BBVA Research

Country Risk Report 2025

December 2024

(Data as December 2024)

Creating Opportunities

Summary

SOVEREIGN RATINGS AND SPREADS:

- **Agencies' ratings changes have been concentrated in Emerging Economies (EE), with very few changes in Advanced Economies (AE).** Changes have been modestly negative in G7 countries (fall in **France**), and positive in peripheral Europe. Across EE however, **the rating cycle has been fairly positive in LATAM countries,** particularly in Argentina, Brazil and Uruguay.

- **Sovereign spreads have either narrowed or remained stable throughout the year across various regions,** primarily due to stabilizing and declining inflation, as well as the monetary easing cycle. Türkiye and Argentina have shown the strongest performance during this period, while spreads in Latin America have been particularly volatile.

FINANCIAL, FISCAL AND PRIVATE VULNERABILITIES:

- **Macroeconomic vulnerabilities have improved across the board and remain below risk thresholds (higher GDP growth and lower inflation), while fiscal vulnerabilities are still relatively stable** (public debt and fiscal balances), with the exception a slight worsening of interest-growth differentials.

- **On the private sector side, debt gaps levels** (outstanding debt ratios vs. estimated equilibrium) **have decreased or stabilized overall due to the high nominal GDP levels (powered by inflation) seen in the last couple of years**, but still remain elevated in some AE economies.

- **Real housing prices gaps (vs long-term equilibria) have picked up during the year and are currently at warning levels in several AE.** Northern Europe, Portugal and Türkiye present the highest disequilibrium levels. China's disequilibrium is finally receding.

- **The reduction in private leverage due to recent high inflation and the easing cycle of central banks has significantly lowered the likelihood of banking crises.** However, China remains a concern due to its high leverage and ongoing real estate crisis.

- **The monetary easing cycle and the relaxation of Global Risk Aversion have markedly lowered the likelihood of foreign exchange tensions** in the coming years, and only a limited number of countries exhibit warning signals for the future.

Summary

SPECIAL TOPIC: THE IMPACT OF FISCAL RULES COMPLIANCE ON SOVEREIGN DEBT MARKETS IN THE EU

- This preliminary analysis **examines the impact of compliance with various fiscal rules under the Stability and Growth Pact (SGP) on sovereign spreads in the EU27**. Additionally, it evaluates the **potential non-linear effects** of compliance concerning **debt-to-GDP ratios** and the **state of the economy** on risk premiums.

- In general, compliance with fiscal rules in the EU has been negatively correlated with sovereign spreads. Specifically, **compliance has a significant and transitory positive effect on risk premia (narrowing spreads)**, although this is not uniformly applicable to all types of numerical fiscal rules. Compliance with **deficit and debt rules exerts a more substantial narrowing effect on spreads** compared to compliance with structural balance or expenditure rules, both in terms of significance and magnitude. Additionally, we provide evidence of the non-linear effects of debt levels and the business cycle, finding that in **highly indebted countries and during periods of economic expansion, the effect on spreads is more pronounced.**

- These findings **contribute to the literature exploring the impact of fiscal rules**—primarily focused on **implementation**—on sovereign debt markets, which demonstrate a **negative effect on sovereign spreads** (Afonso and Guimarães (2015); Thornton and Vasilakis (2017); Afonso and Jalles (2019)). However, **we focus on the second derivative of fiscal rules post-implementation: compliance. A relevant topic in the era of the reformed economic governance framework in the EU.**

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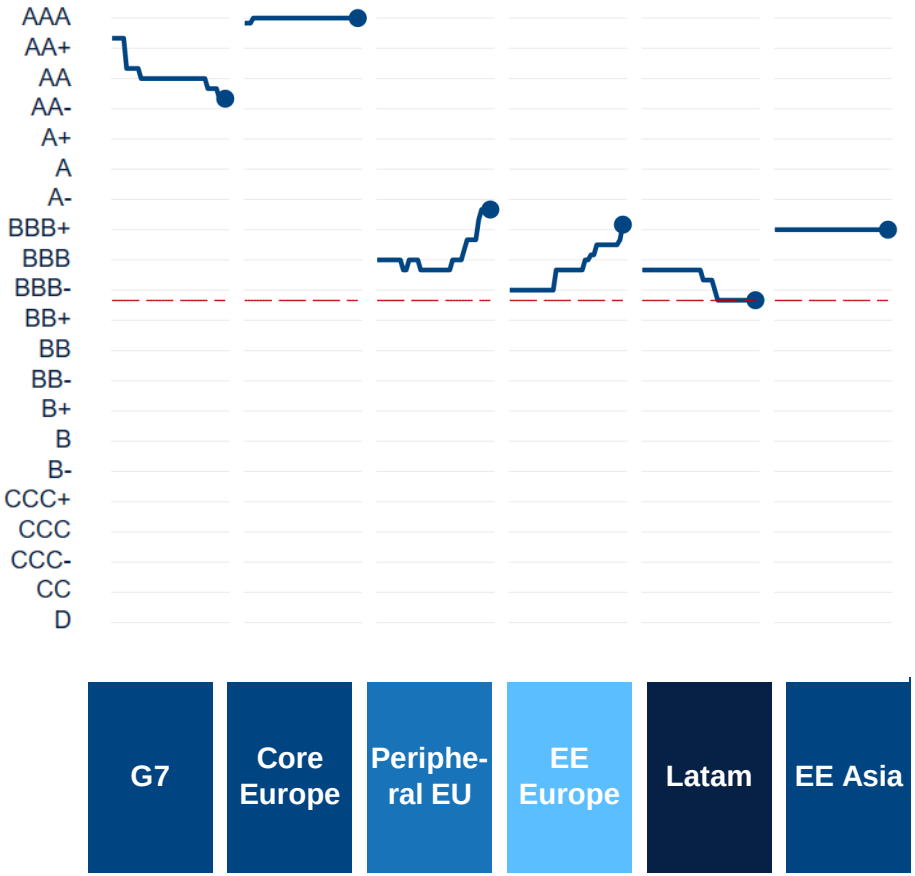
01
Sovereign Markets and Ratings Update

Evolution of sovereign ratings
Evolution of sovereign spreads by country
Evolution of Indicators of global risk aversion

Summary Index

Sovereign markets and rating agencies update

MEDIAN SOVEREIGN RATING INDEX 2016-2024



- **Agencies' ratings changes have been concentrated in EE, with very few changes in AE.**
- **Changes have been slightly negative in G7 countries, France has been downgraded by S&P and Moody's**
- **Other changes have been more positive in Peripheral and EE Europe.**
- During 2024 and among AE, **Portugal** was upgraded by one agency. In peripheral Europe, Croatia was upgraded by all agencies.
- **LATAM**'s ratings experienced improvements, particularly in Argentina, Brazil and Uruguay, with the exception of **Peru** who was downgraded by S&P
- **Türkiye** was upgraded in 2024 by all rating agencies.

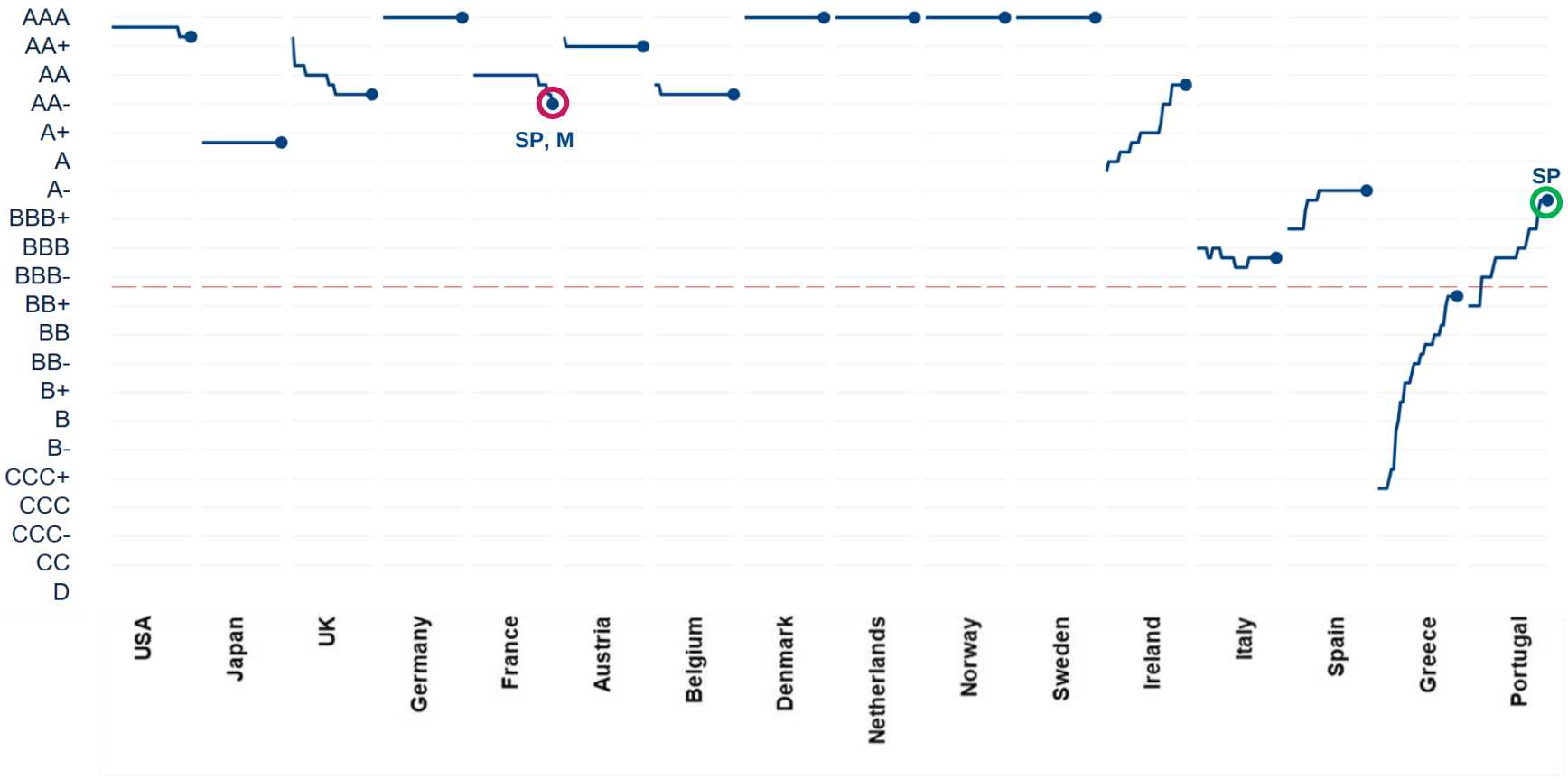
Sovereign Rating Index: An index that translates the three important rating agencies ratings letters codes (Moody's, Standard & Poors and Fitch) to numerical positions from 20 (AAA) to 0 (default). The index shows the average of the three rescaled numerical ratings.

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

Summary Index

Sovereign markets and rating agencies update

SOVEREIGN RATING INDEX 2016-2024 (AND CHANGES IN 2024): ADVANCED ECONOMIES



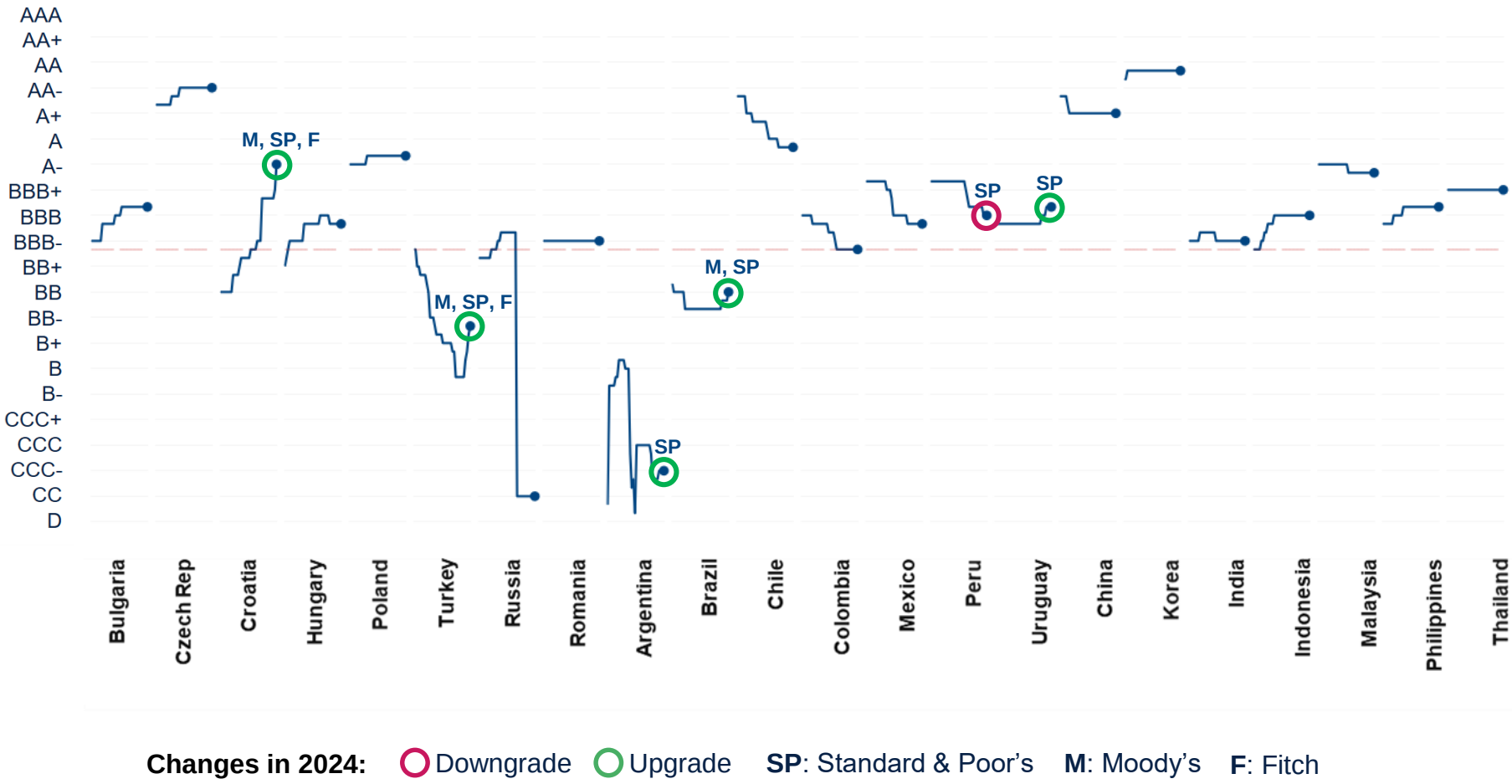
Changes in 2024: Downgrade Upgrade **SP**: Standard & Poor's **M**: Moody's **F**: Fitch

Source: BBVA Research

Summary Index

Sovereign markets and rating agencies update

SOVEREIGN RATING INDEX 2016-2024 (AND CHANGES IN 2024): EMERGING ECONOMIES (*)



Changes in 2024: Downgrade Upgrade **SP**: Standard & Poor's **M**: Moody's **F**: Fitch

(*) Note: Colombia does not technically hold an investment grade status since two rating agencies have its rating in the speculative grade, even though another one has it one notch above investment grade

Source: BBVA Research

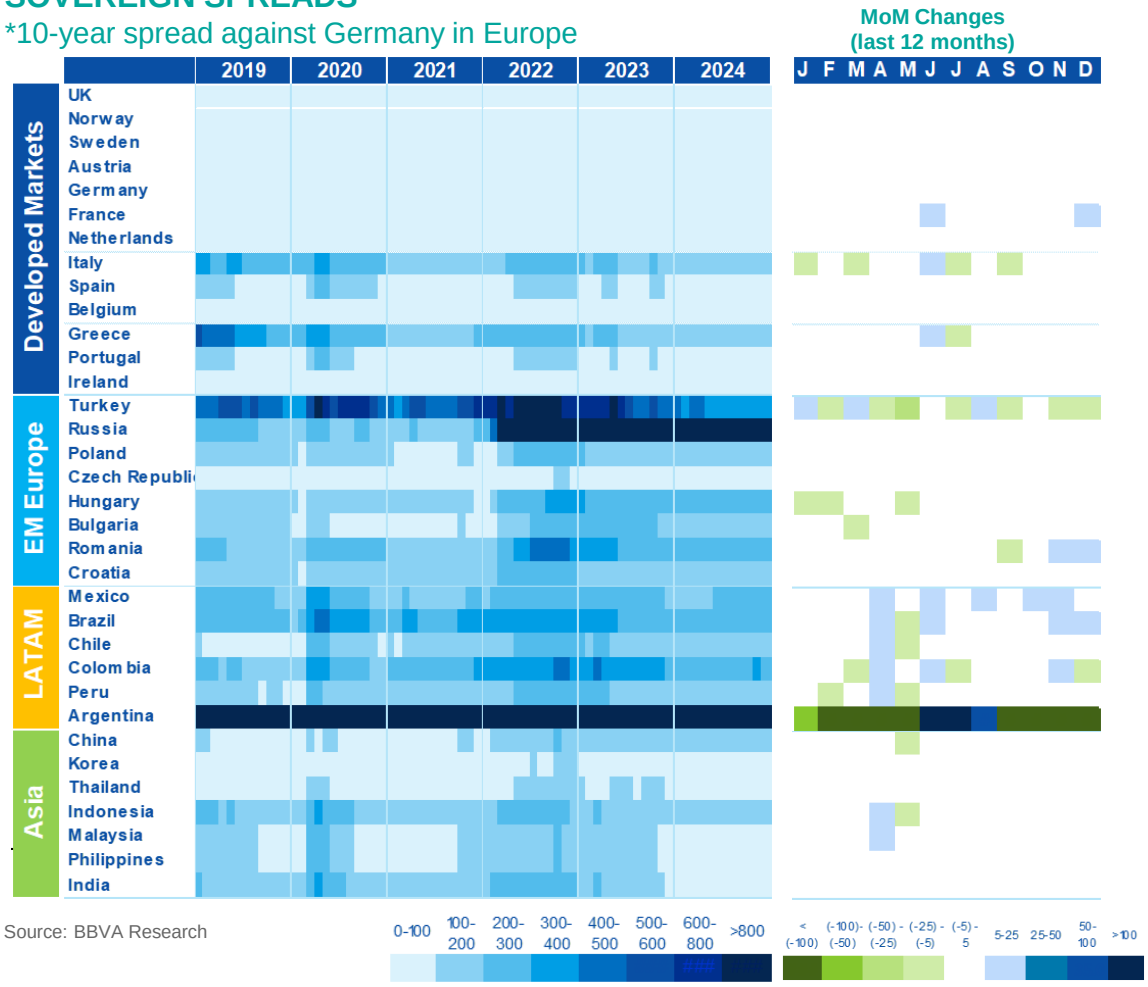
Summary Index

Sovereign spreads

Sovereign spreads have narrowed or remained stable throughout the year and across the board, mainly due to a stabilizing and declining inflation and the monetary easing period from most CBs. Türkiye and Argentina have had the best performance during the year, while spreads in Latam have experienced some volatility.

SOVEREIGN SPREADS

*10-year spread against Germany in Europe



Source: BBVA Research

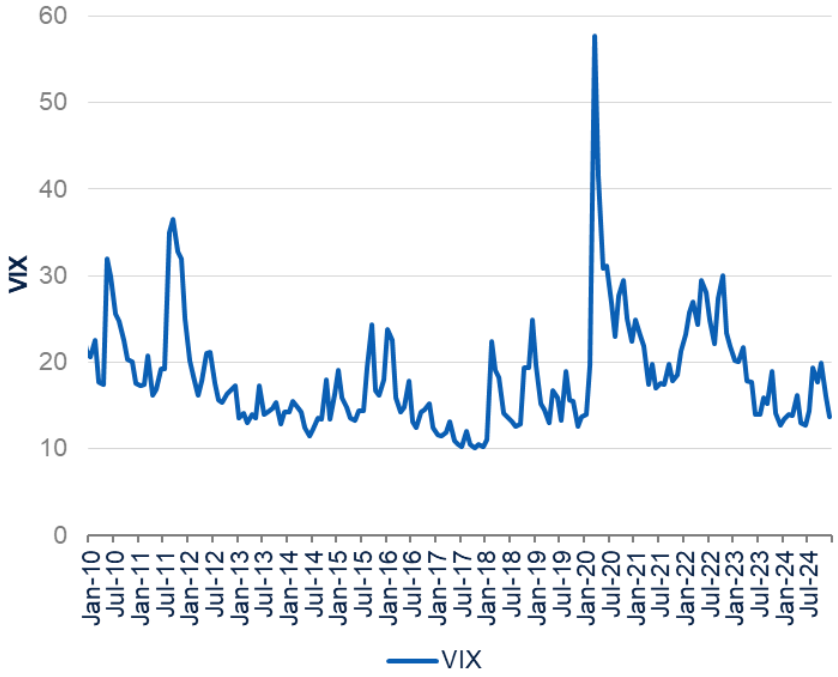
- **Few changes in AE. Italy and Greece** have seen a positive evolution (narrowing of their spreads), while political instability in France has had only a slight impact on its spread.
- Clear stability in EE Europe. **In Türkiye, a gradual improvement of inflationary pressures has pushed spreads downwards since 2023**.
- One year after Milei's triumph, **Argentina's spread has narrowed markedly and also its volatility has noticeably eased** compared to 2023. Mexico spread has deteriorated somewhat.
- Overall, spreads remained fairly stable in EE Asia

Summary Index

Global risk aversion indicators

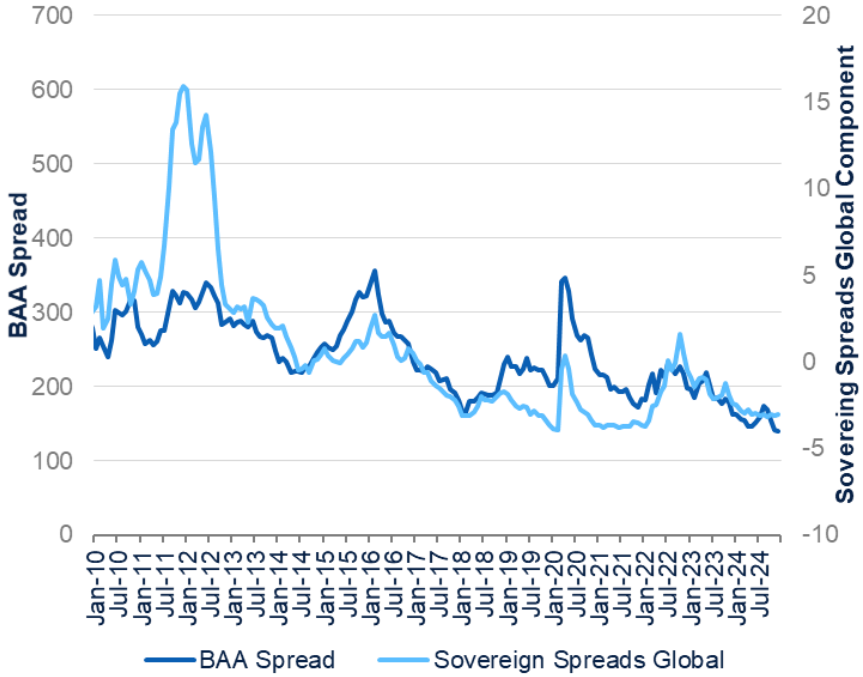
Global Risk Aversion indicators have relaxed throughout the entire year following the start of central bank (CBs) interest rates monetary easing phase, and are currently near historical low levels

GLOBAL RISK AVERSION INDICATOR: VIX
(Monthly Average)



Source: BBVA Research

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



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

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02

Macroeconomic vulnerability and in-house regional country risk assessment

Vulnerability Radars by regions
BBVA-Research sovereign ratings by regions

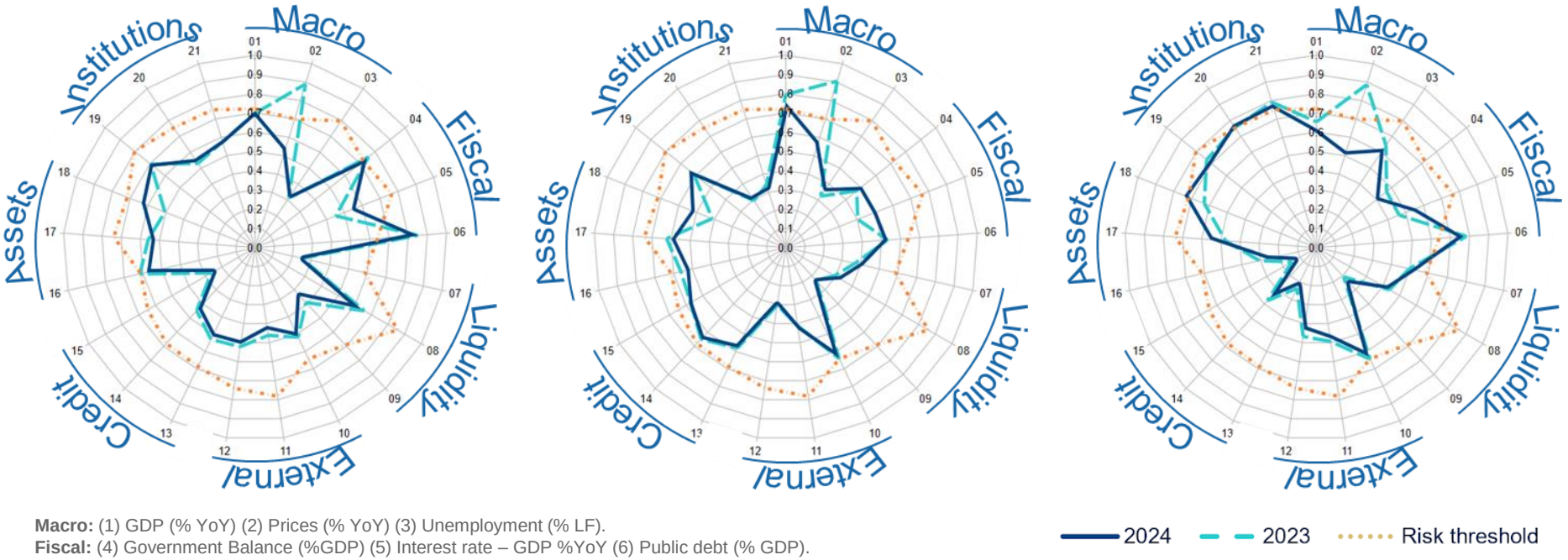
DEVELOPED MARKETS: VULNERABILITY RADAR 2024

(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: Fiscal vulnerability has slightly increased due to a worsening of interest-growth differential. **Nominal GDP growth remains constant, while inflationary pressures have declined**. Equity gaps have worsened.

Core Europe: Macro vulnerabilities have diminished due to a more favorable inflation evolution. **Financial vulnerabilities are declining due to the slight slowdown of housing prices and private debt, despite of equity gaps deterioration.**

Periphery EU: Fiscal balances are improving, **but high public debt remain the highest risk**. Inflation has notably eased in line with the rest of advanced economies.



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 2022**)

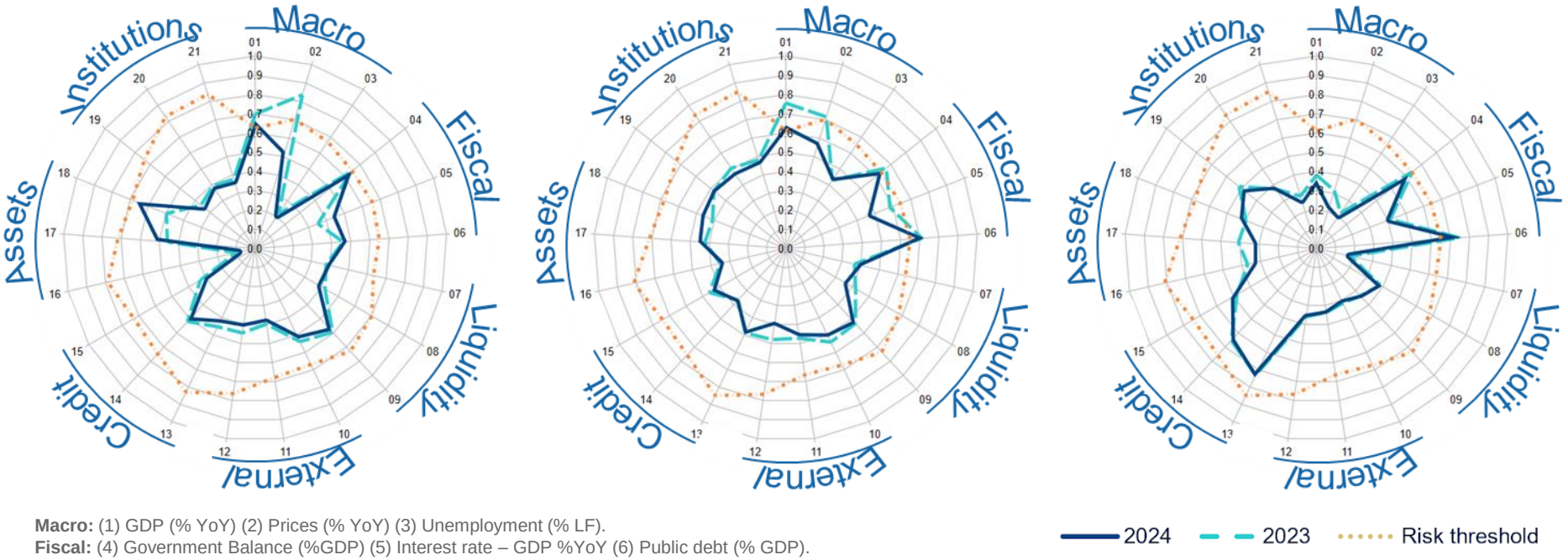
EMERGING ECONOMIES: VULNERABILITY RADAR 2024

(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: Macroeconomic vulnerability improved due to slightly higher growth and dropped inflation. Financial vulnerability is increasing, driven by worsening of housing prices and equity gaps.

LatAm: Macro vulnerabilities have eased markedly due to high GDP growth and low inflation. Fiscal risks stabilized, despite a relatively high public debt levels. Financial vulnerabilities remain under control.

EE Asia: Fiscal vulnerabilities remain constant. Housing prices gaps have slightly relaxed, but **public debt remain over the risk threshold and without changes**.



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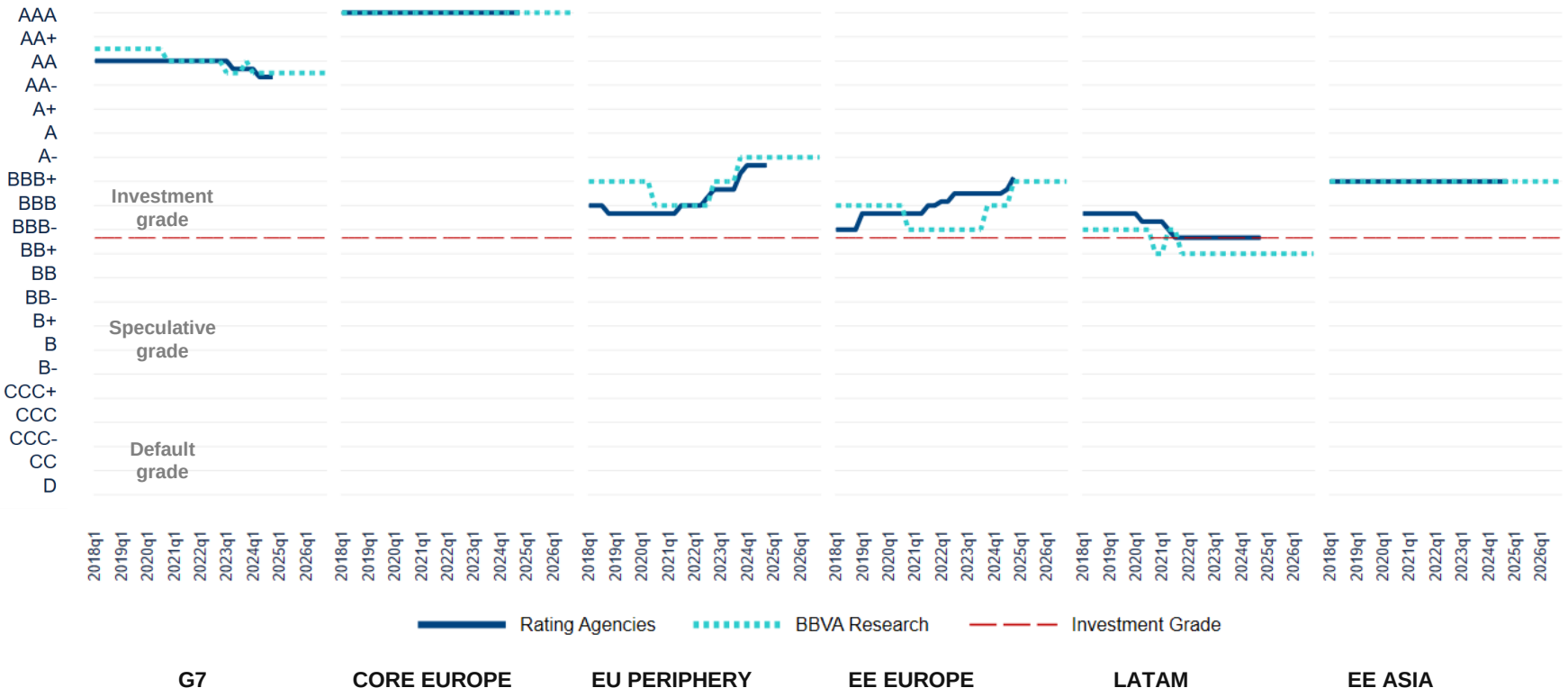
Summary Index

BBVA-Research sovereign ratings by region

Our estimated ratings are currently in line with agencies in most regions, and only a bit more negative in Latam. We do not foresee many changes in the coming years in regional terms.

AGENCIES' SOVEREIGN RATING VS. BBVA RESEARCH RATING
(Median)



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

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03

Assessment of financial, fiscal 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 fiscal stress by regions
Early warning system of currency crises by regions

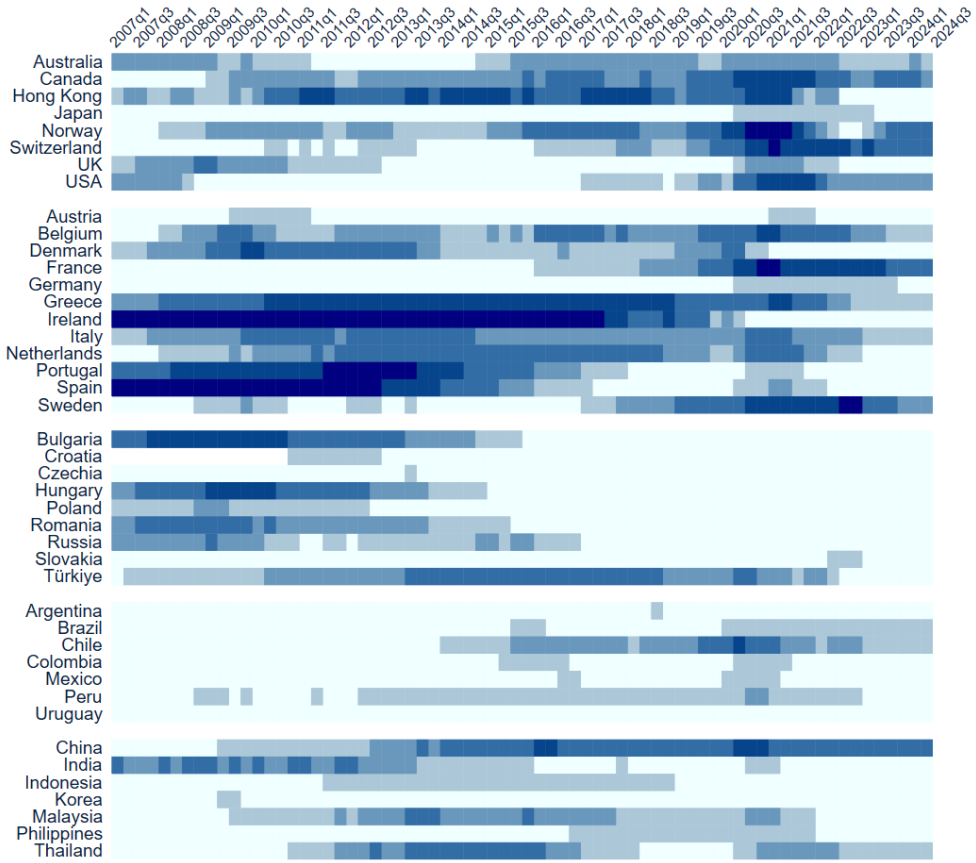
Summary Index

Private debt gaps by country

Debt gaps (debt vs. equilibrium) levels have decreased or stabilized overall in the last year thanks to the high nominal GDP levels due to the high inflation rates seen in the last couple of years, but remain elevated in some AEs (Norway, Switzerland, France, Sweden) and China.

PRIVATE DEBT GAPS COLOR MAP (2007-2024 Q3)

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



The methodology for estimating debt gaps could be found at: https://goo.gl/LTeTHD, https://goo.gl/r0BLbI

Source: IFS, BIS & BBVA Research

- **Private leverage gaps have continued improving in the richest countries helped by the sill high inflation rates**. However, they remain high in Canada, Norway, Switzerland and USA.
- France and Sweden are currently the countries with the highest debt gaps, (coinciding with a high gap in housing prices). In the rest of EU countries, gaps have declined helped by inflation
- Gaps across EE Europe remain well contained. Persistently high inflation rates keep helping, especially in the case of Türkiye
- Debt gaps in Latam have remained contained for several years now, and although Brazil and Chile have persistent positive gaps, they remain low.
- China's excess leverage remains high since private leverage has continued growing, although it has slowed down in the last couple of years

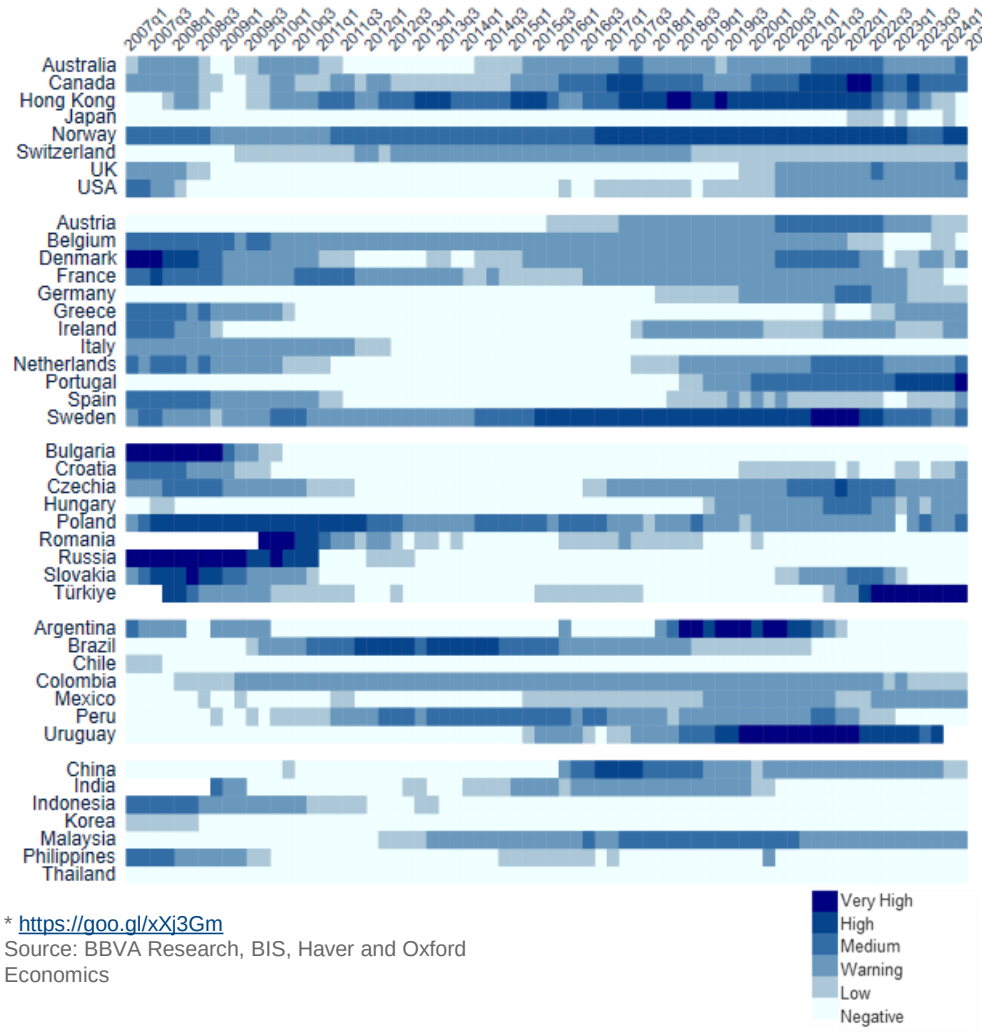
Summary Index

Housing prices gaps by country

Housing prices gaps have picked up during the year and are currently at warning levels in several AE. The highest disequilibrium levels continue to be seen in northern Europe, Portugal and Türkiye. China's disequilibrium is finally receding.

REAL HOUSING PRICES GAPS COLOR MAP (2007-2024 Q3)

Gap between housing prices and its long-term structural trend



* https://goo.gl/xXj3Gm

Source: BBVA Research, BIS, Haver and Oxford Economics

- **Gaps remain high in Australia, Canada, Norway and UK, and remain at a warning level in US.**
- Within EU countries, Portugal has seen the highest acceleration and it has now the highest disequilibrium, followed by Sweden and Netherlands. Prices are also picking up in most Eurozone countries, and now Denmark, Greece, Ireland, and Spain are also showing signs of excess.
- Gaps have decreased in Czech Republic to low levels, and to negative in Hungary and Slovakia. **Real prices have keep on growing quickly in Türkiye, and its gap remains at very high levels**.
- Price gap remains stable in Mexico at warning levels and Uruguay has corrected its excess, while it remains mild in the rest of Latam.
- Malaysia is now the EE Asia's country with the highest disequilibrium, while the real estate crisis in **China has finally reduced its disequilibrium.** Real prices remain contained in other countries in EE Asia.

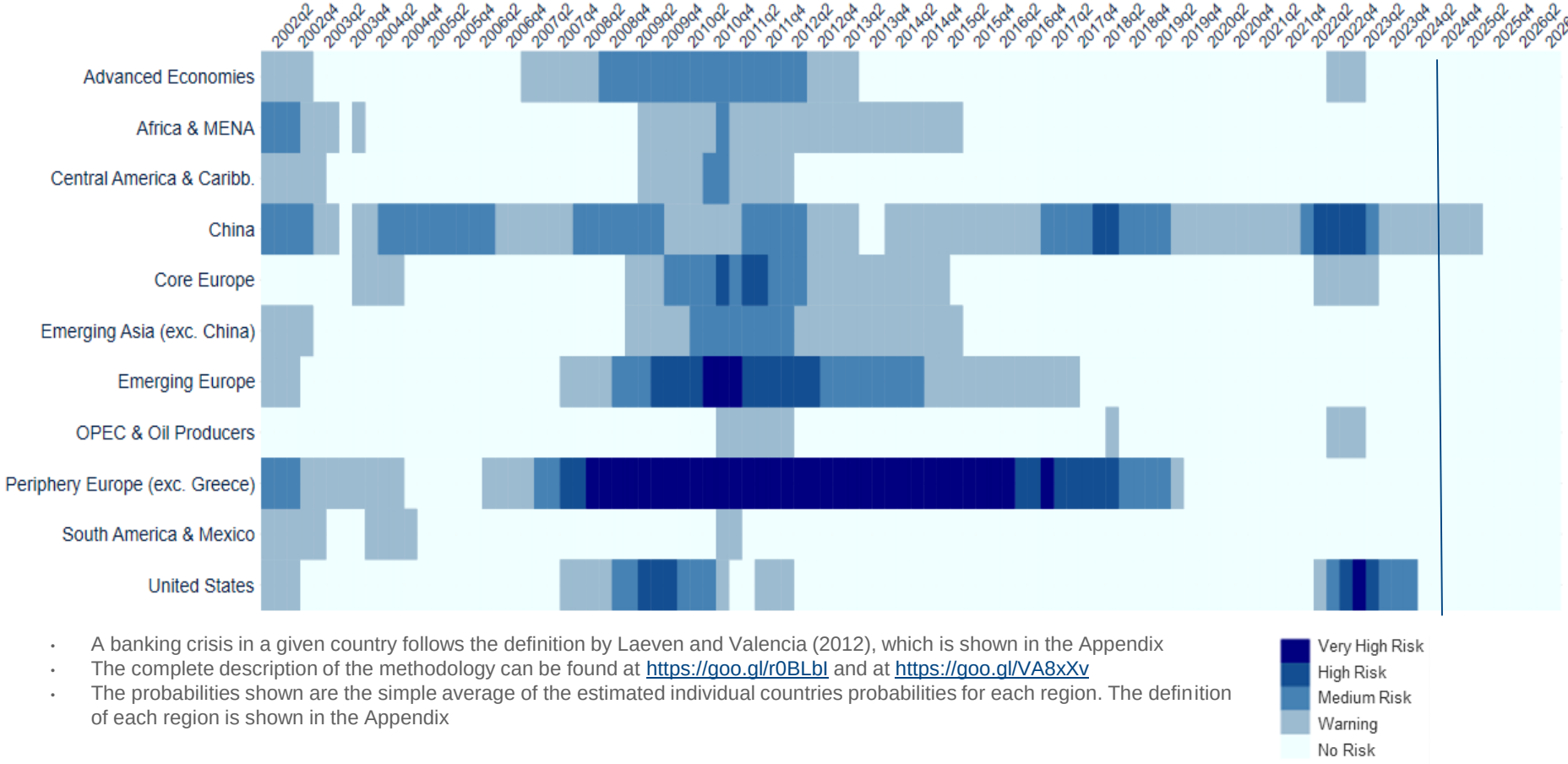
Summary Index

Early Warning System (EWS) of banking crises

The decrease in private leverage thanks to the high inflation of the recent years, together with the easing cycle of CBs have significantly reduced the likelihood of banking crises across the board. China is one of the few countries with a warning due to its still high leverage and the ongoing real estate crisis.

PROBABILITY OF A SYSTEMIC BANKING CRISIS (2001Q1-2026Q4)

(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/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

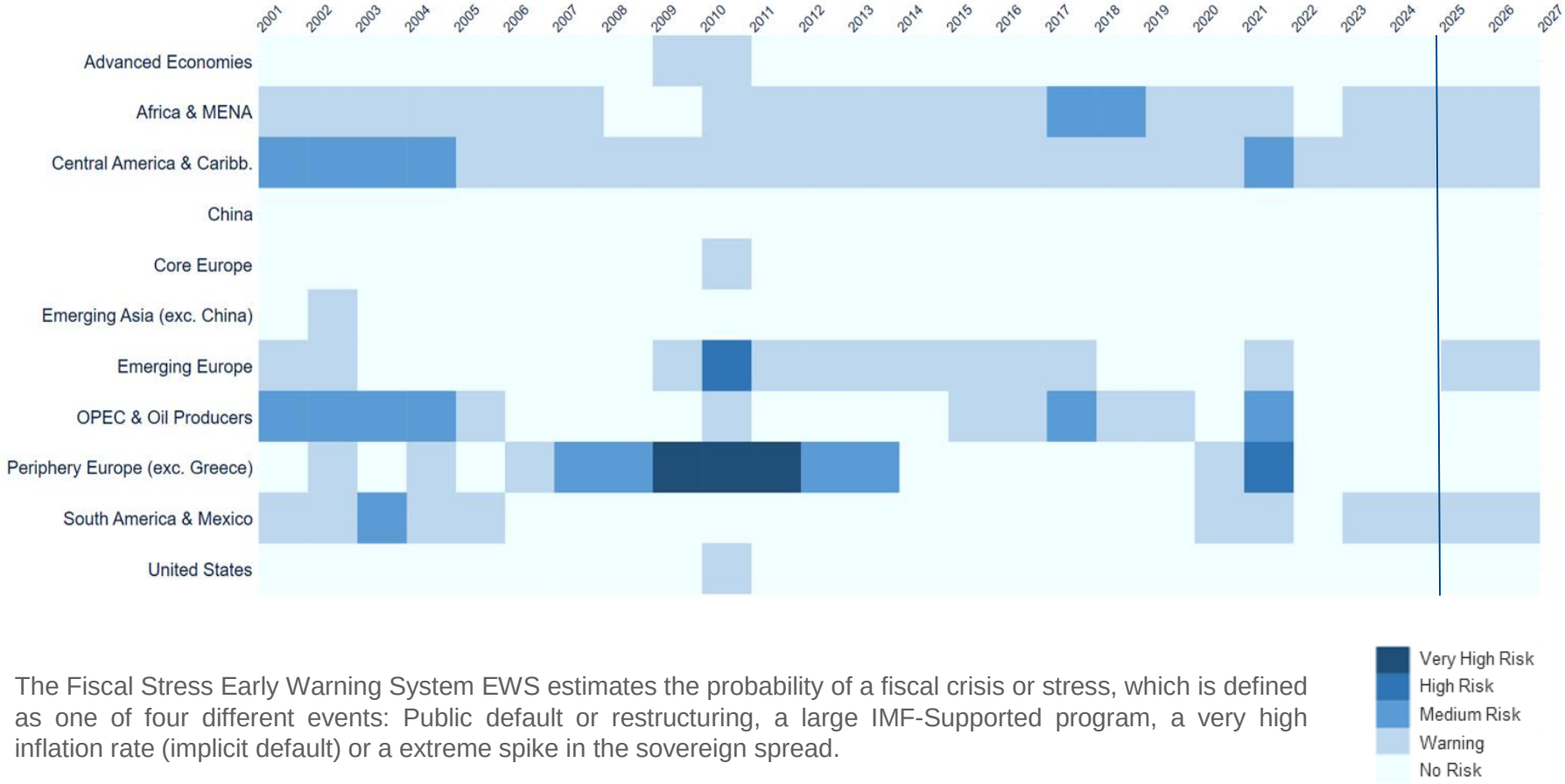
Summary Index

Early Warning System (EWS) of fiscal stress

The reduction of interest rates and public debt services have reduced the likelihood of fiscal stress episodes throughout AE. Despite the recent improvement, public debt levels remain elevated in most countries, which keep some of them in Emerging Europe, Latam and Africa & MENA with a warning.

PROBABILITY OF A FISCAL STRESS EPISODE (2000 - 2027)

(Based on 1-year lagged data)



- The Fiscal Stress Early Warning System EWS estimates the probability of a fiscal crisis or stress, which is defined as one of four different events: Public default or restructuring, a large IMF-Supported program, a very high inflation rate (implicit default) or a extreme spike in the sovereign spread.
- The probabilities shown in the table are the simple average of the individual countries probabilities for each region.

Source: BBVA Research

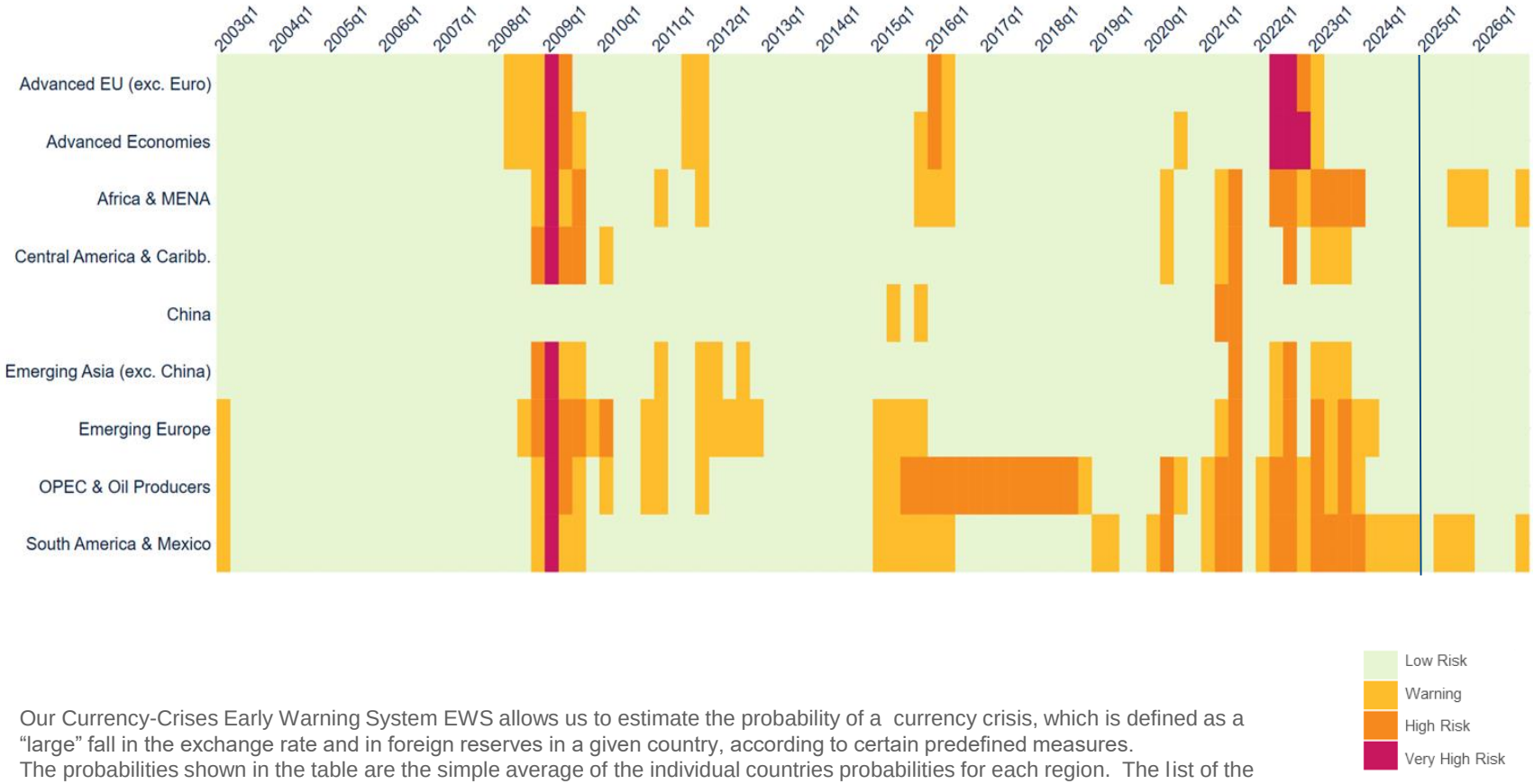
Summary Index

Early warning system of currency crisis

The monetary easing cycle and the relaxation of Global Risk Aversion have clearly reduced the likelihood of FX tensions in the coming years, and only a handful of countries display warning signals for the coming years

PROBABILITY OF CURRENCY TENSIONS (2001Q1-2026Q4)

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

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04

Special Topic: The impact of Fiscal Rules Compliance on Sovereign Debt Markets in the EU

Summary Index

Literature, motivation and findings

LITERATURE:

- Existing literature examines the **relationship between fiscal rules and sovereign bonds**, generally finding that the **implementation of fiscal rules has a reducing impact on risk premiums** and leads to an improvement in sovereign bond ratings:
  - Afonso and Guimarães (2015); Thornton and Vasilakis (2017); Afonso and Jalles (2019)

- Another strand of literature finds that **tighter fiscal rules lower government bond interest rates** (mainly focused on the US):
  - Poterba & Rueben (1999); Poterba & Rueben (2001); and Lowry & Alt (2001); Badinger and Reuter (2017)

- Studies on advanced economics suggest that the **well design of fiscal rules reduce pro-cyclicality of fiscal policy**:
  - Bénétrix and Lane (2013); Sacchi and Salotti (2015); Nerlich and Reuter (2015); Combes et al. (2017)

- As regards the existing literature on **compliance with fiscal rules**, Larch et al. (2023) analyze a **new dataset on numerical compliance with fiscal rules for the EU27**, which is utilized in this study, and document **moderate compliance with the key elements of the EU framework**. Reuter (2019) continues this line of research, finding that **independent monitoring and enforcement bodies enshrined** in the fiscal framework **positively influence the probability of compliance**. Finally, Caprau et al. (2024) demonstrate that a **high number of rules may undermine compliance**.

OUR ANALYSIS: MOTIVATION AND FINDINGS

- The following preliminary study examines **the impact of compliance with various fiscal rules** encompassed within the Stability and Growth Pact (SGP) on sovereign spreads in the EU27. Additionally, it evaluates the **potential non-linear effects** of compliance concerning debt-to-GDP ratios and the state of the economy on risk premiums**.**

- **The results yield the following concise conclusions:**
  - The **deficit and debt rules exert more significant and narrowing effects on spreads** compared to compliance with structural balance or expenditure rules, both in terms of significance and magnitude.
  - In countries with **high levels of debt and during periods of economic expansion**, the impact of the deficit and debt rules on risk premiums is **markedly more substantial and reductionary**.

Summary Index

Data: Fiscal Rules Compliance Tracker and rest of variables

European Fiscal Board Fiscal rules Compliance Tracker (Larch et al., 2023). It encompasses **compliance** with the main **numerical fiscal rules of the Stability and Growth Pact (SGP) in the EU27** (including deviations to specific targets):

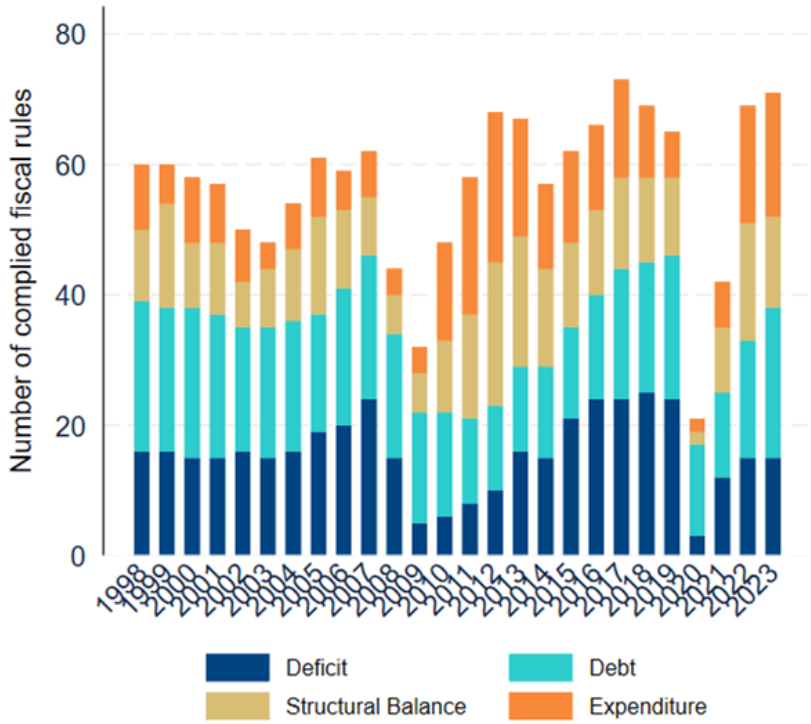
- **Deficit**: compliance fulfilled if the budget balance is equal or larger than -3% of GDP
- **Debt**: country is compliant if the excess above 60% of GDP has declined by 1/20 on average over the past three years (or debt below 60%).
- **Structural Balance**: compliance fulfilled if i) the structural budget balance is at or above the medium-term objective (MTO), or ii) the annual improvement is equal or higher than 0.5% of GDP.
- **Expenditure**: a country is compliant if the annual rate of growth of primary expenditure is at or below the 10-year average of the nominal rate of potential output growth.

Macroeconomic variables, annual frequency (sources):

- Sovereign 10-y spreads (vs Germany) (Oxford Economics)
- Real GDP, GDP deflator, Population, Public debt (EC)
- VIX and 5-y sovereign spread

Compliance with the **deficit rule has historically been moderate in the EU27 since its implementation in 1998**. Before the Global Financial Crisis (GFC), **65% of countries were compliant**, a figure that rose to **72.4% after the GFC** and before the COVID-19 pandemic. During this latter period, **compliance rates for the structural balance, debt, and expenditure rules were 60%, 63%, and 59%, respectively.**

HISTORICAL SGP NUMERICAL RULES COMPLIANCE IN THE EU27



Source: BBVA Research from Larch et al. (2023) and Oxford Economics. Note that the timing of implementation of fiscal rules is heterogeneous: the deficit rule was implemented since the existence of the SGP (1998), the structural balance rule was implemented in the reform of the SGP in 2005, and the debt and expenditure rules were implemented since 2011, with the Six-pack reform. General poor compliance in 2020 and 2021 is explained by the activation of the general escape clause after the pandemic.

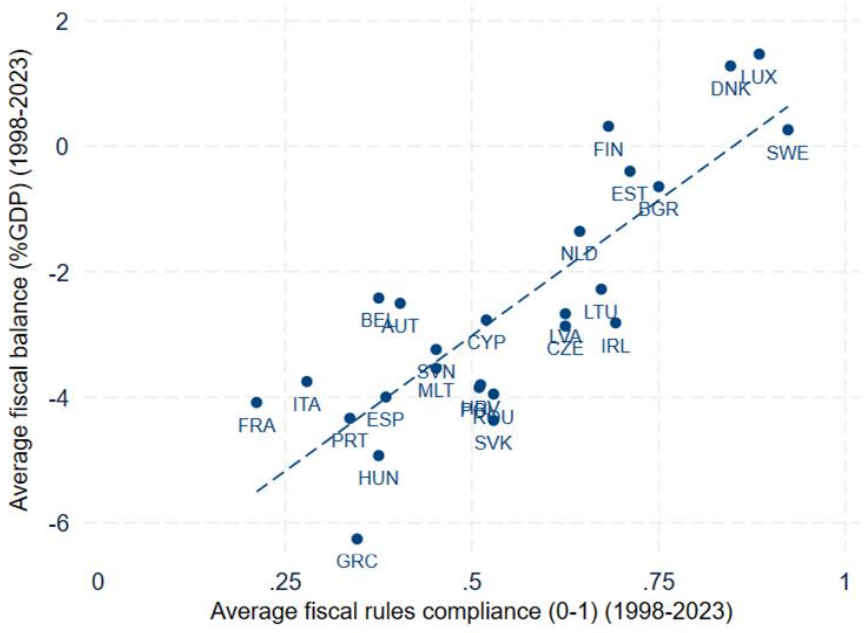
Summary Index

Data: a bird-eye view on the relation between fiscal rules compliance and sovereign spreads in the EU27

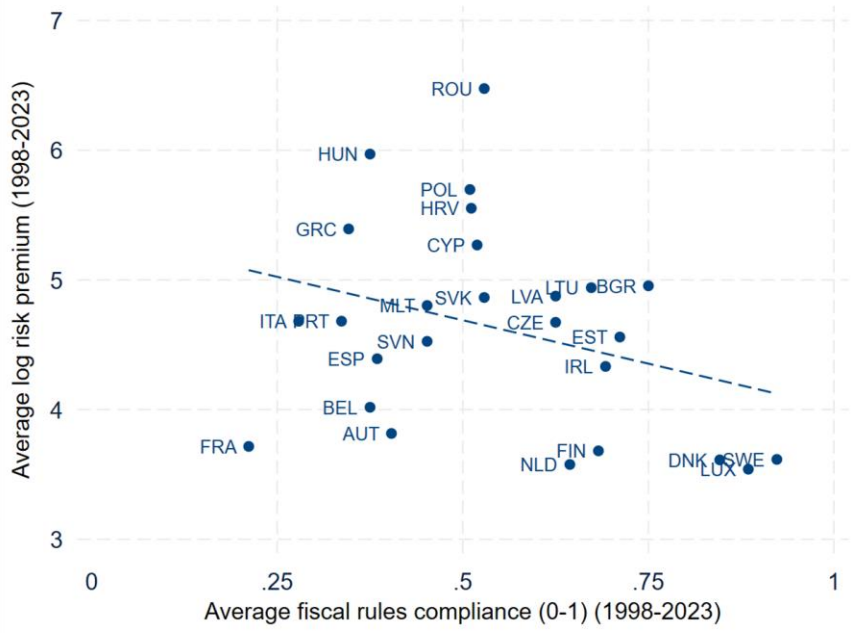
- As anticipated, countries that demonstrate **high compliance with historical numerical fiscal rules have exhibited superior fiscal outcomes**, as measured by fiscal balance relative to GDP. On average, countries with a **history of fiscal irresponsibility**, such as Spain, France, Italy, Greece, and Hungary, show **fiscal deficits that are 4 percentage points of GDP higher** than those of countries that **adhere to fiscal rules**, including Luxembourg, Denmark, and Sweden.

- Moreover, **fiscal irresponsibility is associated with higher 10-year sovereign spreads** compared to Germany. Countries such as Portugal, Italy, Greece and Spain exhibit **more pronounced risk premiums** in contrast to historically responsible nations like Luxembourg, Sweden, and Denmark. France shows significant historical non-compliance rates but has remained unpenalized by markets.

HISTORICAL FISCAL RULES COMPLIANCE AND FISCAL BALANCES



HISTORICAL FISCAL RULES COMPLIANCE AND SPREADS



Source: BBVA Research from Larch et al. (2023), Oxford Economics and European Commission.

Summary Index

Methodology and results:

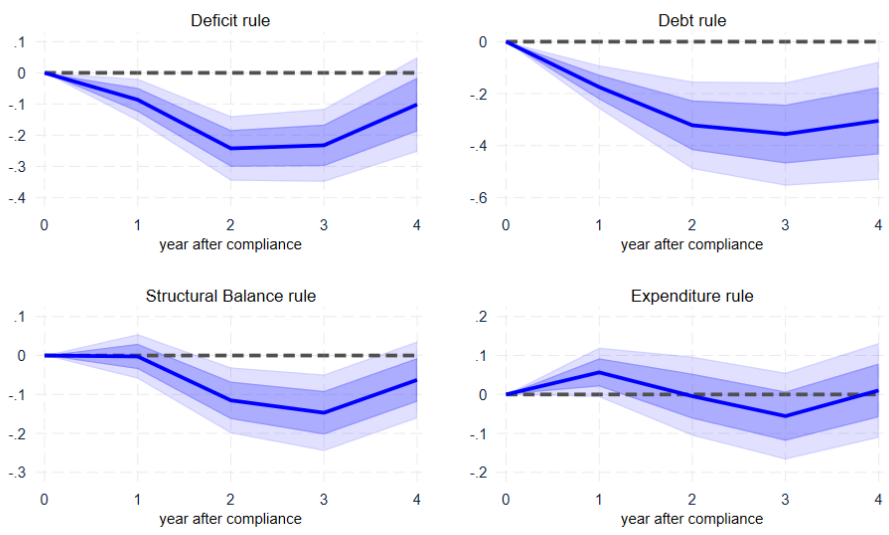
We estimate the dynamic impact of numerical fiscal rules compliance on sovereign bond spreads by the following panel local projection regressions (Jordà, 2005):

$$Y_{i,t+h} = \alpha_i^h + \sum_{l=1}^{2} \gamma_l^h \cdot Y_{i,t-l} + \beta^h FR_{i,t-1} + \mathbf{X}_{i,t}\delta^h + \epsilon_{i,t}^h \qquad \forall_{h\in\{1,\dots,4\}}$$

- Y corresponds to the log of the sovereign 10-year bond spread
- α_i^h are country fixed effects included to capture unobserved heterogeneity across countries and time-unvarying factors
- We include 2 lags of the dependent variable to control for the own dynamics and persistence
- $FR_{i,t-1}$ corresponds to (the first lag) a set of dummy variables that take value 1 if country i at year t is compliant with each of the 4 different fiscal rules (0 otherwise). To avoid potential endogeneity issues with sovereign spreads (market pressure effects on compliance), we introduce the first lag of the regressor
- Vector of controls $\mathbf{X}_{i,t}$ include real GDP growth, inflation (GDP deflator-based), the log of GDP per capita, the log of the VIX and the firt lag of debt-to-GDP ratio (in line with Afonso and Jalles (2019)).
- $\epsilon_{i,t}^h$ is the disturbance term
- Set of regressions are estimated by country fixed effects

IMPACT OF COMPLIANCE BY RULE ON SPREADS

IMPACT OF COMPLIANCE ON MODIFIED SPREADS*



Source: BBVA Research. Note: results show the estimated beta coefficient and 66 and 90% confidence intervals (shaded areas). *Modified 10-y spreads combine sovereign 10-year spreads for countries part of the EA, and the 5-y sovereign risk measure for countries out of the euro area. Thus, we correct for currency tensions and differentials between out of the EA and in the EA countries, contrary to a broad strand of literature, which generally applies the 10-y differential for a broad set of countries also out of the EU against US 10-year yield.

Summary Index

Exploring non-linearities of the impact of rules compliance on sovereign markets:

DEPENDENCE ON DEBT-TO-GDP

We estimate the dynamic impact of rules compliance on sovereign bond spreads by the following panel state-dependent local projection regressions (Ramey and Zubairy (2018)), conditioned on the level of debt-to-GDP (below or above 90%):

$$Y_{i,t+h} = \alpha_i^h + \sum_{l=1}^{2} \gamma_l^h \cdot Y_{i,t-l} + \mathbb{1}[d_{i,t-1} > 90](\beta_{high}^h FR_{i,t-1}) + \mathbb{1}[d_{i,t-1} \leq 90](\beta_{low}^h FR_{i,t-1}) + \mathbf{X}_{i,t}\delta^h + \epsilon_{i,t}^h \quad \forall_{h\in\{1,\dots,4\}}$$

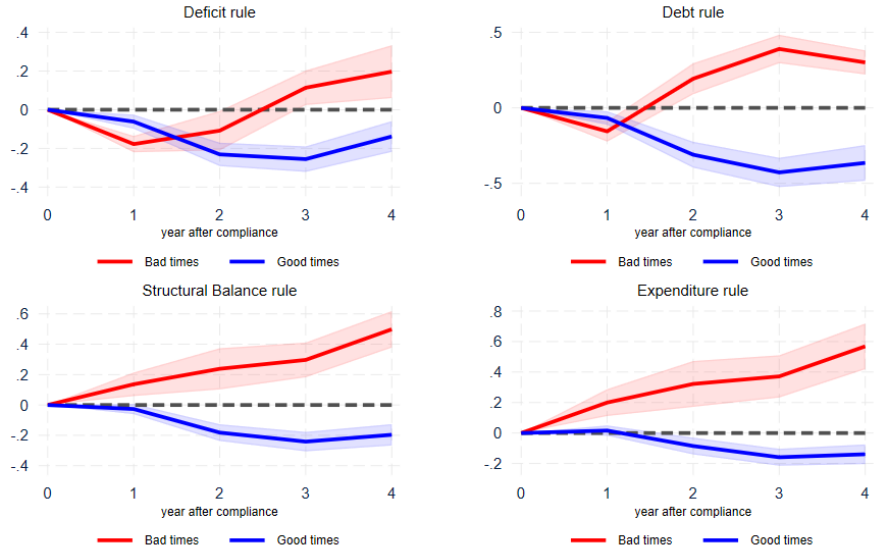
- High debt state is defined as being greater than 90%, while low debt corresponds to debt equal or lower than 90%.

DEPENDENCE ON THE BUSINESS CYCLE

We allow the dynamic impact of rules compliance on sovereign bond spreads to vary depending on the phase of the business cycle by the following panel state-dependent local projection regressions a la Auerbach and Gorodnichenko (2012):

$$Y_{i,t+h} = \alpha_i^h + \sum_{l=1}^{2} \gamma_l^h \cdot Y_{i,t-l} + F(z_{i,t})\beta_{bad}^h FR_{i,t-1} + (1 - F(z_{i,t}))\beta_{good}^h FR_{i,t-1} + \mathbf{X}_{i,t}\delta^h + \epsilon_{i,t}^h \quad \forall_{h\in\{1,\dots,4\}}$$

- $F(z_{i,t}) = \frac{exp(-\gamma_{i,t})}{1+exp(-\gamma_{i,t})}$, $\gamma = 1.5$ and z is real GDP growth rate (state of the economy indicator).



Source: BBVA Research. Note: shaded areas represent 90% confidence intervals. Recall that the dependent variable in both specifications is the modified 10-year risk premium, which alleviate concerns as regards to currency tensions for out-of-the EA countries.

Summary Index

Robustness checks:

- The **potential influence of currency tensions on spreads**: we compare regression results between utilizing the sovereign 10-year spreads for all countries of the EU27, only including euro area countries and using the modified version of the risk premium. Results are similar.

- Since the structural balance (2005), and the expenditure and debt rules (2011) were not implemented after 1998, we **conduct same regressions since those year for these specific rules**. The rationale behind this feature of the analysis is that markets potentially react to numerical rules once they have been implemented. Results yield similar conclusions. Results including all years available have been included to maximize the time sample at use.

- **Dynamic structure of specification**: we estimate different specifications with alternative number of lags of the dependent variable as such (from 1 to 4). Results are similar.

Summary Index

Key messages:

- In general, numerical fiscal rules **compliance in the EU27 has had a significant and transitory (fades 4 years after compliance) positive effect on risk premiums (narrowing spreads)**, although this effect does not apply uniformly to all types of numerical rules.

- Compliance with the **deficit and particularly with debt rules has had a more substantial impact on spreads** compared to compliance with the structural balance or expenditure rules, both in terms of significance and magnitude.

- Moreover, we provide evidence of the **non-linear effects of fiscal rules compliance on spreads**. In countries with **high debt levels**, the **impact of the deficit and debt rules on spreads is more pronounced** than in low-debt countries.

- Furthermore, the effect of compliance indeed depends on the state of the economy. **During periods of economic expansion, all rules significantly narrow sovereign spreads**, except for one year following compliance with the deficit and debt rules during periods of economic slack. Conversely, in periods of **recession**, **markets respond in the opposite direction** to fiscal rules compliance.

- These results **contribute to the existing body of evidence regarding the impact of fiscal rules**—primarily focused on **implementation**—on sovereign markets, which indicate a **narrowing effect on sovereign spreads** (Afonso and Guimarães (2015); Thornton and Vasilakis (2017); Afonso and Jalles (2019)). However, **this study analyzes the second derivative of fiscal rules post-implementation: compliance.**

- One rationale underlying these results is the **hypothesis** concerning a set of effects: a **reduction** in the **risk premium** would decrease debt costs and subsequently **lower interest expenses**, potentially **increasing the likelihood of future compliance** with the same rules. It is crucial to test this hypothesis, particularly in the **new era of reformed EU fiscal rules, where it is essential to implement consolidation plans that are sustained over time.**

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Vulnerability Indicators table by country

Creating Opportunities

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Vulnerability Indicators Table

VULNERABILITY INDICATORS* 2024: ADVANCED ECONOMIES

	Fiscal sustainability			External sustainability			Liquidity management			Macroeconomic performance			Credit and housing			Private debt			Institutional		
	Fiscal balance (1)	Interest rate GDP growth differential 2025-29	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	-7.6	-0.6	121.0	-3.3	94.5	2.9	25.1	14.5	25.8	2.8	2.9	4.0	23.6	13.2	18.1	70.8	75.5	50.0	0.0	1.1	1.3
Canada	-2.0	-1.1	106.1	-1.0	143.3	-3.1	7.5	5.2	21.1	1.3	2.4	6.2	26.5	22.9	6.7	102.0	117.9	112.3	0.8	1.7	1.5
Japan	-6.1	-2.1	251.2	3.8	104.4	-10.6	23.0	6.7	12.5	0.3	2.2	2.5	-7.5	-0.7	19.5	65.2	114.0	47.2	1.0	1.4	1.5
Australia	-1.7	-0.4	49.3	-0.9	92.8	1.4	3.9	4.5	32.6	1.2	3.3	4.2	15.7	15.4	2.3	111.2	60.1	116.9	0.9	1.8	1.5
Korea	-0.5	-2.4	52.9	3.9	35.3	-4.2	1.3	1.4	16.7	2.5	2.5	2.9	-35.1	-31.5	-5.4	91.1	111.6	109.1	0.6	0.9	1.2
Norway	12.0	-0.7	42.7	14.5	154.4	-7.8	-8.7	-0.4	62.8	1.6	3.3	4.3	41.5	32.3	12.2	87.7	144.4	354.9	0.9	2.1	1.8
Sweden	-1.2	-2.4	36.4	6.6	177.9	-1.8	3.3	5.9	15.6	0.9	2.1	8.5	22.0	16.3	3.4	83.5	162.6	161.5	0.8	2.0	1.6
Denmark	1.8	-1.0	28.2	9.0	137.8	-0.9	0.6	8.6	25.7	1.9	1.8	2.9	-14.6	4.9	30.0	87.8	133.4	240.0	0.9	2.4	1.9
Finland	-3.7	-1.3	81.4	-1.2	216.4	-0.4	11.2	9.2	46.5	-0.2	1.2	8.3	21.3	-17.1	-15.5	64.0	117.8	139.1	0.7	2.2	2.0
UK	-4.3	-0.4	101.8	-2.8	280.9	6.2	14.3	9.9	24.7	1.1	2.6	4.3	-10.3	14.1	1.0	77.2	61.1	95.1	0.5	1.5	1.4
Austria	-3.4	-1.1	78.7	2.6	153.7	2.1	7.2	4.9	58.3	-0.6	3.0	5.6	-9.7	3.9	1.6	44.3	91.7	97.0	0.7	1.1	1.7
France	-6.0	-0.8	112.3	0.1	246.1	-0.8	10.2	3.8	46.5	1.1	2.3	7.4	38.7	-2.3	3.9	61.2	148.0	104.7	0.3	1.2	1.2
Germany	-2.0	-1.2	62.7	6.6	145.7	1.1	5.7	6.0	42.0	0.0	2.4	3.4	-0.2	0.3	4.9	50.3	69.5	89.6	0.6	1.7	1.6
Netherlands	-1.6	-1.7	44.3	10.0	348.4	1.8	4.4	6.5	37.0	0.6	3.2	3.9	-7.5	12.4	6.4	94.2	178.0	94.2	0.7	1.9	1.6
Belgium	-4.7	-0.7	105.0	-0.3	242.8	1.5	17.9	12.6	51.7	1.1	4.3	5.7	13.0	-1.0	-1.7	58.7	126.2	64.0	0.4	1.3	1.3
Italy	-4.0	0.5	136.9	1.1	118.7	0.6	22.1	13.2	27.8	0.7	1.3	7.0	6.4	-20.1	17.1	36.6	61.1	72.8	0.6	0.6	0.4
Spain	-3.0	-1.6	102.2	2.9	160.9	-0.1	5.4	2.4	40.9	3.1	2.8	11.5	-17.9	2.4	18.0	44.3	79.0	73.1	0.3	0.6	0.8
Ireland	3.8	-1.9	42.4	12.0	595.2	0.5	-1.4	5.6	55.9	-0.2	1.7	4.4	-49.9	2.0	9.5	28.7	136.8	36.9	0.9	1.6	1.6
Portugal	0.2	-1.5	94.4	2.0	148.3	0.5	6.7	7.3	45.5	1.9	2.5	6.5	-26.6	34.9	9.2	53.8	80.5	78.3	0.7	0.7	1.1
Greece	-1.0	0.9	159.0	-6.5	243.1	2.3	14.5	5.6	81.5	2.3	2.9	10.5	10.2	12.7	27.2	41.2	54.9	46.1	0.2	0.1	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

Summary Index

Vulnerability Indicators Table

VULNERABILITY INDICATORS* 2024: EMERGING ECONOMIES

	Fiscal sustainability			External sustainability			Liquidity management				Macroeconomic performance			Credit and housing		Private debt			Institutional		
	Fiscal balance (1)	Interest rate GDP growth differential 2025-29	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	-2.9	-1.6	23.7	-1.0	45.1	1.8	3.5	3.0	8.8	44.5	2.3	2.8	4.3	-14.5	-5.6	22.2	55.4	70.7	0.3	-0.1	0.0
Slovakia	-5.9	-2.1	59.1	-1.7	99.9	0.0	8.2	0.2	1.2	49.2	2.3	2.8	5.6	-3.4	-5.6	36.4	40.8	109.0	0.6	0.3	0.6
Croatia	-2.5	-2.6	59.9	1.5	79.9	1.5	9.1	0.1	1.0	35.9	3.4	4.0	5.6	-30.5	4.9	28.0	49.2	70.4	0.6	0.2	0.4
Hungary	-5.0	-0.5	73.5	1.6	152.1	1.2	15.2	0.7	3.2	33.3	1.5	3.8	4.4	-27.6	5.0	16.6	77.9	74.0	0.7	0.0	0.4
Poland	-5.7	-1.8	55.5	0.9	50.6	1.6	12.6	1.7	5.2	25.8	3.0	3.9	3.2	-26.8	19.3	24.3	36.6	65.9	0.6	0.6	0.5
Romania	-7.8	-2.1	55.7	-7.5	51.5	1.1	13.2	2.3	6.3	42.6	1.9	5.3	5.6	-18.7	-28.7	12.4	27.0	67.0	0.4	0.0	0.4
Russia	-1.9	-3.2	19.9	2.7	14.4	3.4	2.7	4.0	13.4	7.5	3.6	7.9	2.6	-17.9	-16.4	19.5	76.4	102.1	-1.1	-1.1	-1.2
Türkiye	-4.9	-8.5	25.5	-0.5	42.6	0.7	7.5	0.5	3.2	41.5	3.2	58.4	8.8	-3.2	38.8	9.8	44.6	82.9	-1.0	-0.5	-0.5
Argentina	0.0	-26.8	86.9	0.8	47.7	0.7	6.7	0.4	3.9	38.6	-3.8	220.5	7.8	-4.2	-26.3	3.7	24.8	50.4	-0.1	-0.4	-0.4
Brazil	-6.9	3.1	87.6	-1.8	33.2	1.4	17.4	2.4	13.0	10.8	3.0	4.3	7.2	4.8	-2.9	35.7	53.1	104.4	-0.4	-0.5	-0.3
Chile	-2.3	-2.8	41.0	-2.3	75.6	0.8	3.6	1.8	5.7	32.6	2.5	3.9	8.5	8.3	-26.6	45.8	99.9	144.5	0.1	1.0	0.6
Colombia	-5.6	1.2	60.0	-2.4	48.5	1.2	7.8	2.8	10.4	34.8	2.0	6.6	10.1	-13.1	5.5	30.9	30.6	102.8	-0.7	-0.3	-0.5
Mexico	-5.0	2.3	51.0	-0.5	31.0	1.2	14.6	2.7	3.7	23.3	1.2	4.8	2.7	-3.1	14.4	16.5	20.5	71.1	-0.6	-1.0	-0.8
Peru	-3.9	-0.8	33.0	2.3	33.0	2.5	4.5	6.5	14.5	40.2	3.1	2.4	6.6	-2.7	-3.7	16.5	35.5	107.1	-0.5	-0.7	-0.5
China	-4.0	-3.7	74.0	1.2	14.0	0.7	4.4	2.5	13.3	2.6	4.8	0.3	5.0	31.7	4.4	62.6	142.6	125.0	-0.5	0.0	0.0
India	-7.8	-3.2	83.1	-1.2	18.3	1.8	13.8	4.8	9.3	4.6	7.0	4.4	7.8	-1.2	-9.8	43.3	52.1	79.6	-0.6	-0.4	0.2
Indonesia	-2.7	-1.6	40.5	-1.1	31.5	1.1	5.7	2.7	6.7	34.4	5.0	2.5	5.2	-13.9	-28.8	16.5	24.7	82.1	-0.4	-0.5	-0.2
Malaysia	-3.6	-2.0	68.4	2.6	67.1	1.1	9.7	1.1	5.9	18.3	4.8	2.8	3.5	-30.2	11.3	69.3	87.8	104.0	0.2	0.3	0.6
Philippines	-3.9	-3.7	57.6	-2.2	28.8	1.9	11.1	5.1	7.1	26.8	5.8	3.3	4.4	-10.1	-12.2	11.1	26.3	66.1	-0.6	-0.5	-0.4
Thailand	-2.4	-1.9	65.0	1.8	38.1	2.0	10.0	2.6	8.7	8.0	2.8	0.5	1.1	-0.2	-7.7	90.7	83.1	92.4	-0.3	-0.5	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. ARA Metric: see https://www.imf.org/external/np/pp/eng/2011/021411b.pdf

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

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Methodological Appendix

Creating Opportunities

Methodological 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.
- **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.

Methodological 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). Assesing Fiscal Stress. IMF WP 11/100
Expected Interest rate GDP growth differential 5 years ahead	0.8	0.0	Higher	Baldacci et Al (2011). Assesing Fiscal Stress. IMF WP 11/100
Gross Public Debt (%GDP)	60.0	40.0	Higher	IMF Public Debt Sustainability Analysis (DSA) in Market-Acess 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). Assesing Fiscal Stress. IMF WP 11/100
Liquidity Problems				
Gross Financial Needs	25.0	15.0	Higher	IMF Public Debt Sustainability Analysis (DSA) in Market-Acess Countries, 2013
Debt Held by Non Residents	55.0	45.0	Higher	IMF Public Debt Sustainability Analysis (DSA) in Market-Acess Countries, 2013
Short Term Debt Pressure				
Public Short-Term Debt as % of Total Public Debt (Developed)	15.0		Higher	Baldacci et Al (2011). Assesing 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). Assesing 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 (8 th percentil)	Lower	World Bank Governance Indicators

Methodological 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 a 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.

Methodological 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 available year

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 075 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/r0BLbI

Methodological Appendix

Methodology: Housing Prices Equilibrium & Gaps (1)

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 59 countries and from 1990 to the most recent available year, using a random-effects GLS model allowing for heteroscedasticity and autocorrelation, allowing also for a country-wise autocorrelation coefficient.

Some of the explanatory variables are decomposed into two components: a trend (10-years moving average) and a cyclical component (deviation from the trend). The contribution of the trend components is the one that adds to the estimated equilibrium price level:

- GDP real or GDP real per household
- Bank Credit-to-GDP
- Short-term real interest rates (as a deviation from US Libor interest rates)
- US Libor interest rates
- Unemployment rate

Other variables are not decomposed into cycle and trend components but also add to the equilibrium level:

- Households growth rate (%)
- Population between 25 and 44 years old growth rate
- Change in urban population

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 0.8 to our own gaps and 0.2 to the gaps estimated through the BIS methodology.

Methodological Appendix

Methodology: Housing Prices Equilibrium & Gaps (2)

In order to perform any type of cross-country analysis/comparison we need to have comparable data for all the countries included in the analysis. Therefore, we have mainly relied on the BIS Housing Prices Database that includes about 322 series for about 70 countries and regions classified by 6 different characteristics.

However, we have regrouped the original BIS series into a more comparable set of 42 variables according to only 3 characteristics:

- Geographical coverage (whole country, urban areas, large cities, etc.)
- Type of property (all types, single-family houses, apartments)
- “Vintage” (i.e. all properties, new, existing).

Additionally, since we also need to use other sources of data (Dallas FED, Haver) to complement the BIS database, we have tried to classify/organize them, if possible, according to the same criteria. If the most generic series is not available we chose the second “most generic” one. e.g. if there is no series that includes the whole country we would use the one that includes urban areas.

Importantly, since the dependent variable is defined as an index (2016=100), we now also transform all independent variables into indexes, making it much easier for the data to adjust to changes in the dependent variable

Finally, in order to use the number of households as part of our explanatory variables (e.g. GDP/income per household, etc.), we needed to smooth and carefully treat some of the very noisy original data.

Methodological Appendix

METHODOLOGY: EARLY WARNING SYSTEMS

EWS Banking Crises:

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

Methodological 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

Methodological 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 the most recent quarter, 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 determines 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-last quarter).

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