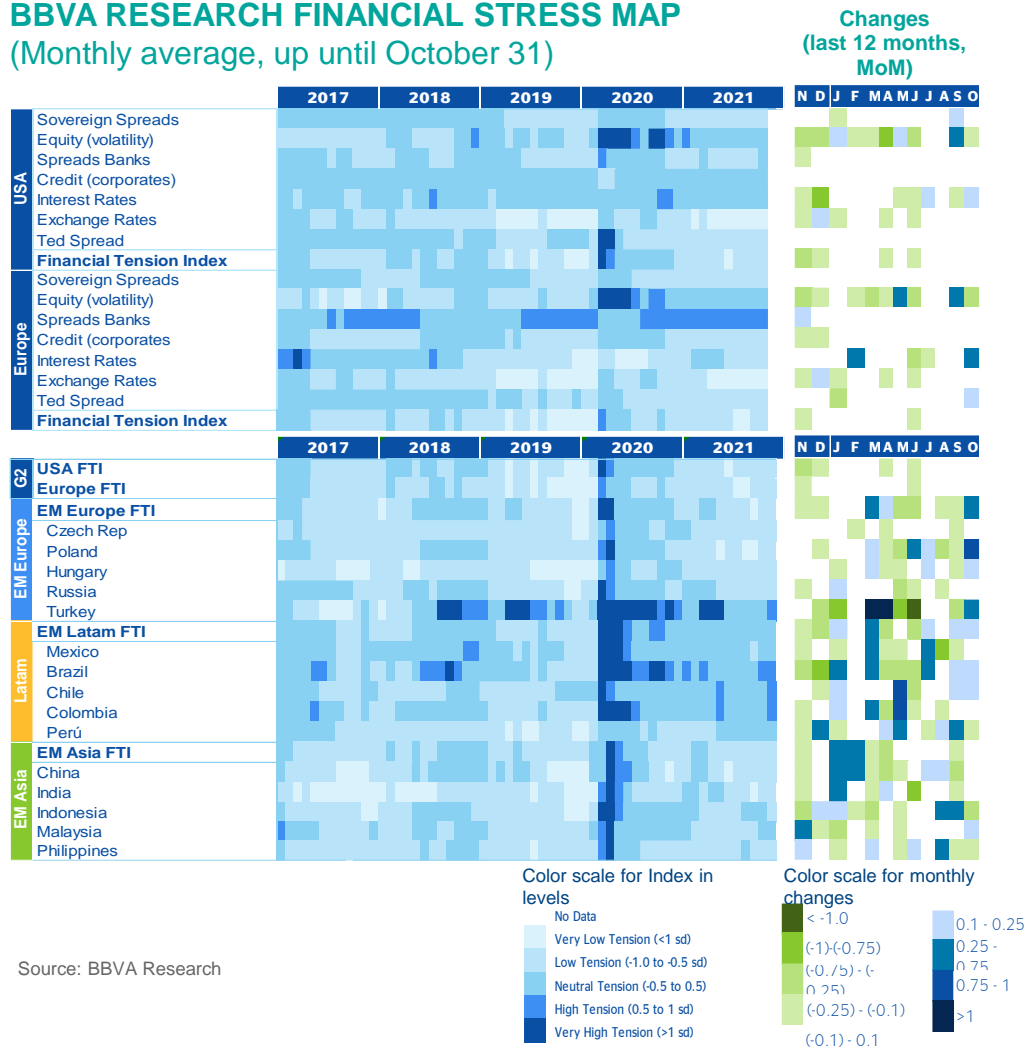
* The global component of sovereign CDS corresponds to the first component from a PCA Analysis on 51 CDS from both EEs and DMS
Source: FED, Datastream and BBVA Research

Global Risk Aversion indicators have continued relaxing during 2021 after the COVID shock last year. However, while corporate and sovereign spreads have basically remained stable, VIX has been more volatile and aligned with the pandemic evolution and related news (new contagion waves, new variants, etc.)

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

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BBVA RESEARCH FINANCIAL STRESS MAP (Monthly average, up until October 31)



- Small peaks in tensions in equity markets in USA and Europe due to the stress in China's Evergrande.

We have also seen higher than usual levels of tensions in the European banking sector

- Strong surge in FT in Turkey during the first half of 2021 with a new peak towards the end of the year

- LatAm has been the region with higher FT during 2021, with a high volatility across the board

- FT in EE Asia have remained contained through 2021, with the exception of some transitory peaks in Malaysia and Philippines

FT have remained limited and going through a relaxation period in AE in 2021. The outlook has been more volatile throughout EE, where Turkey and some LatAm countries have faced some severe peaks in financial stress during 2021

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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

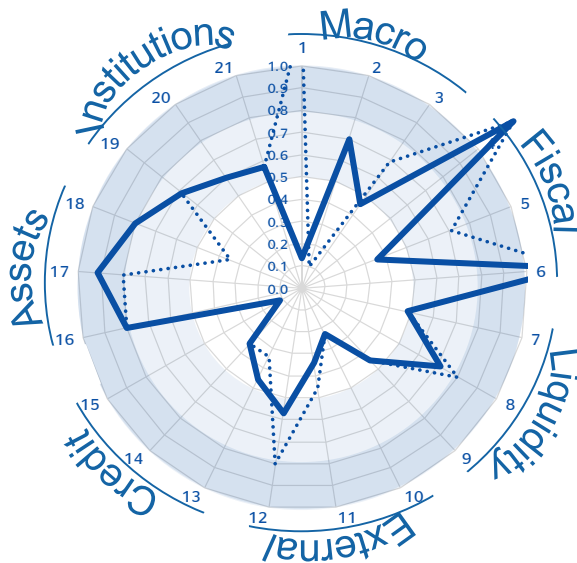
Macroeconomic Vulnerability and Risk Assessment

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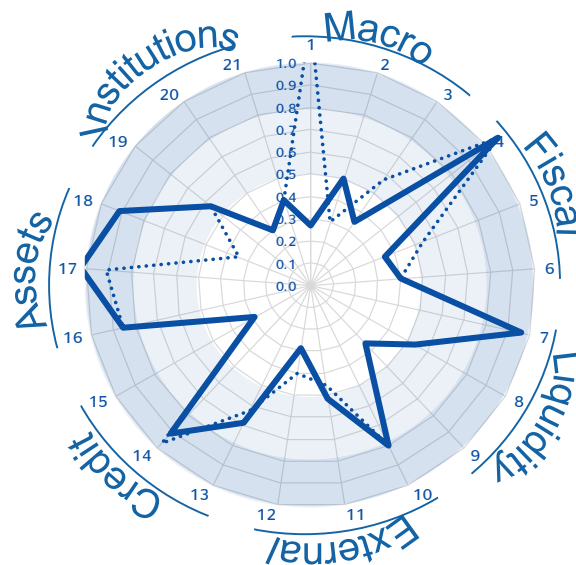
DEVELOPED MARKETS: VULNERABILITY RADAR 2021

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

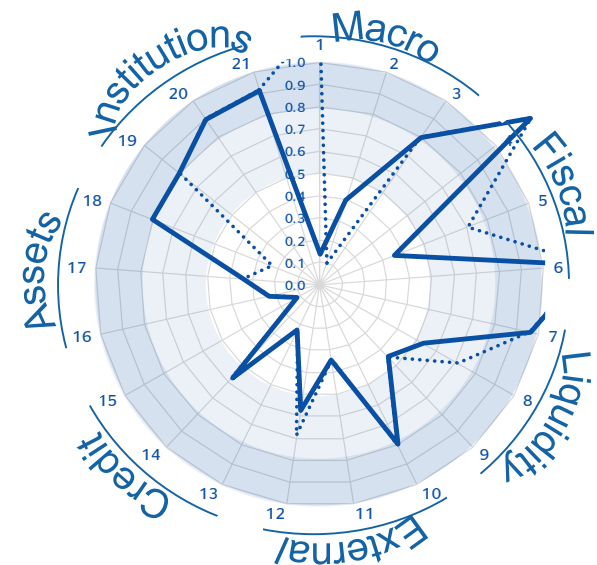
G7: Housing prices and equity markets have surpassed the high-risk vulnerability threshold. Fiscal vulnerability has improved due to high nominal GDP growth rates (r-g)



Core Europe: Financial vulnerabilities are all into high-risk territory. Macro vulnerabilities have clearly improved thanks to the gradual return to the pre-pandemic activity levels



Periphery EU: Fiscal vulnerabilities remain extremely high, while macro vulnerabilities have improved markedly. Financial vulnerabilities remain well under control



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 gap (%).

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. **Institutional indicators are updated annually and last data corresponds to 2020**)

■ High risk

■ Moderate Risk

□ Safe

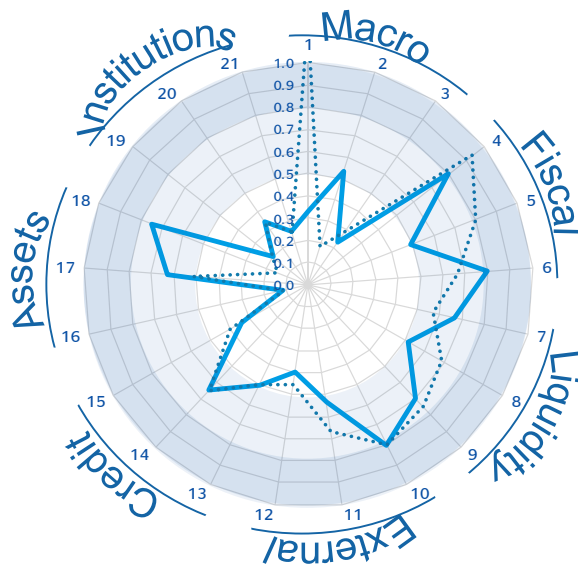
Macroeconomic Vulnerability and Risk Assessment

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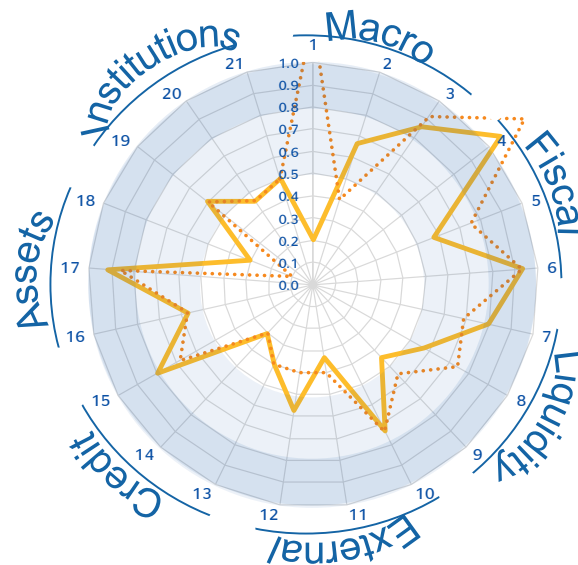
EMERGING ECONOMIES: VULNERABILITY RADAR 2021

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

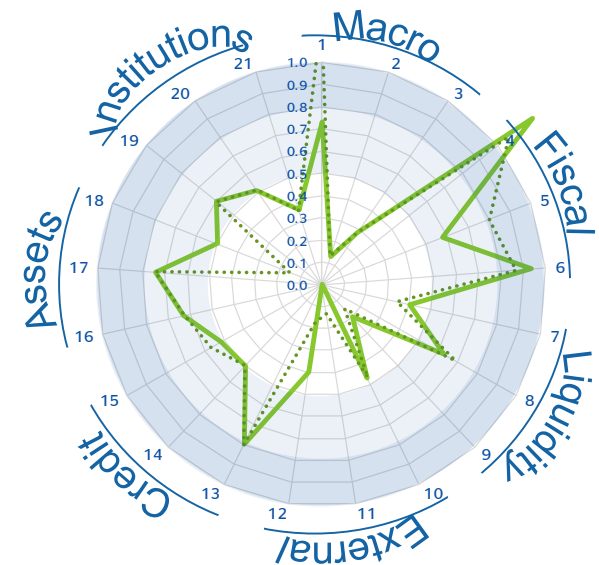
EE Europe: Public debt vulnerability has increased due to the fiscal effort during the pandemic, although other fiscal variables have improved. Equity markets' vulnerability has grown fast in 2021



LatAm: Fiscal and macro vulnerabilities have improved slightly during 2021 after the initial COVID shock. Housing price vulnerability remains high and private debt risk is worsening



EE Asia: Fiscal vulnerabilities continue to be the main vulnerabilities. Housing prices gaps and household leverage are also near or at high-risk levels



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 gap (%).

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. **Institutional indicators are updated annually and last data corresponds to 2020**)

■ High risk

■ Moderate Risk

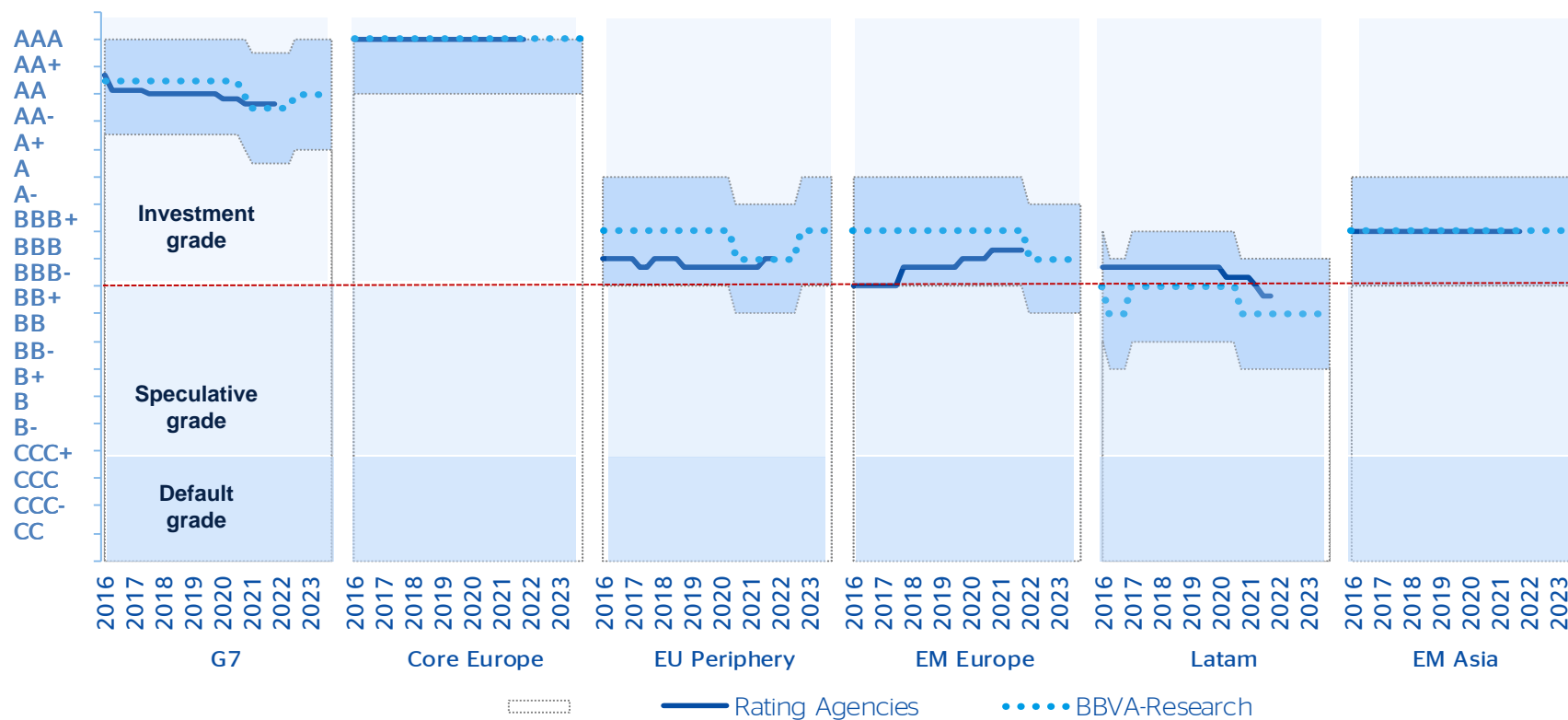
□ Safe

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 during 2021 despite the large increase in fiscal vulnerabilities triggered by the COVID shock. We do not observe big differences between Agencies' ratings and the own BBVA-Research ones at a regional level.

04

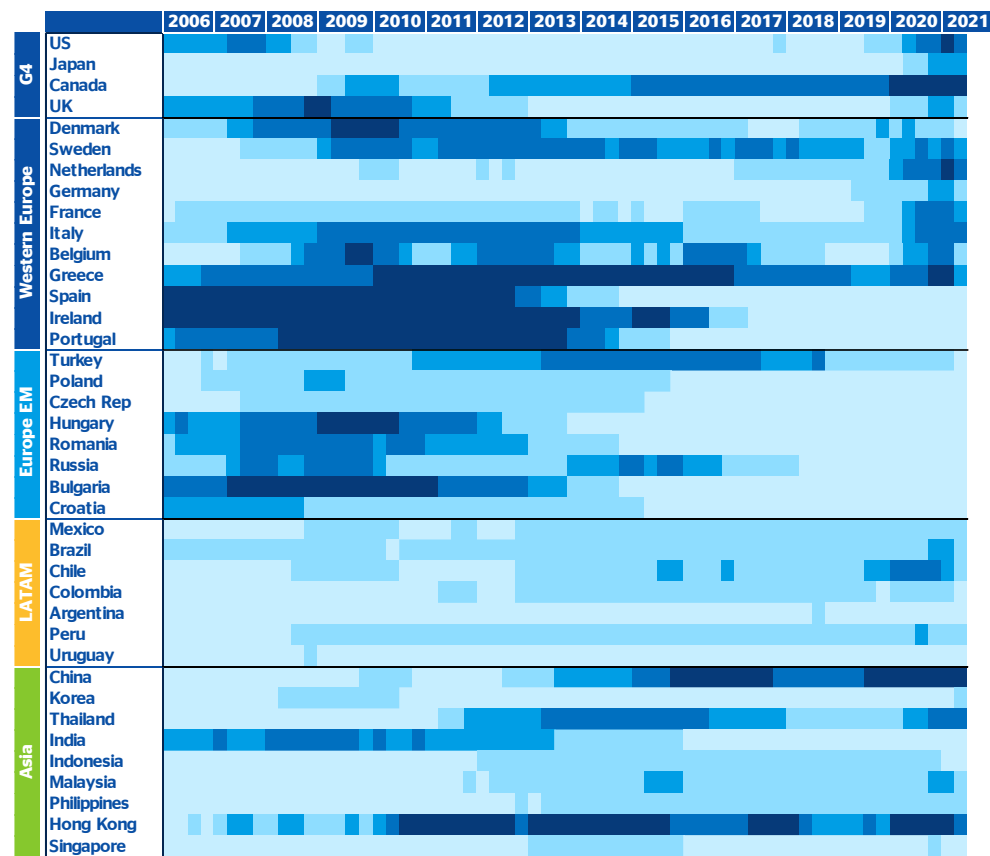
Assessment of financial and external disequilibria

- 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

Debt gaps (debt vs. equilibrium) levels have decreased overall in 2021 thanks to the recovery of GDP levels (lower Debt-to-GDP ratios and higher equilibrium levels), but have remained elevated in several Advanced Economies and China

PRIVATE DEBT GAPS COLOR MAP (2006-2021 Q2)

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



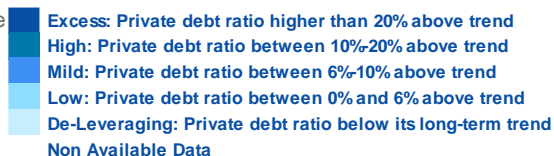
- Private leverage disequilibrium is extremely high in Canada and it has increased rapidly in USA, although it has slowed-down more recently.
- COVID Crisis has triggered a surge in gaps in most countries in northern Europe, some of which were already highly indebted. Although debt-to-GDP ratios have also increased in Peripheral Europe, their levels are still well below equilibrium levels.
- Turkey's leverage has returned to levels close to equilibrium after a temporary peak at the beginning of the COVID crisis. Gaps across EE Europe remain well contained
- Debt gaps have improved significantly across LatAm countries after the deterioration observed at the beginning of the pandemic
- China's excess leverage has kept deteriorating and it's currently at an extremely high level. HK's gap has improved slightly. It also remains high in Thailand.

The methodology for estimating debt gaps could be

found at: <https://goo.gl/LTeTHD>.

<https://goo.gl/r0BLbl>

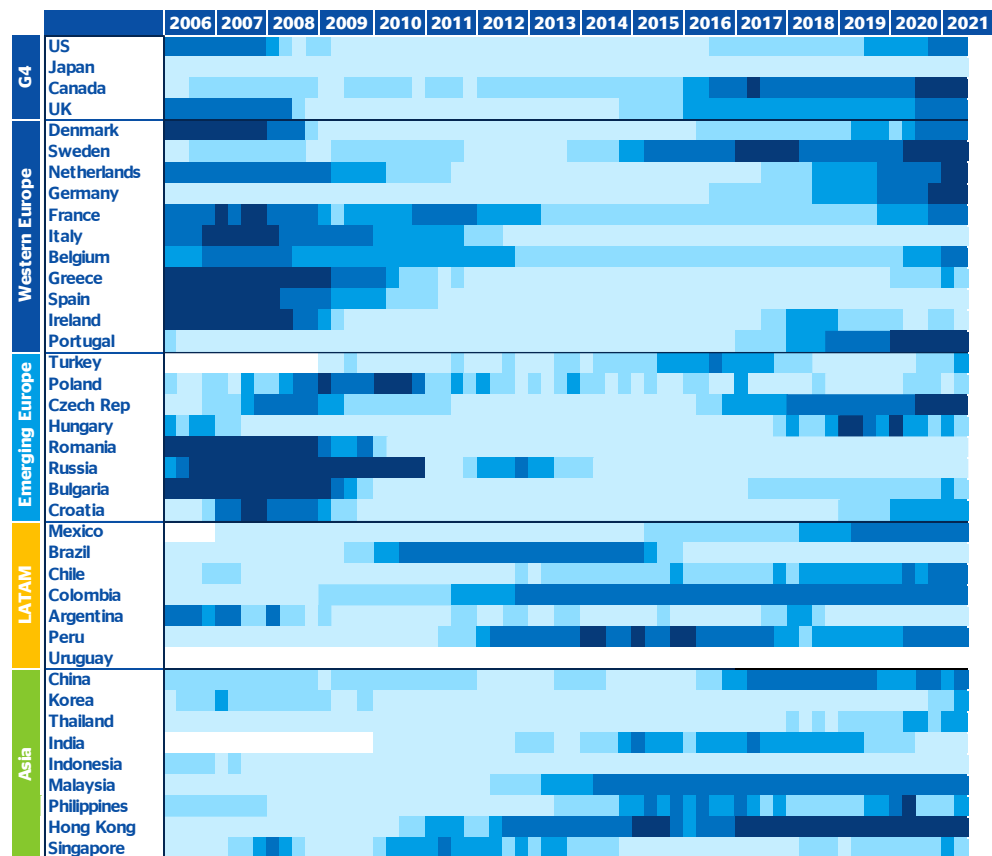
Source: IFS, BIS & BBVA Research



Housing prices have surged across the board during 2021, specially in Advanced Economies (AE). However, price gaps have evolved more heterogeneously, being again AE where they have widened more strongly, leaving some countries at record levels

REAL HOUSING PRICES GAPS COLOR MAP (2006-2021 Q2)

Gap between housing prices and its long-term structural trend



- Canada's gap is at an extremely high level. US and UK gaps have also entered into a high warning level.
- Gaps are also signaling clear excess levels in Sweden, Netherlands, Germany and Portugal, while Belgium, France and Denmark currently at warning levels.
- Gaps continue indicating excessive levels in Czech Republic, while the gap has grown to a mild-disequilibrium in Turkey. Gaps are growing across other countries, but still remain at low levels.
- Price gap remain high in Colombia, and have kept growing during the pandemic in Chile, Mexico and Peru.
- China's gap has grown again in 2021 warranting a warning signal, while HK's gap also continues showing a high excess level. Warning signals are emerging in Korea, and Philippines, and remaining high in Malaysia

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

Source: BBVA Research, BIS, Haver and Oxford Economics

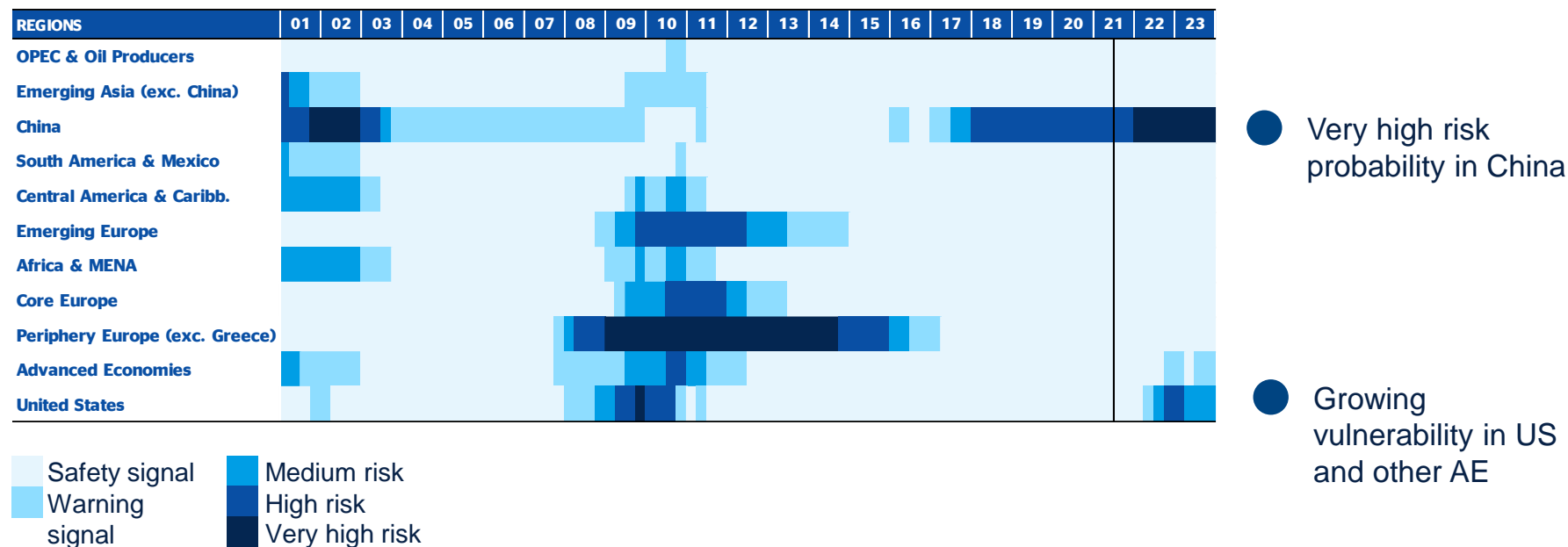
Excess: Real house prices higher than 20% above trend
 High: Real house prices between 10%-20% above trend
 Mild: Real house prices between 6%-10% above trend
 Low: Real house prices between 0% and 6% above trend
 De-Leveraging: Real house prices below its long-term trend
 Non Available Data

Assessment of financial and external disequilibria

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EARLY WARNING SYSTEM (EWS) OF BANKING CRISES (2001Q1-2023Q4)

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



- 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

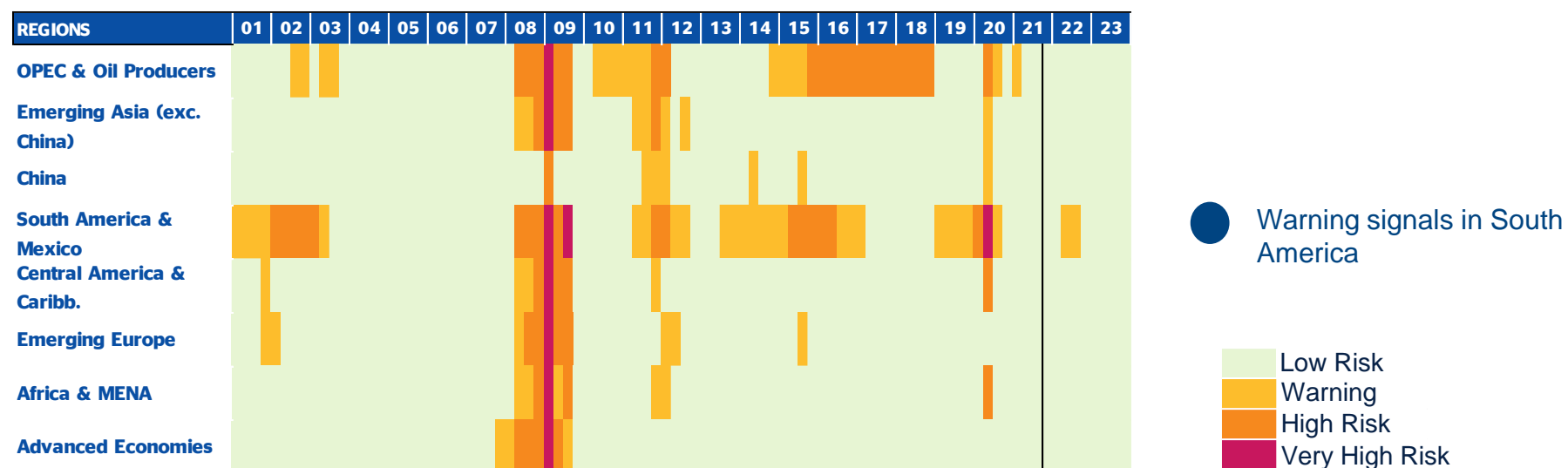
The upsurge in debt disequilibria observed after the COVID crisis (that has extended during 2021) has increased the vulnerability to a banking crisis in several countries, mostly concentrated in Core Europe and other AE, US and China

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 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 have remained muted during 2021 probably due to the abundant liquidity provided by Central Banks. Going forward, a significant likelihood of high tensions remain limited to a small group of countries, mainly in South America

05

Special Topic: Evolution of Private Leverage, Housing Prices and Public Debt during COVID

Evolution of Private Leverage, Housing Prices and Public Debt during COVID

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- **The pandemic crisis has triggered a significant increase in public and private debt levels** due to the huge fiscal stimulus placed by public authorities across the board, and due to several emergency policies designed to support private business (public guarantees, credit lines extensions, etc.), or the increasing private sector needs for liquidity due to the fall in revenues.
- Moreover, the huge swings in GDP levels have obviously caused a direct impact in the levels of the private and public leverage ratios simply because of a denominator effect
- Furthermore, **housing price levels have surged since the start of the pandemic**, specially in 2021, partly due to high savings levels in some countries and demographics, pent-up demand and changes in households' preferences.
- Higher leverage and rapid growing housing prices have always been associated with a higher financial vulnerability, since households and governments become more vulnerable to financial shocks like interest-rates raises
- **In this section we want to take a closer look at how private leverage, public leverage and housing prices have changed across a large and heterogeneous group of countries, and try to elucidate whether these changes have made countries more vulnerable** or not, by analyzing how some indicators of sustainability have evolved as a result of such changes

Evolution of Private Leverage during COVID (1/3)

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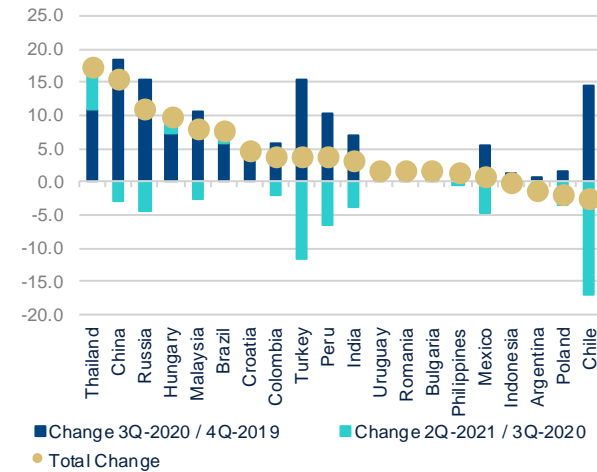
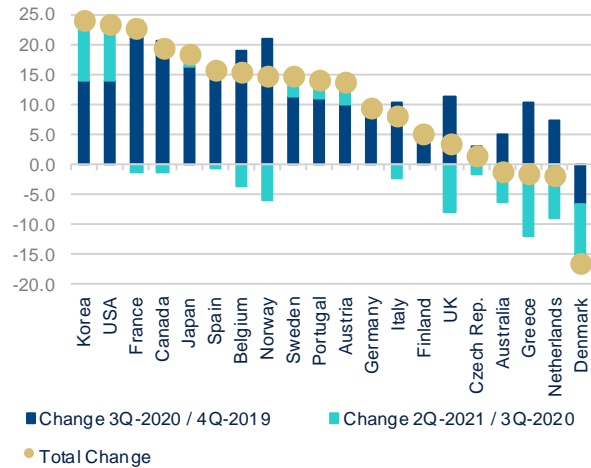
- **We first decompose the changes in private leverage** since the start of the pandemic **into two different phases**, the initial period in 2020 when the largest drops in GDP occurred (from 2019Q4 to 2020Q3), and the following recovery period (from 2020Q4 to 2021Q2).
- Given this decomposition in two phases we can spot in which countries the changes in leverage have been driven mainly by the denominator effect (changes in GDP) or by actual increases in debt levels.
- For instance, we can observe that in countries such as Mexico, the increase in private leverage was almost matched by the decrease in the following period, leaving private leverage basically unchanged.
- On the other hand, in Korea, US and Thailand, private leverage has increased in both periods, despite the strong recovery of GDP levels in the second one. This suggest that the changes in leverage have not only been driven by the denominator effect, but that there has been an important growth in debt levels too, even in 2021.
- In other countries such as Belgium, Norway or China, the increase in leverage during the initial phase was much larger than the correction during the recovery, also leaving leverage at a much higher levels than at the end of 2019.

Evolution of Private Leverage during COVID (2/3)

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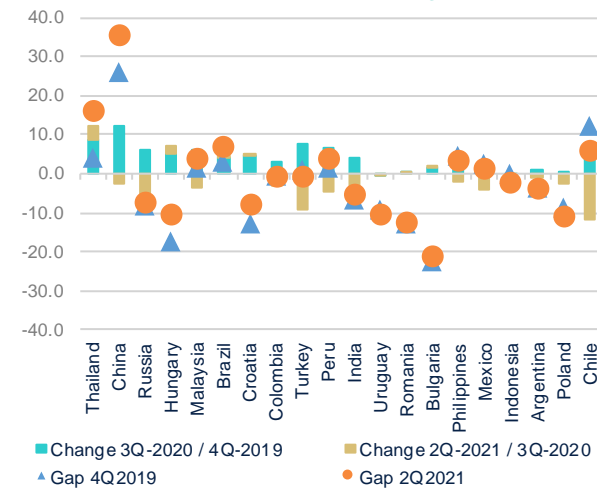
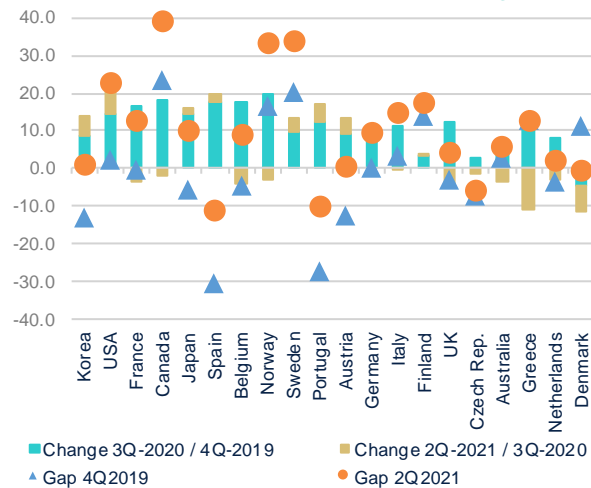
PRIVATE DEBT: CHANGE FROM 4Q2019 TO 2Q2021

Change in private debt-to-GDP ratio broken down by different periods, Advanced Economies (left), Emerging Economies (right)



PRIVATE DEBT GAPS VS. LONG-TERM TREND: CHANGE FROM 4Q2019 TO 2Q2021

Gap between private debt-to-GDP ratio and its long-term structural trend. Initial vs. final levels, and changes by different periods



Source: BBVA Research

Evolution of Private Leverage during COVID (3/3)

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- However, **not every change in leverage is an unsustainable change and thus not necessarily imply an increase in vulnerability.**
- For evaluating how the changes in leverage have translated into a higher vulnerability **we look at how the deviation from an estimated long-term trend (gaps) have changed** during the same periods of time.
- We are interested in countries with large positive gaps (at least 10% of GDP) as an indication of vulnerability. In the graphs we show the pre-pandemic gap, the changes in the two phases and the final gap.
- We can observe that, for instance, although private leverage has increased in most EE countries, only in China and Thailand that has translated into a clearly large positive gap, since many EE countries had negative or very low gaps before the start of the pandemic.
- On the other hand, debt gaps have become significantly positive in several AE countries, such as Canada, Norway, Sweden, USA, France or Finland.

Evolution of Housing Prices during COVID (1/2)

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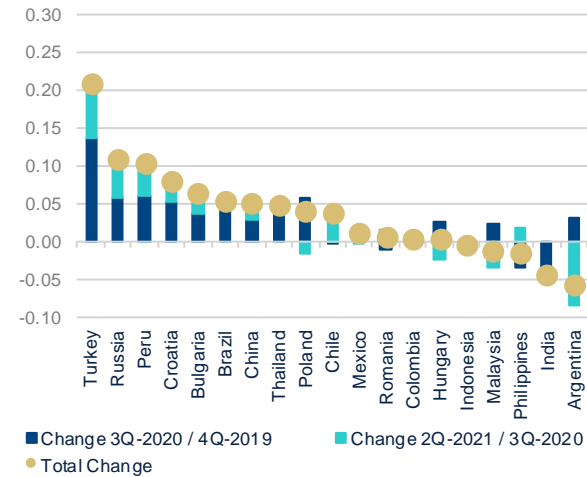
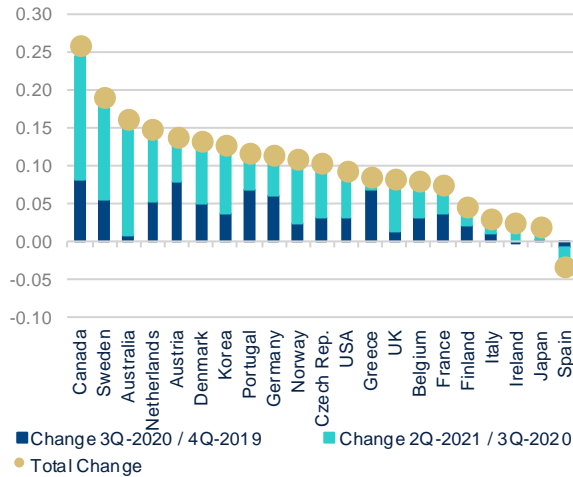
- In the case of **housing prices we reproduce the same analysis that in the case of private leverage**. First we decompose the change in **real prices** since the start of the pandemic in the same two phases as before (from 2019Q4 to 2020Q3 and from 2020Q4 to 2021Q2).
- Then we also decompose the deviations from the estimated long-term trend (gaps) into the same periods.
- In this case we can see that prices have grown strongly across the board in AE, while in EE the picture is more heterogeneous. Moreover, it is noticeable that growth has been mainly concentrated in 2021, although prices were also growing in many countries during 2020 despite the strong fall in activity and GDP during that period.
- Similarly to the private leverage case, large positive gaps are mainly concentrated on AE. Moreover, gaps have increased strongly in many places where gaps were already high (Canada, Sweden, Australia, Austria, Netherlands, Portugal, Czech Republic, etc.).
- In EE, gaps are smaller in general, but it is important to highlight the case of China because it coincides with a large gap in private leverage, which undoubtedly increases the overall vulnerability

Evolution of Housing Prices during COVID (2/2)

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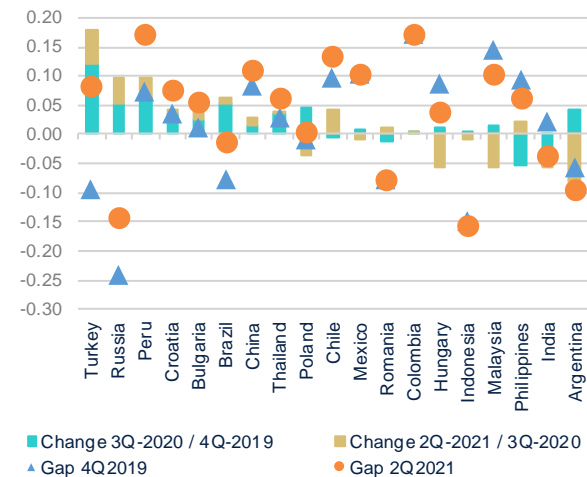
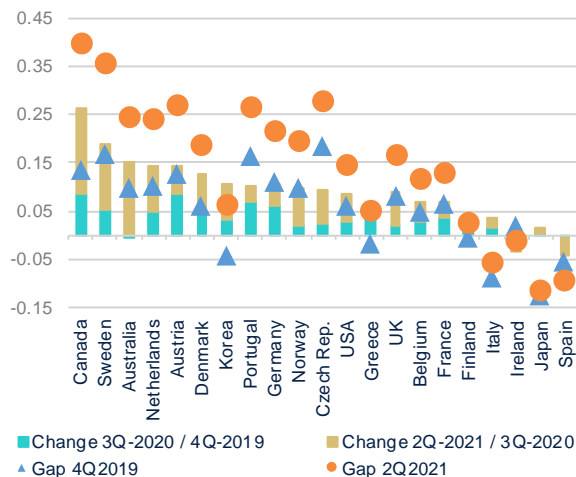
HOUSING PRICES: CHANGE FROM 4Q2019 TO 2Q2021

Change in real housing prices broken down by different periods, Advanced Economies (left), Emerging Economies (right)



HOUSING PRICES GAPS VS. LONG-TERM TREND: CHANGE FROM 4Q2019 TO 2Q2021

Gap between real housing prices and their long-term structural trend. Initial vs. final levels, and changes by different periods



Source: BBVA Research

Evolution of Public Debt during COVID (1/2)

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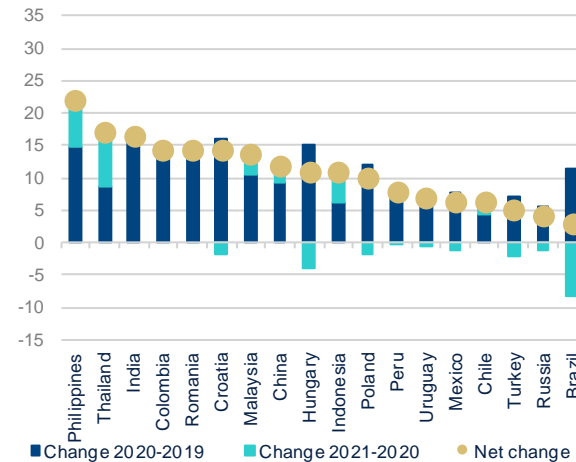
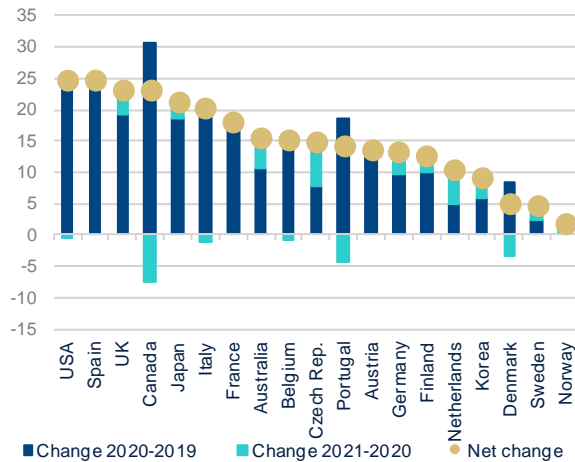
- In the case of **Public Debt** we also decompose the changes in the Public Debt-to-GDP ratios since the start of the pandemic into the change in 2020 and the estimated change in 2021.
- **Since we do not have an estimated “gap” we analyze the evolution of the “projected interest rate - growth differential” instead.** In this case we depict the r-g differential in 2019 vs. the r-g differential estimated for 2021.
- As expected, public leverage has strongly increased both in AE and EE and for most countries the increase in leverage in 2020 has been much larger than the change in 2021, leaving public debt ratios significantly higher than before.
- It is also noticeable that the r-g differential has widened across the board, driven mainly by the increase in the nominal GDP growth expected between 2021-2025 due to the strong expected rebound in activity and also to the recent pick-up in inflation rates.
- This suggests that although the increase in public debt has increased fiscal vulnerability in most countries, this has not translated into an immediate increase in fiscal sustainability issues, at least while interest rates remain low.
- However, if the current rise in inflation levels that we are witnessing in several economies translates into raises in official rates and into higher nominal interest rates, several countries might find much harder to service those larger debt levels.

Evolution of Public Debt during COVID (2/2)

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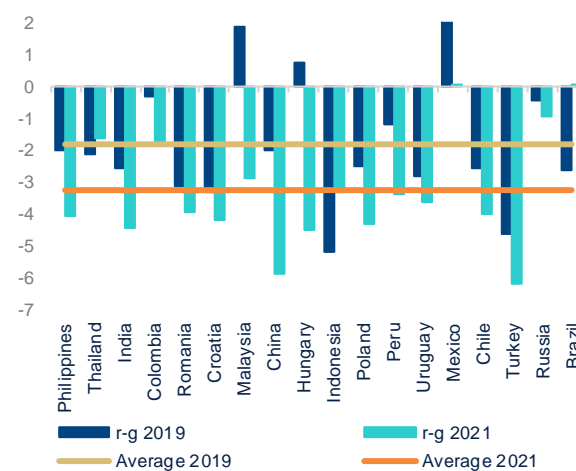
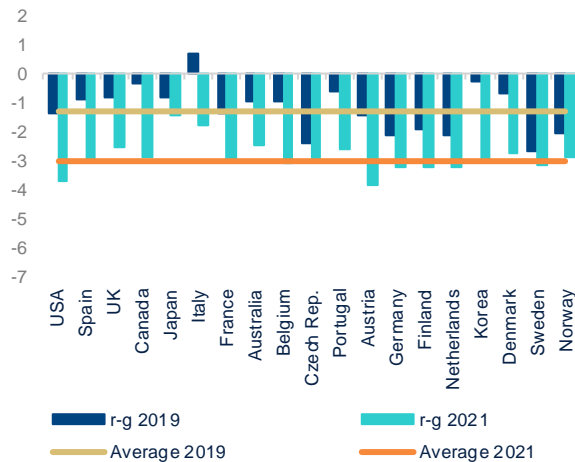
PUBLIC DEBT: CHANGE FROM 2019 TO 2021

Change in public debt-to-GDP ratio broken down by different periods, Advanced Economies (left), Emerging Economies (right)



PROJECTED INTEREST RATE-GROWTH DIFFERENTIAL: 2019 VS 2021

Gap between projected interest rate and nominal GDP growth rates. Values vs. averages by region in 2019 vs. 2021



Source: BBVA Research

Vulnerability Indicators table by country

Vulnerability Indicators Table

[← Summary](#) [← Index](#)

VULNERABILITY INDICATORS* 2021: DEVELOPED MARKETS

	Fiscal sustainability			External sustainability			Liquidity management			Macroeconomic performance			Credit and housing			Private debt			Institutional		
	Fiscal balance (1)	Interest rate GDP growth differentia 2021-26	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 gap (4)	HH debt (1)	NF corporate debt (1)	Financial liquidity (6)	WB political stability (7)	WB control corruption (7)	WB rule of law (7)
United States	-10.8	-3.7	133.3	-3.5	103.4	-0.6	45.0	16.7	25.0	5.9	4.3	5.6	29.2	15.1	21.8	78.7	82.0	50.5	-0.3	-1.2	-1.5
Canada	-7.5	-2.9	109.9	0.5	135.5	4.9	21.8	11.3	23.6	5.7	3.8	6.9	51.9	44.6	24.5	110.8	128.6	106.3	-1.0	-1.8	-1.8
Japan	-9.0	-1.4	256.9	3.5	89.8	-7.4	61.3	16.4	13.5	2.4	0.7	2.7	4.5	-20.6	27.0	66.4	117.0	47.8	-1.0	-1.5	-1.5
Australia	-8.5	-2.5	62.1	3.6	104.4	3.7	12.6	4.2	47.0	3.5	2.6	5.0	15.4	29.6	27.0	121.1	70.6	117.9	-1.1	-1.8	-1.7
Korea	-2.9	-3.0	51.3	4.5	34.4	-0.7	5.4	7.3	15.5	4.3	2.7	3.7	-6.8	3.8	31.8	106.0	112.3	98.1	-0.5	-0.8	-1.2
Norway	-5.9	-2.8	42.7	7.2	180.7	0.3	-8.7	8.1	65.4	3.0	2.3	3.6	47.8	27.5	38.6	111.1	147.5	160.7	-1.2	-2.1	-2.0
Sweden	-2.6	-3.2	39.6	4.8	182.3	1.9	6.7	10.3	33.6	4.0	2.0	8.0	47.5	44.2	23.5	94.7	178.9	155.4	-1.1	-2.1	-1.9
Denmark	-1.9	-2.7	38.8	7.0	155.5	-0.5	7.9	16.1	38.7	3.8	1.4	3.6	12.7	21.8	27.0	109.8	130.9	247.2	-1.0	-2.1	-1.9
Finland	-4.6	-3.2	72.2	-0.1	241.5	-0.4	14.2	10.7	71.9	3.0	2.2	7.6	28.4	6.2	24.7	69.4	122.9	122.3	-0.9	-2.2	-2.0
UK	-11.9	-2.5	108.5	-3.4	325.4	4.3	18.0	7.5	37.3	6.8	3.5	5.2	11.0	23.1	20.8	85.3	73.6	52.1	-0.5	-1.8	-1.6
Austria	-5.8	-3.8	84.2	1.6	159.5	1.3	14.3	8.4	82.9	3.9	2.9	5.8	0.0	31.0	73.5	52.2	94.8	87.9	-1.0	-1.5	-1.9
France	-8.9	-3.0	115.8	-1.7	259.9	-0.4	20.7	8.0	60.7	6.3	2.9	8.4	12.8	18.5	35.7	65.2	163.2	97.0	-0.3	-1.3	-1.4
Germany	-6.8	-3.2	72.5	6.8	165.5	1.4	14.4	8.8	56.3	3.1	4.0	5.4	10.0	20.1	19.6	58.0	74.0	84.0	-0.6	-1.9	-1.6
Netherlands	-6.1	-3.2	58.1	7.9	427.9	1.2	14.4	15.4	49.6	3.8	1.8	4.2	17.9	27.7	40.9	101.5	150.5	87.9	-0.9	-2.0	-1.8
Belgium	-7.0	-3.1	113.4	0.0	254.0	0.0	16.3	16.6	70.1	5.6	3.0	6.4	17.9	16.2	30.9	63.5	174.4	57.0	-0.5	-1.6	-1.4
Italy	-10.2	-1.8	154.8	3.7	139.6	-1.0	27.0	14.9	36.0	5.8	1.7	9.3	24.8	-6.8	35.1	44.3	73.7	75.0	-0.5	-0.2	-0.3
Spain	-7.0	-3.0	119.8	0.7	197.4	0.2	22.4	15.1	54.0	5.2	2.4	15.0	-5.6	-11.4	31.0	61.8	107.6	81.4	-0.3	-0.6	-1.0
Ireland	-5.3	-5.2	57.4	11.1	605.4	-1.2	6.2	11.2	75.3	13.0	3.2	7.0	-54.9	-5.6	31.7	33.0	194.2	29.7	-1.0	-1.5	-1.4
Portugal	-4.8	-2.6	130.8	-1.7	201.8	-1.7	15.4	10.6	58.9	5.0	0.8	6.9	-4.4	25.8	32.8	68.3	105.9	88.5	-1.1	-0.8	-1.1
Greece	-10.2	-1.1	206.7	-7.4	306.8	-2.1	14.5	8.1	81.5	6.5	1.3	16.6	31.1	4.9	38.5	60.7	65.1	70.7	-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* 2021: EMERGING ECONOMIES

	Fiscal sustainability			External sustainability			Liquidity management				Macroeconomic performance			Credit and housing		Private debt			Institutional		
	Fiscal balance (1)	Interest rate GDP growth differential 2021-26	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)	HH debt (1)	NF corporate debt (1)	Financial liquidity (6)	WB political stability (7)	WB control corruption (7)	WB rule of law (7)
Bulgaria	-3.7	-3.8	25.0	0.5	62.5	2.0	3.5	2.9	11.3	55.8	4.5	3.3	5.2	-27.5	3.9	23.6	72.9	65.4	-0.5	0.2	0.0
Czech Rep	-8.0	-3.0	45.0	1.6	72.6	4.7	14.3	1.4	12.6	36.8	3.8	2.7	3.7	-6.6	32.4	33.1	57.1	72.7	-1.0	-0.5	-1.0
Croatia	-4.1	-4.2	87.0	-0.1	84.9	1.1	10.4	1.9	10.1	34.3	6.3	2.9	6.7	-9.4	3.4	35.5	63.4	74.1	-0.8	-0.1	-0.4
Hungary	-6.6	-4.5	76.6	0.6	155.1	1.2	17.8	0.6	3.9	37.0	7.6	4.8	3.9	-12.6	-3.4	21.2	81.8	84.9	-0.7	0.0	-0.5
Poland	-4.2	-4.3	55.5	2.3	56.6	1.4	9.0	1.8	5.8	34.7	5.1	5.0	5.7	-12.1	0.2	33.6	87.6	93.0	-0.5	-0.6	-0.5
Romania	-6.7	-4.0	51.1	-5.7	53.6	1.1	11.0	1.8	5.3	57.2	4.2	2.5	5.8	-15.6	-9.2	15.9	34.6	68.3	-0.5	0.1	-0.4
Russia	-0.6	-0.9	17.9	5.7	29.5	..	1.9	5.1	18.0	22.9	4.7	5.8	4.8	-9.5	-19.1	19.7	90.3	108.0	0.5	0.8	0.7
Turkey	-2.7	-6.2	48.8	-2.4	58.3	0.7	11.3	0.4	2.6	37.2	9.5	18.1	12.6	1.2	7.2	15.3	65.2	96.7	1.3	0.3	0.3
Argentina	-5.4	-20.5	89.4	1.1	65.3	0.9	12.2	0.8	8.1	42.1	7.5	48.2	9.6	-5.5	-8.7	4.8	20.3	133.0	0.1	0.1	0.4
Brazil	-6.2	0.0	90.6	-0.5	43.3	1.6	22.1	3.3	18.8	10.8	5.2	7.9	12.0	8.9	5.1	36.2	52.8	93.8	0.5	0.3	0.2
Chile	-7.9	-4.0	34.4	-2.5	73.0	0.8	9.9	1.8	7.0	40.9	11.0	5.5	8.5	8.8	15.8	45.9	110.3	125.8	-0.2	-1.1	-1.1
Colombia	-8.0	-1.7	64.5	-5.0	52.6	1.5	10.0	3.5	13.4	36.1	9.2	3.4	15.4	-0.5	24.9	30.8	33.8	113.5	0.9	0.2	0.4
Mexico	-3.3	0.1	50.7	-0.1	38.5	1.3	12.5	3.8	5.6	30.0	6.0	5.5	4.2	2.3	13.8	16.7	25.6	77.5	0.7	0.8	0.7
Peru	-3.8	-3.4	32.6	-1.8	35.6	2.9	7.4	7.5	20.7	51.9	12.2	3.8	11.4	6.1	24.7	15.9	42.7	142.3	0.1	0.4	0.5
China	-7.5	-5.8	76.0	1.2	16.1	..	4.4	3.2	16.4	..	8.0	1.2	4.0	50.9	13.7	61.4	159.4	248.7	0.2	0.3	0.3
India	-11.3	-4.5	90.6	-1.0	21.5	2.0	15.4	5.4	13.4	4.5	9.5	5.5	7.1	-5.0	1.5	39.7	53.2	79.4	0.7	0.2	0.0
Indonesia	-6.1	-3.3	41.4	-0.3	43.5	1.2	8.1	2.4	9.2	53.2	3.2	2.0	6.8	-2.7	-24.7	17.8	22.6	89.9	0.5	0.4	0.3
Malaysia	-5.9	-2.9	70.7	3.8	69.5	1.2	11.7	1.2	6.8	25.2	3.5	2.5	4.5	4.4	18.1	98.0	70.9	113.1	-0.1	-0.2	-0.6
Philippines	-7.6	-4.0	59.1	0.4	26.6	2.3	13.2	6.6	9.9	27.8	3.2	3.3	7.2	4.6	9.0	4.4	43.4	66.2	0.9	0.6	0.5
Thailand	-6.9	-1.6	58.0	-0.5	37.6	2.4	13.7	3.3	12.8	13.4	1.0	1.0	1.9	20.6	4.7	77.7	53.5	94.3	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 Spreads Maps:** It shows a colour map with six different ranges of sovereign spreads (darker >500, 300 to 500, 200 to 300, 100 to 200, 50 to 100 and the lighter below 50 bp). For European countries the spread corresponds to the difference of the local 10-year bond yield vs. Germany. For Emerging Economies countries the spread correspond to the EMBI spread.
- **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 Economies). 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
- **Equity Prices Gap:** Equity Prices Indexes are first transformed to real prices using the CPI index. The gap is estimated as the deviation of the current value of the logarithm of real equity prices vs. its corresponding 4-year moving average.

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
Macroeconomics				
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)
Fiscal Vulnerability				
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
External Vulnerability				
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
Liquidity Problems				
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
Private Balance Sheets				
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
Excess Credit and Assets				
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 prices gap (%)	20.0	20.0	Higher	BBVA Research (based on historical percentiles)
Institutions				
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 (8th 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: 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

We finally combine our own estimated gaps with the gaps estimated following the BIS methodology ([trend based on a HP filter](#)), assigning a weight of 0.75 to our own gaps and 0.25 to the gaps estimated through the BIS methodology.

The full description of our 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.

We finally combine our own estimated gaps with the gaps estimated following the BIS methodology ([trend based on a HP filter](#)), assigning a weight of 0.75 to our own gaps and 0.25 to the gaps estimated through the BIS methodology.

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
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- Core Europe: Austria, Belgium, Denmark, Finland, France, Germany, Netherlands, Sweden and United Kingdom.
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- 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
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- Advanced Economies: Australia, Japan, Korea, Singapore, Canada, Iceland, New Zealand and Switzerland

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