Focal Point
EM Vulnerabilities Monitor: a new tool to gauge post-pandemic risks
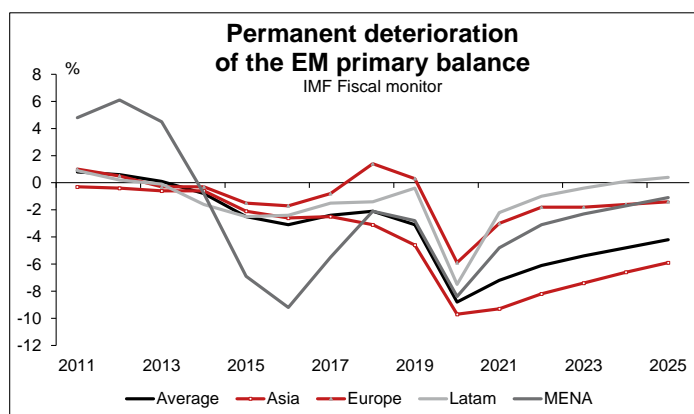May 31, 2021

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– We present our new EM vulnerabilities monitor to assess strengths and weaknesses across the EM complex. Our monitor is using a straightforward quantitative method : we focus on the build-up of imbalances, highlighting the principal vulnerabilities through time and countries. We do not try to predict the occurrence of a crisis.

– EM vulnerabilities have been increasing slightly since 2013. However, the structure of the vulnerabilities has changed. Risks are now stemming from the macro and fiscal sectors rather than from the external sector. EMs appear to be less vulnerable to a rise of core yields than in 2013.

– Latin America and Africa present the most significant vulnerabilities in conjunction with weaker external factors and a sharper deterioration of the macro and fiscal environment. Turkey, Brazil, and South Africa are unsurprisingly the countries with the highest level of vulnerabilities.

EM countries have always been a heterogenous complex, exhibiting various strengths and vulnerabilities in different sectors that can lead to an economic and financial crisis in the worst case. It is even more critical to track and characterise EM country's vulnerabilities in the post-pandemic period. Indeed, the Covid crisis has hit all EM countries in a heterogeneous way, and the scars of the crisis will also be different. Likewise, rising core yields in the US and Europe will have significant ramifications on the financing of EM countries that have seen a substantial rise in their debt-to-GDP. All EMs will react differently. Therefore, in this Focal point, we present a new tool to monitor macroeconomics and financial vulnerabilities across the largest EM countries, based on an original quantitative approach to rank risk.

Rising EM vulnerabilities
The Covid has accelerated the build-up of EM imbalances. 2020 has seen the highest numbers of EM defaults since 2001, with six countries defaulting/restructuring their debt for a total of USD107bn or 9% of the EM BofA index's asset. Likewise, 218 of 253 EM rating or outlook actions since March 2020 have been downgrades. Despite the improvement of the pandemic, negative outlooks are still representing 35% of the total outlooks, the highest level since 2016.

It is still difficult to assess the impact of the pandemic on EM macroeconomic and financial fundamentals, but for sure, the crisis has left scars. The most striking consequence is the deterioration of fiscal metrics.

Permanent deterioration of the EM primary balance
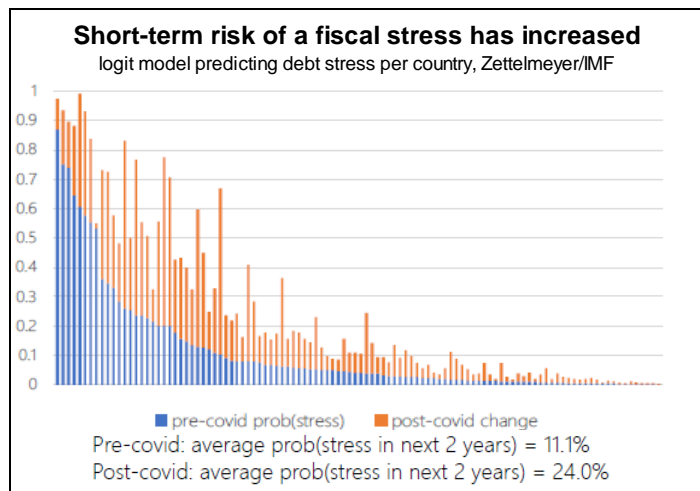IMF Fiscal monitor

According to the IMF, EM fiscal deficits will reach 7.7% of GDP in 2021 after 9.8% in 2020, and total debt will reach 72% in 2025 (+18ppt in 5Y). A meaningful change is that, contrary to the past, the IMF is not pushing for a step up in fiscal discipline and is even calling for more fiscal support to ensure a resilient recovery wherever possible.

Despite the crisis, there has been little change in the debt distress list according to the IMF/WB sustainability framework. The crisis has impacted EM countries' fiscal room but not the long-term debt sustainability.

A tool to monitor EM vulnerabilities
Predicting the exact timing of an EM crisis is next to impossible. Experience over the last forty years shows that FX and interest rate turbulences are preceded and caused by imbalances emerging in different sectors of the economy and unfold with different paces; what is difficult to time is then the trigger that unleashes the crisis.

Short-term risk of a fiscal stress has increased
logit model predicting debt stress per country, Zettelmeyer/IMF

Pre-covid: average prob(stress in next 2 years) = 11.1%
Post-covid: average prob(stress in next 2 years) = 24.0%

The literature is abundant on indicators to monitor EM vulnerabilities and the probability of a macroeconomic and financial crisis. The article of Kaminsky, Lizondo, and Reinhart, 1998, Leading Indicators of Currency Crises, serves as the base for constructing EM early warning systems. The main pitfalls of this approach remain that it is difficult to characterise a previous EM crisis. Moreover, the calibration process can be long and complicate, and the predictive results weak.

In our approach, we decide to adopt a more straightforward quantitative method where we focus on the essential ingredient of a crisis, the build-up of imbalances. We do not try to predict the probablitiy or the timing of a crisis, but we highlight the principal vulnerabilities through time and EM countries.

Our model is based on the following principles:

- Crises can be originated in different ways, from excessive government debt to too high private sector leveraging or FX misalignment.
- "This time may be different": countries evolve in their risk management policies, so statistical predictive models calibrated on past crises may not be that reliable.
- Given all that, the approach should be as much "model-free" as possible.

We first define three broad areas of vulnerability: the external sector, the government balances, and the credit/banking sector. We collect a few relevant variables for each of them based on the recent literature on EM crises. The variables are listed in the appendix, along with the rationale of their choice and the source.

We derive, for each variable, its distribution across time and countries, i.e., we want to compare, say, Brazilian external debt to GDP on Q4 2017 with Q1 2007, but also with Indonesian debt at any date. We do not rely on a theoretical statistical distribution; we rank the observations. Then, we consider which tail of the distribution is related to increase vulnerability; for debt, the right tail is what matter, whereas for government balance or the current account is the left one. Based on that, we build an index ranging from 0 (low vulnerability) to 1 (max vulnerability). We consider both the levels scaled to GDP and its 5-year change for stock variables like debt and credit.
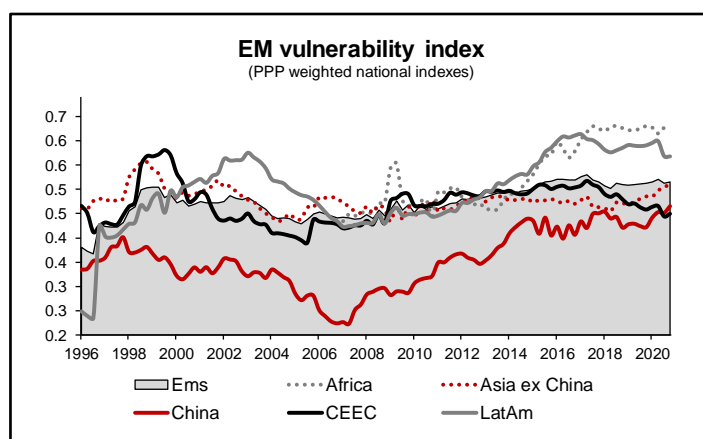
By averaging the scores by group, we get an indicator for each source of vulnerability. We take a weighted average of

the group scores to get to the final county score: we give a 40% weight to the external balance and fiscal/government score respectively and 20% to the credit sector. The weights reflect our judgment on the importance of each factor.
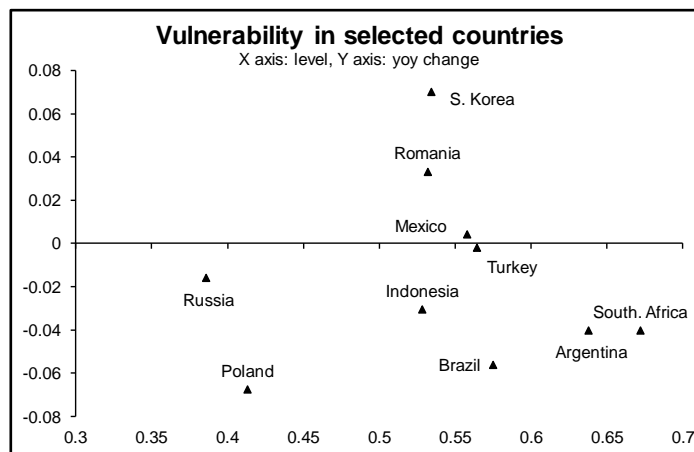
The final score can be used as a ready reckoner and a tool to rank countries, but what is probably more important is that looking at all the components allows the analyst to explore the context that can be used to form the case for a country. Moreover, the tool enables spot-specific flashpoints in countries characterised by an overall low vulnerability.

The standard way to present the results is the heatmap shown at the end of the report. We add to the overall score a measure of governance strength, based on the standard indicators published by the World Bank, as a proxy of the capability and willingness of the government to address imbalances.

Alternatively, the time series of the index at the country, region, or aggregate levels are available to provide a rough comparison of vulnerabilities across time and regions.
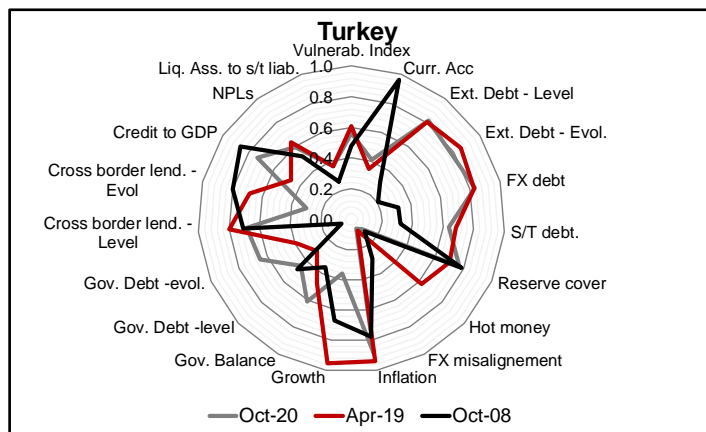
EM vulnerability index
(PPP weighted national indexes)

An alternative way to track the evolution of risk is to draw a diagram with the level and the change of the index.

Vulnerability in selected countries
X axis: level, Y axis: yoy change

It is also possible to compare, for each country, the level of the vulnerability index and its components in different periods (see the chart on the next page).

The EM monitor must be thought to describe the risks and not show the possible spillovers between the sectors. The final score provides summary information but cannot be taken at face value, and an analysis is still required to understand the real risks. For instance, in Turkey, the risk is

likely higher than in Colombia despite its lower overall vulnerability index.

Turkey

The dynamic has been negative: the macro/fiscal sector has been kept afloat thanks to an aggressive credit growth policy financed by external debt and a rapid FX reserve decline.

The tool uses international institutions' data to ensure comparability across countries. It entails some problems in data availability and a substantial lag of at least one-two quarters. Therefore, it monitors the medium-term dynamics rather than the short-term developments, for which financial conditions indexes based on asset prices would be more appropriate.

The final vulnerability index does not include the important political dimension. olitical risk and the credibility of the institutions, especially in EM countries, are some of the main qualitative factors influencing the vulnerabilities. Unfortunately, it is difficult to measure and understand its final impact on the risks. For example, Chile is surprisingly exhibiting a poor vulnerability index compared with its IG rating. However, it has one of the best governance scores, and its institutions' high credibility leads us to adopt a more relaxed stance regarding its vulnerabilities. South Africa has the weakest vulnerability index, but the credibility of the Treasury and the SARB is a welcome support. For this reason we show a governance score, based on World Bank data, along with the vulnerability one.

EMs less vulnerable to a rise of core rates

Looking at the signal from our tool, it appears that, since 2013 and the *taper tantrum,* EM vulnerabilities have been on average increasing slightly. However, the structure and the repartition of the vulnerabilities have changed. Risks are now stemming from the macro and fiscal sectors rather than from the external side. The high level of FX and external debt remains a concern in Latin America, but the current account (CA) deficit has been in check; stable inflows finance it, and FX reserve coverage is adequate.

EMs appear to be less vulnerable to a rise of core yields and a EM FX weakness. They are less in a situation where high credit growth fuels a CA deficit financed by volatile portfolio inflows.

This time, the temporary growth deterioration, lagging Covid-19 vaccination and the higher debt level due to the pandemic are the main issues. The risk of a fiscal crisis in the short term has increased, so the need for fiscal reforms like in Brazil, Colombia or for new tools like the G20

Common Framework and the DSSI. That said, according to Zettelmeyer, 2020, *Pandemic Sovereign Debt Risks*, the impact of the crisis on long-term debt sustainability is modest because the yield decline has offset the growth decline.

Higher risk in LatAm, safer CEE

Latin America and Africa present the most significant vulnerabilities in conjunction with weaker external factors and a sharper deterioration of the macro and fiscal environment. In addition, Latin America faces a busy electoral cycle in the next 18 months that could have disruptive impacts on economic policy, which – as mentioned – is not captured by the vulnerability index. At the other end of the spectrum, the CEE region has seen its vulnerabilities declining since 2016 and has been more resilient to the pandemic. Cross-border lending risk is relatively high, but it is explained by the claims of European banks on local branches.

At the country level, Chile aside, Turkey, Brazil, and South Africa are not surprisingly the countries with the highest level of vulnerabilities. In Turkey, the external sector score could be even weaker if considering all the CBRT's FX liabilities. Brazil has exhibited poor fiscal metrics even before the pandemic. The low growth potential will make the debt profile adjustment difficult without a significant fiscal reform. To this extent, the Q4/22 Presidential election will be a turning point. Like Brazil, South Africa has seen a deterioration of its debt metrics coupled with low growth potential for a while. On the positive side, the debt is held by local investors, and the financing has not been difficult.

EM vulnerabilities monitor

Q4 2020		Governance score*	Vulnerability index	External sector									Macro & Fiscal						Credit/Banks					
				Score	Current account	External debt		Sh. term ex. debt	FX debt	Reserve cover	Hot money	REER	Score	Inflation	GDP growth	Gov't balance	Gov' debt		Score	Cross border lending		Credit Growth	NPL ratio	Liq ass to s/t liab
						Level	5 yr chg										Level	5 yr chg		Level	5 yr chg			
Africa	Egypt	0.73	0.66	0.57	0.82	0.54	0.85	0.08	0.57	0.46	0.05	0.91	0.77	0.69	0.72	0.97	0.96	0.50	0.62	0.38	0.85	-	-	-
	Nigeria	0.86	0.59	0.43	0.53	0.25	0.59	0.27	0.27	-	-	0.58	0.73	0.90	0.90	0.90	0.20	0.75	0.64	0.15	0.70	-	0.78	0.93
	S.Africa	0.45	0.67	0.53	0.52	0.90	0.80	0.34	0.81	0.27	0.04	0.34	0.80	0.43	0.81	0.95	0.90	0.94	0.69	0.64	0.73	0.49	0.74	0.88
Asia	China	0.51	0.48	0.53	0.30	0.39	0.63	0.95	0.40	0.33	0.56	0.68	0.47	0.20	0.03	0.91	0.57	0.57	0.38	0.12	0.39	0.87	0.14	0.39
	India	0.54	0.52	0.35	0.43	0.24	0.35	0.47	0.23	0.33	0.37	0.38	0.54	0.41	0.01	0.85	0.74	0.63	0.81	-	-	0.66	0.82	0.95
	Indonesia	0.55	0.53	0.57	0.62	0.97	0.97	0.40	0.97	0.08	0.07	0.46	0.45	0.06	0.15	0.65	0.52	0.77	0.61	0.91	0.50	0.42	0.32	0.92
	Malaysia	0.31	0.57	0.65	0.23	1.00	0.80	0.51	1.00	0.03	-	0.63	0.49	0.13	0.04	0.81	0.82	0.59	0.58	0.99	0.92	0.83	0.08	0.10
	Philippines	0.60	0.50	0.55	0.50	0.78	0.47	0.29	0.79	0.19	0.66	0.70	0.50	0.28	0.06	0.80	0.66	0.59	0.41	0.21	0.46	-	0.54	0.42
	S.Korea	0.20	0.53	0.52	0.13	0.67	0.44	0.88	0.68	0.26	0.39	0.70	0.46	0.01	0.78	0.28	0.66	0.54	0.71	0.55	0.63	0.96	-	-
	Thailand	0.47	0.45	0.32	0.10	0.29	0.39	0.46	0.28	0.07	0.15	0.80	0.51	0.05	0.50	0.72	0.51	0.71	0.59	0.59	0.40	0.75	0.49	0.74
CEEC	Czech Rep.	0.18	0.44	0.42	0.38	0.56	0.21	0.91	0.49	0.06	0.03	0.71	0.36	0.14	0.33	0.51	0.43	0.40	0.64	0.88	0.93	0.46	0.31	0.69
	Hungary	0.29	0.54	0.50	0.40	0.74	0.04	-	0.76	0.84	0.71	0.37	0.60	0.34	0.54	0.76	0.91	0.46	0.61	0.80	0.47	0.47	0.05	0.69
	Poland	0.29	0.41	0.42	0.24	0.55	0.14	0.82	0.59	0.29	0.11	0.61	0.45	0.11	0.40	0.63	0.72	0.37	0.34	0.58	0.19	0.23	-	-
	Romania	0.41	0.53	0.65	0.85	0.77	0.80	0.04	0.79	0.45	0.87	0.65	0.53	0.18	0.44	0.91	0.59	0.54	0.29	0.34	0.12	-	0.63	0.08
	Russia	0.64	0.39	0.34	0.22	0.64	0.10	0.39	0.63	0.13	0.38	0.22	0.41	0.32	0.80	0.12	0.13	0.63	0.44	0.09	0.36	0.76	0.84	0.15
	Turkey	0.59	0.56	0.55	0.41	0.82	0.78	0.64	0.83	0.77	0.10	0.07	0.59	0.89	0.35	0.61	0.43	0.63	0.54	0.68	0.30	0.73	0.60	0.37
	Ukraine	0.71	0.55	0.57	0.73	0.63	0.03	0.61	0.63	0.40	0.73	0.82	0.60	0.64	0.75	0.67	0.82	0.09	0.39	0.08	0.25	-	0.98	0.23
Latin America	Argentina	0.59	0.64	0.55	-	0.92	0.96	0.49	0.92	0.79	0.03	0.04	0.83	-	0.44	0.91	0.96	0.99	0.43	0.07	0.67	0.52	0.59	0.31
	Brazil	0.59	0.58	0.45	0.35	0.79	0.50	0.45	0.80	0.30	0.24	0.15	0.78	0.25	0.81	0.97	0.94	0.93	0.42	0.65	0.55	0.68	0.23	0.00
	Chile	0.24	0.62	0.70	0.67	0.94	0.93	0.21	0.94	0.41	0.88	0.42	0.52	0.22	0.48	0.75	0.33	0.85	0.66	0.81	0.76	0.96	0.10	-
	Colombia	0.56	0.59	0.59	0.82	0.88	0.79	0.42	0.87	0.39	0.24	0.35	0.62	0.11	0.53	0.83	0.83	0.79	0.54	0.36	0.55	0.49	0.71	0.59
	Mexico	0.62	0.56	0.55	0.36	0.92	0.89	0.25	0.90	0.45	0.19	0.42	0.60	0.31	0.69	0.48	0.77	0.76	0.48	0.47	0.65	0.55	0.27	0.48
	Peru	0.51	0.52	0.58	0.37	0.92	0.80	0.11	0.82	-	-	0.45	0.43	0.07	0.08	0.80	0.43	0.80	0.58	0.64	0.58	-	0.64	0.46

* Average of World Bank indicators for Regulation Quality, Rule of Law, Government Effectiveness and Political Stability

The index ranges from 0 (low risk) to 1 (high risk) based on the evolution of the indicators across time and countries. The Vulnerability Index is constructed by weighting the averages of the External sector, Macro&Fiscal and Finance/Credit groups. The external and Macro&Fiscal categories have a 40% weight each, the Credit/Banks one 20%.

Research Analysis

Appendix: Variables details

Subgroup	Variable	Type of risk	Transformation	Source
External	Curr.acc.to GDP (forecast)	Wide and prolonged deficit triggers BoP crisis	Level	IMF WEO
	External debt to GDP	Insolvency / restructuring risk, exposure to higher interest rates	Level, and 5 year change	BIS
	Short term external debt to GDP	Rollover/interest rate risk	Level	BIS
	FX denominated debt to GDP	Exposure to exchange rate fluctuations	Level	BIS
	FX reserve cover	Vulnerability to widening external deficits	(FX reserves + current account – debt) /GDP	IMF BOPS, BIS, Nat. sources
	Porfoltio flows to GDP	Sudden stop in inflows	3 year change	IMF BoPS, Nat. Sources
	Real effective exchange rate	Exchange rate misalignment, risk of sudden correction	Deviation from 4 year moving average	BIS
Macro and Fiscal	Inflation (forecast)	Currency depreciation, interest rate increase	Level	IMF WEO
	GDP growth (forecast)	Risk for debt sustainability	Level	IMF WEO
	Government Balance to GDP	Risks for gov't debt	3 year moving average	IMF Fiscal Outlook
	Gov't debt to GDP	Gov't debt crisis	Level, and 5 year change	IMF Fiscal Outlook
Credit/Finance	Cross border lending to GDP	Credit bubble/sudden stop	Level and 5 year change	BIS
	Credit to Nonfinancial private sector to GDP	Credit bubble	3 year change	BIS
	Non-Performing to outstanding loans	Banking sector solvency, gov't contingent liability	Level	IMF
	Banks' liquid assets to short term liabilies	Rollover	Level	IMF

Imprint

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