PGIM
India Mutual Fund

The Investment Implications of COVID-Induced Debt Overhang

Perspectives | PGIM Fixed Income

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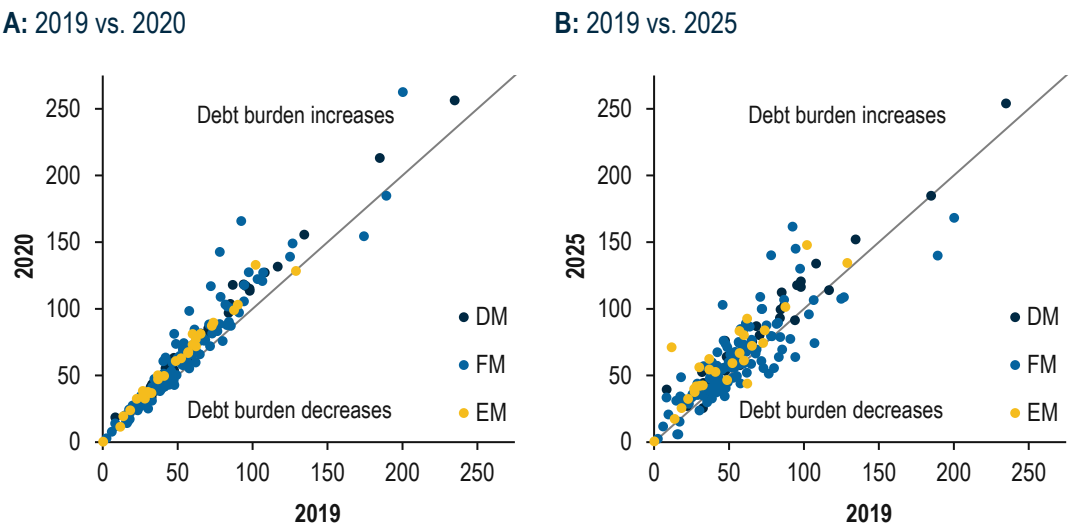
- A large debt overhang is one of the most salient economic legacies of the COVID pandemic, as some emerging and frontier economies could face distress servicing their debt.
- In this piece, we present a parsimonious analytical framework aimed at spotting the discrepancies among emerging and frontier markets in their ability to weather the risks of COVID-induced debt overhang. We then leverage the framework to identify investment opportunities.
- Our model shows countries that exhibit higher debt sustainability and liquidity scores display lower debt burdens and face lower financing needs. They also tend to rely more heavily on external financing and enjoy larger FX reserve buffers relative to their external short-term liabilities.
- We further assess how our debt sustainability and liquidity score might help explain sovereign spreads and used the regression to identify potential market mispricing based on model-implied and actual sovereign spreads. We find countries undergoing highly idiosyncratic dynamics from both ends of the valuation spectrum, highlighting the need to supplement the analysis with country-specific appraisals.

A large debt overhang is one of the most salient economic legacies of the COVID pandemic (Figure 1A). This problem follows the contraction of many economies and the fiscal response countries deployed to cushion the economic disruption to households and businesses. The debt buildup is expected to linger for the next few years, as the International Monetary Fund (IMF) forecasts public indebtedness will remain higher in 2025 versus 2019 for nearly 75% of economies worldwide and about 70% of developing markets (Figure 1B).

Figure 1: Public debt as % of GDP



Source: IMF, Haver Analytics, PGIM Fixed Income

This backdrop raises concerns that some emerging and frontier economies could eventually face distress servicing their debt. In fact, the pandemic has already precipitated defaults and debt restructurings among economies—such as Argentina, Ecuador and Zambia—that were already standing on precarious macroeconomic ground prior to the shock. Advocacy in support of debt relief for low-income countries, including the World Bank/IMF-backed Debt Service Suspension Initiative (DSSI) and the G20 Common Framework, reflect the angst among global policymakers about the repayment capacity of some countries. Thus, debt sustainability and liquidity positions must be analyzed more thoroughly throughout the investment process.

In this piece, we present a parsimonious analytical framework aimed at spotting the discrepancies among emerging and frontier markets in their ability to weather the risks stemming from the COVID-induced debt overhang. We then leverage the framework to identify investment opportunities within this complex.

METHODOLOGY

Our framework is based on fundamental variables that capture debt dynamics and liquidity positions.[1] Our starting point is the debt-to-GDP ratios in 2020. Acknowledging that higher reliance on external debt tends to entail higher risk than similar debt levels denominated in local currency, we also take the share of external public debt into consideration. Equally important to the debt stock and composition, in our view, are the debt dynamics. In particular, we consider the projected average differential between a country's interest bill and its nominal growth rate from 2021 to 2025, which is a key parameter for forward-looking debt sustainability assessments. Finally, we consider a couple of measures that reflect short-term repayment risks, namely, the financing needs for 2021 and the stock of FX reserves relative to the stock of short-term external debt. Figure 2 provides additional details on the variable

[1] At a conceptual level, this analysis differs from PGIM Fixed Income's proprietary ratings framework in that the latter offers a more comprehensive picture based on observed macroeconomic variables, whereas this framework is an ad-hoc analysis that zooms in on one aspect of the pandemic's economic fallout and relies more heavily on forward-looking metrics. There are also methodological differences.

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set underpinning our framework. The sample of 68 emerging and frontier markets is based on data availability and market relevance of countries within the EMBIG Index.

Figure 2: Variables underpinning the framework

Variable	Description	Year	Source
Public debt	General government gross debt as % of GDP	2020	IMF's World Economic Outlook
Public external debt	General government gross external debt as % of general government gross debt	2020	BIS and IMF's World Economic Outlook
r-g	Average differential between projected interest rate paid on the stock of public debt and nominal GDP growth	2021-26	IMF's World Economic Outlook
FX reserves to ST external debt	Ratio of FX reserves (excluding gold) to short term external debt	2020	BIS and IMF
Financing needs	Projected fiscal balance plus scheduled public debt amortizations as % of GDP	2021	IMF's World Economic Outlook and Bloomberg

Having established the economic relevance of the variables underpinning our framework, we next conduct a raw diagnosis of the information that can be drawn from this set. Ideally, each variable should carry material implications on the issue under scrutiny while having little relationship with the other variables. More technically, each variable should render a high signal-to-noise ratio (calculated as the reciprocal of the coefficient of variation) and a low correlation coefficient with the other metrics. Figure 3 shows the correlation matrix of this variable set, with the diagonal showing each variable's signal-to-noise ratio. In general, our parsimonious approach appears to be capable of offering meaningful information while avoiding redundancies.

Figure 3: Signal-to-noise ratios and correlation matrix

	Public debt	Public external debt	FX reserves to ST external debt	r-g	Financing needs
Public debt	2.31				
Public external debt	-0.08	2.40			
FX reserves to ST external debt	0.09	0.04	0.55		
r-g	0.00	-0.05	0.08	-0.80	
Financing needs	0.46	-0.39	-0.12	-0.05	1.73

Source: See Figure 2, Haver Analytics, PGIM Fixed Income. Diagonal data represent the signal- to-noise ratios (mean/std dev).

Next, we rank the countries' standing under each fundamental metric by computing the ratio of each data point's deviation from the variable median to the standard deviation of the variable under consideration. Relying on medians rather than means mitigates the impact of outliers in shaping results. Further, this approach not only facilitates the ranking of countries as per their ordinal position for each metric, but it also allows them to be ranked according to the magnitude of their out/under-performance relative to the sample median.

We then compute the first principal component derived from the relative performance of each country in every metric in order to find one single measure the captures overall debt sustainability and liquidity standing of countries. We rely on this summary score to rank our cohort of emerging and frontier markets.

RESULTS

Figure 4: Debt sustainability and liquidity ranking

		Public debt	Public external debt	FX reserves to ST external debt	r-g	Financing needs	Debt sustainability and liquidity score
1	Cameroon	0.77	-1.61	1.35	0.04	0.95	2.53
2	Azerbaijan	1.52	-1.40	0.75	-0.06	0.39	2.23
3	Peru	1.04	-0.83	0.55	-0.05	0.78	2.11
4	Guatemala	1.16	0.27	1.21	-0.50	0.93	1.91
5	Tajikistan	0.60	-1.64	-0.15	0.57	0.81	1.83
6	Paraguay	1.06	-1.43	-0.10	-0.32	0.38	1.72
7	Honduras	0.58	-1.45	0.86	0.32	0.26	1.67
8	Saudi Arabia	1.14	0.60	1.11	0.00	0.82	1.67
9	Russia	1.59	1.22	0.74	0.09	1.16	1.62
10	Cote D'ivoire	0.69	-1.17	-0.13	-0.07	0.46	1.62
11	Ecuador	0.04	-1.08	-0.09	-0.54	1.09	1.47
12	Senegal	0.00	-2.07	-0.22	0.26	0.47	1.22
13	Indonesia	1.00	-0.26	0.07	-0.07	0.17	1.15
14	Belarus	0.61	-0.80	-0.27	-0.16	0.40	1.14
15	Armenia	0.10	-1.18	-0.10	-0.17	0.44	1.14
16	Jamaica	-1.36	-1.55	0.15	-0.30	1.22	1.06
17	Serbia	0.25	-0.54	0.01	-0.04	0.33	1.03
18	Lithuania	0.64	-1.94	-0.28	0.00	0.05	1.02
19	Ethiopia	0.36	0.57	-0.16	1.83	1.01	0.98
20	Vietnam	0.65	0.71	0.15	0.58	0.44	0.98
21	Mongolia	-0.26	-2.03	0.19	0.69	0.26	0.95
22	Dominican Republic	-0.13	-0.41	0.18	0.03	0.75	0.83
23	Kuwait	1.86	-0.83	-0.10	5.83	-0.75	0.71
24	Qatar	-0.21	-0.50	-0.21	-0.25	0.94	0.64
25	Gabon	-0.23	-0.26	-0.14	-0.59	0.97	0.63
26	Kazakhstan	1.31	0.83	-0.17	0.93	0.17	0.59
27	Romania	0.54	-0.46	0.02	0.06	-0.14	0.49
28	Georgia	0.18	-1.46	-0.09	0.25	-0.44	0.48
29	Nigeria	1.05	1.12	1.72	0.97	-0.01	0.44
30	Papua New Guinea	0.57	0.08	0.01	-0.25	0.05	0.37
31	Chile	1.14	0.34	0.00	0.07	-0.50	0.32
32	Iraq	-0.53	-0.66	0.94	0.80	0.10	0.29
33	Panama	0.08	0.03	-0.30	-0.01	0.36	0.25
34	Poland	0.28	0.64	0.00	0.07	0.13	0.21
35	Turkey	0.99	0.37	-0.28	0.61	-0.10	0.21
36	Bolivia	-0.05	0.39	0.86	0.20	0.13	0.20
37	Trinidad & Tobago	0.22	0.53	0.04	-0.99	0.11	0.17
38	Oman	-0.53	-1.36	-0.20	-0.26	0.12	0.05
39	Colombia	0.10	0.50	0.23	-0.20	0.01	0.05
40	Ukraine	0.17	-0.19	-0.10	-0.06	-0.47	-0.20
41	Belize	-2.11	-0.85	7.63	-0.31	-0.12	-0.29
42	El Salvador	-0.77	0.04	-0.12	-0.90	0.31	-0.37
43	Philippines	0.64	0.85	0.62	0.14	-1.06	-0.57
44	Kenya	-0.10	-0.08	0.10	0.19	-0.66	-0.59
45	Uruguay	-0.02	-0.37	0.01	-0.10	-0.91	-0.61
46	Mexico	0.18	0.86	0.19	-0.56	-0.50	-0.61
47	Angola	-2.10	-0.79	0.30	0.76	-0.59	-0.82
48	Morocco	-0.35	1.06	0.25	-0.34	-0.33	-0.94
49	Mozambique	-1.93	-0.66	-0.22	1.14	-0.34	-0.97
50	Hungary	-0.53	0.55	-0.06	0.02	-0.39	-1.00
51	Tunisia	-0.75	-0.54	-0.20	0.08	-0.59	-1.03
52	Malaysia	-0.06	1.11	-0.17	0.15	-0.16	-1.04
53	China	-0.04	2.15	0.04	0.41	-0.57	-1.16
54	Croatia	-0.74	0.62	0.02	0.00	-0.51	-1.23
55	Namibia	0.00	0.77	0.05	-0.37	-2.88	-1.47
56	Costa Rica	-0.09	1.09	-0.08	-0.93	-0.79	-1.49
57	Ghana	-0.42	-0.03	-0.11	-0.13	-1.89	-1.51
58	Zambia	-1.78	-0.51	-0.16	1.29	-1.41	-1.57
59	India	-0.82	2.12	0.40	0.26	-0.67	-1.73
60	Argentina	-1.28	0.29	-0.20	3.82	-0.93	-1.76
61	South Africa	-0.39	0.70	-0.10	-0.68	-1.65	-1.78
62	Jordan	-0.78	0.37	-0.21	-0.50	-1.04	-1.82
63	Pakistan	-0.74	0.84	-0.04	0.08	-2.09	-2.03
64	Brazil	-1.14	1.78	0.37	-0.45	-1.88	-2.22
65	Bahrain	-2.30	-0.42	-0.32	-0.35	-3.10	-2.23
66	Sri Lanka	-1.18	0.64	-0.24	-0.20	-1.73	-2.30
67	Suriname	-3.43	0.72	-0.15	2.23	-1.08	-2.32
68	Egypt	-0.84	1.21	0.06	-0.05	-3.50	-2.38

The score is largely determined by the stock of public debt and the financing needs. Intuitively, large stocks of public debt stem from recurrent fiscal shortfalls and spawn heavier amortization schedules—hence a lower debt sustainability and liquidity score.

Figure 4 presents the ranking drawn from our framework; color coding is added to facilitate the visualization of results[2]. A first observation worth noting is that no country exhibits a consistent outsized performance across all metrics. A second remark is that the score is largely determined by the stock of public debt and the financing needs. This should not come as a surprise given that these variables hold the strongest correlation. Intuitively, large stocks of public debt stem from recurrent fiscal shortfalls and spawn heavier amortization schedules—hence a lower debt sustainability and liquidity score. Third, while relevant, the level of FX reserves relative to short-term liabilities appear to play a secondary role. Fourth, public external debt affects the score in a seemingly counterintuitive way, as countries with larger shares of external debt (reflected in a more negative deviation from the median) tend to log a higher score. This relationship stems from the negative pair-wise correlation that public external debt has with public debt and, especially, financing needs. One possible explanation to these seemingly counterintuitive relationships is that countries with deeper local markets are less reliant on external sources of financing. These countries enjoy more leeway to take on leverage and conduct fiscal and debt policy that entails heftier financing needs that can be easier to roll over domestically; conversely, countries that compete for financing in the international market face more investor scrutiny on their fiscal standing and, thus, are more prone to conduct a more disciplined fiscal policy producing lower debt burdens and financing needs. Lastly, the differential between interest rate and economic growth seems to have a mixed role on the debt sustainability and liquidity score. Technically, this result stems from the low correlation the r-g metric holds with the rest of the variables. One plausible intuitive interpretation is that the current debt and liquidity profile does not shape the medium-term projections of debt dynamics in a material way, and, naturally, the latter does not affect the former.

The main takeaways of this model are that countries that exhibit higher debt sustainability and liquidity scores display lower debt burdens and face lower financing needs. They also tend to rely more heavily on external financing (with Saudi Arabia and Russia being notable exceptions among the top ten countries) and enjoy larger FX reserve buffers relative to their external short-term liabilities. However, no distinct pattern emerges for the projected growth rates relative to borrowing costs of these countries.

Conversely, countries with lower debt sustainability and liquidity scores present larger debt-to-GDP ratios and face heftier financing needs. Further, they tend to be less reliant on external funding, with India and Brazil epitomizing how robust domestic markets provide some countries the space for persistent fiscal largesse. These countries also tend to have lower reserves and are expected to show poorer debt dynamics.[3]

Next, we conduct a regression analysis to assess how our debt sustainability and liquidity score might help explain sovereign spreads. In particular, we focus on the average spreads observed over the course of this year in order to narrow the analysis to a relevant time horizon while diluting day-to-day trading gyrations that could skew the results.

[2] By construction, the first principal component is a linear combination of the underlying variables that produces a mean of 0. Given all the variables were normalized by their standard deviation ahead of the principal component analysis, the range of scores resembles the ranges observed across variables. However, rather than focusing on the specific value assigned to each country, the most relevant information that this score contains lies in the ordinal ranking it renders, which informs the impact that each underlying variable has in shaping the ranking and the ensuing liquidity score (see discussion below) and enables the empirical application to identify potential misalignments in market pricing (see next section).

[3] Argentina stands out for its seemingly favorable debt dynamics. However, this is an artifact of the large inflation-fueled nominal growth rate, the recent debt-restructuring that produced a lower, step-up structure of coupon payments, and the funding provided by the central bank via noninterest-bearing financing.

Figure 5 presents the results of this exercise. Column (1) shows that a simple univariate specification that includes only the score as an independent variable and an intercept yields a statistically significant relationship that explains about 11% of the variance in sovereign spreads. The coefficient of interest is negative, consistent with the intuitive conjecture that a higher (i.e., better) debt sustainability and liquidity score should entail a tighter spread.

We enrich the model by including a battery of control variables that may also influence credit risk, namely: PPP-based GDP per capita; a numerical mapping of the average credit rating assigned by the three main rating agencies; and categorical variables capturing whether a country is currently participating in an IMF program, is a commodity exporter, or is a member of the Eurozone. Column (2) shows that while the influence of the debt sustainability and liquidity scores on spreads drops by about half, it remains statistically significant; further, the inclusion of controls significantly boosts the model's explanatory power.

Figure 5: Average spreads (January 4–June 30) vs. debt sustainability and liquidity score

Dependent variable: average EMBIG Diversified Sovereign spread (January 4–June 30, 2021)

	(1)	(2)	(3)	(4)
Debt sustainability and liquidity score	-121.835**	-61.149*	-75.798***	-83.915**
	(52.357)	(33.787)	(27.775)	(31.373)
GDP per capita		0.004	0.000	-0.002
		(0.003)	(0.002)	(0.003)
Credit rating		-102.697***	-57.694***	-67.952***
		(18.241)	(9.799)	(11.614)
IMF program		-192.014**	-136.950*	-175.957**
		(94.634)	(76.091)	(81.985)
Commodity exporter		86.027	93.965	82.311
		(68.202)	(62.290)	(66.092)
Eurozone		202.876*	109.222	
		(102.586)	(78.565)	
Idiosyncratic			700.744***	636.424***
			(154.718)	(145.795)
Default				1.154
				(3.235)
Intercept	460.980***	1,226.390***	810.349***	918.804***
	(56.056)	(164.735)	(88.853)	(123.683)
Observations	68	68	68	59
R-squared	0.109	0.658	0.816	0.832

Heteroskedasticity-robust standard errors in parentheses. Asterisks denote statistical significance at *10%, **5% and ***1% levels.

Credit ratings, engagement with the IMF, and idiosyncratic dynamics emerge as key drivers of spreads along with our debt sustainability and liquidity score.

In a third specification, we add a binary variable reflecting whether a country has undergone highly idiosyncratic dynamics like a recent—or impending—debt restructuring (e.g., Argentina, Sri Lanka and Zambia), civil conflict (e.g., Ethiopia) or frictions with the international community (e.g., Belarus). Column (3) shows that the effect of the score is robust to the inclusion of this control variable, while the model's explanatory power is bolstered by about 16 basis points. Judging by the magnitude of their coefficients as well as their level of statistical significance, credit ratings, engagement with the IMF, and idiosyncratic dynamics emerge as key drivers of spreads along with our debt sustainability

and liquidity score.[4] Further, these results highlight how impactful inherently transient drivers, such as engagement with the IMF or idiosyncratic dynamics, can become relative to more fundamental factors, such as credit ratings and our score.

All in, these results support the empirical relevance of our analytical framework in explaining the market's assessment of the risk profile of emerging and frontier economies.

INVESTMENT IMPLICATIONS

Naturally, actionable investment implications follow the most recent market data. We thus leverage our debt sustainability and liquidity scores to identify potential market mispricing based on the sovereign spreads observed as of June 30, 2021. We emphasize that this analysis, and the conclusions drawn, complement our PGIM FI proprietary ratings framework. This output allows investors to focus on variables that are more likely to drive EM sovereign fundamentals, and therefore relative value, given current market conditions. As always, it highlights a more focused starting point from which to then overlay country specific qualitative factors to help us better determine potential alpha generating relative value analysis.

First, we run analogous regressions to the ones discussed above but replacing the dependent variable with the June 30th spreads. Figure 6 shows that the previous results hold in terms of the direction and magnitude of coefficients, their statistical significance, and the model's predictive power.

We employ specification (3)[5] to estimate the fitted spreads of each country, which are then compared to the actual spread. The difference could be interpreted as an indication that the spread is trading at a premium or a discount.

Cases such as Zambia and Suriname underscore the need to complement quantitative analysis with bottom-up assessments of the economic and political outlook on the ground.

Figure 6: Spreads as of June 22, 2021 vs. debt sustainability and liquidity score

Dependent variable: EMBIG Diversified Sovereign spread as of June 30, 2021

	(1)	(2)	(3)	(4)
Debt sustainability and liquidity score	-133.121**	-71.018**	-85.895***	-96.582***
	(52.851)	(35.169)	(27.968)	(31.299)
GDP per capita		0.005	0.001	-0.001
		(0.003)	(0.002)	(0.003)
Credit rating		-103.725***	-58.019***	-68.249***
		(18.080)	(9.798)	(11.939)
IMF program		-209.190**	-153.266*	-189.370**
		(90.027)	(76.776)	(79.274)
Commodity exporter		75.357	83.419	78.584
		(69.705)	(57.767)	(63.003)
Eurozone		174.886*	79.769	
		(100.801)	(71.727)	
Idiosyncratic			711.686***	646.091***
			(145.609)	(134.762)
Default				0.126

[4] In our fourth analysis, we also considered the role that a track record of defaults may play in shaping sovereign spreads. We gauge such track record by the number of years that a country has been in default since 1960 through 2019 (we use the Credit Rating Assessment Group database compiled by the Bank of Canada and the Bank of England). A few countries dropped from our analysis due to data constraints. The results shown in column (4) indicate that default stigmas do not persist, as countries' track records don't weigh on spreads once we control for the other drivers. The model's explanatory power only improves marginally with the inclusion of the default measure. One explanation behind this result may stem from the forward-looking nature of markets and the reflection of past developments in contemporary fundamentals or credit ratings.

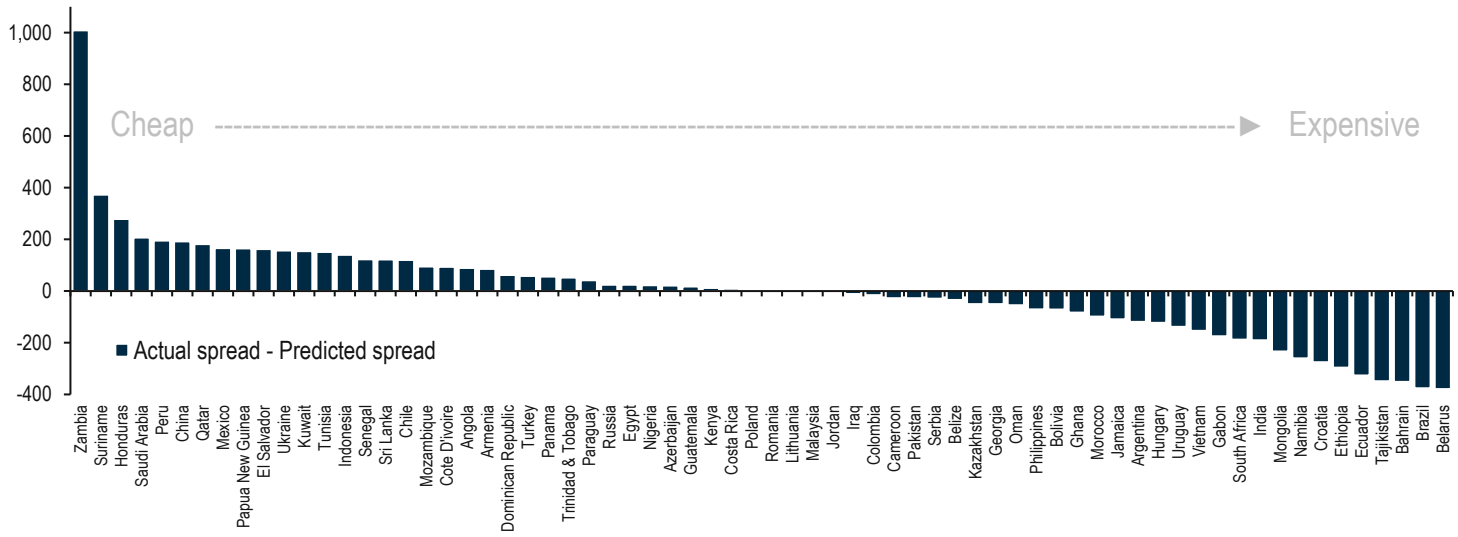
[5] Column (3) is our preferred specification as it contains all of the countries considered in this analysis, while the inclusion of the default variable provides just a negligible contribution to the model and implies dropping some countries.

				(3.372)
Intercept	456.098***	1,232.542***	810.004***	932.861***
	(55.902)	(158.923)	(86.610)	(133.059)
Observations	68	68	68	59
R-squared	0.128	0.665	0.826	0.843

Heteroskedasticity-robust standard errors in parentheses. Asterisks denote statistical significance at *10%, **5% and ***1% levels.

Figure 7 depicts the results of this comparison. The two cheapest credits are effectively in default. Zambia has suspended servicing its external debt and is negotiating an IMF program that will very likely include debt restructuring; likewise, Suriname is currently engaged in contentious negotiations with bondholders regarding a debt restructuring. These cases underscore the need to complement this analysis with bottom-up assessments of the economic and political outlook on the ground. Of more utility, the model flags countries, such as Honduras, Saudi Arabia, Peru, China, Mexico, Indonesia, and Chile, for their relatively cheap valuations. On the other side of the spectrum, the model highlights cases, e.g. Belarus, Tajikistan, Ecuador, and Ethiopia, as credits that look expensive given their idiosyncratic headwinds. More tellingly, the analysis flags countries, such as Brazil, Croatia, India, South Africa, and Vietnam, as being relatively rich.

Figure 7: Potential mispricing



CONCLUSION

The COVID-19 pandemic has been a massive shock to the global economy that has led to a material deterioration of macroeconomic fundamentals worldwide. Thus, credit differentiation is key to identify investment opportunities in this environment. This paper presents a parsimonious, yet economically and empirically significant, analytical framework aimed at facilitating such differentiation of credit risks across emerging and frontier markets by focusing on one of the most salient legacies of the pandemic—the large global debt overhang. Countries, such as Cameroon, Azerbaijan, Peru, Guatemala, Paraguay, Saudi Arabia, and Russia, appear better equipped to weather the risks stemming from the global debt buildup, chiefly due to their low debt burdens, low financing needs, and ample reserve buffers. In contrast, countries, e.g. Egypt, Suriname, Sri Lanka, Brazil, Argentina, and India,

stand on a more precarious footing, underscoring the pressing need for these countries to undertake corrective measures.

Our framework allows us to identify potential mispricing among emerging and frontier credits. We find countries undergoing highly idiosyncratic dynamics from both ends of the spectrum, highlighting the need to supplement the analysis with country-specific appraisals. The model also flags Honduras, Saudi Arabia, and Peru as being especially cheap while it points to Brazil, Bahrain and Croatia as being particularly expensive.

NOTICE: IMPORTANT INFORMATION

Source(s) of data (unless otherwise noted): PGIM Fixed Income as of July 2021.

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