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# The Investment Case for Emerging Markets Debt

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The investment case for emerging markets (EM) debt is compelling. First, in a world rightly concerned about excessive debt and insufficient yields, EM has an answer: EM governments are subject to debt constraints and pay market-determined yields. Second, EM debt has “worked” for over a decade – in fact, it has worked so well that backward-looking efficient frontiers tell investors to have *far more* EM debt<sup>1</sup> versus a current, average allocation of an institutional investor. Third, market structure in EM debt is characterized by liquidity and default rates and recovery values that are in line with many developed market (DM) bond markets.

### I. EM vs. DM Debt – Better Fundamentals That Pay More Than DM

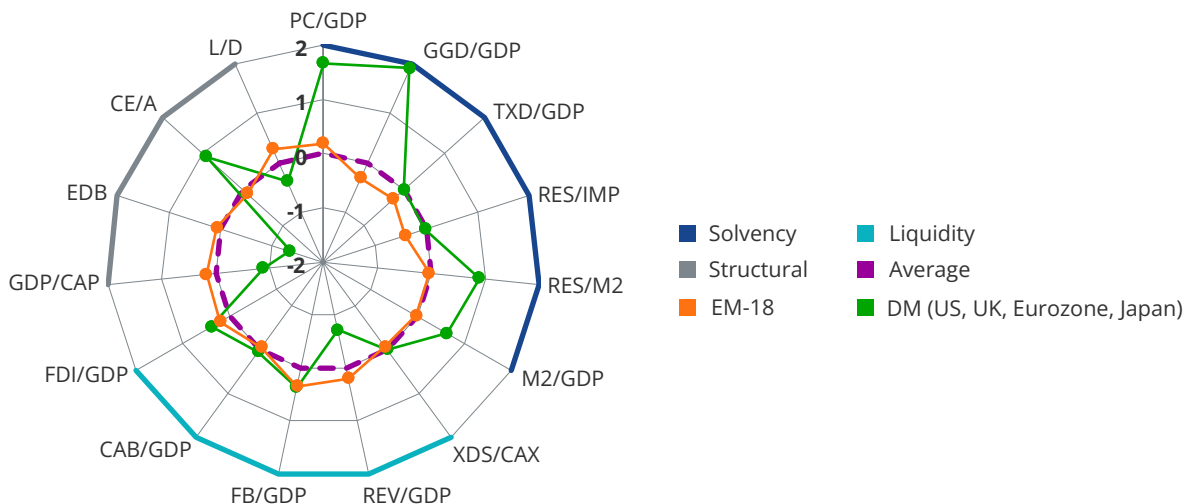
EM could be fairly characterized as having low debt and market-based yields, in contrast to higher-indebted and lower-yielding DM countries. Government debt-to-GDP in EM (G-20 Emerging) is around 69.4%, compared to 122.9% in DM (G-20 Advanced).<sup>2</sup> The Yield-to-Maturity (YTM) on the hard currency J.P Morgan Emerging Markets Bond Index (EMBI) Global Diversified Index is 8.56%; the YTM on the local currency J.P. Morgan Government Bond Index-Emerging Markets (GBI-EM) Global Diversified Index is 6.86%, while one of the highest yields in the DM market comes from the U.S., where yields of similar duration are 3.87% and 4% respectively.<sup>3</sup> Since the Global Financial Crisis, global investors have been asking two key questions: “What is the limit to debt in DM countries?” and “Where do I find yield amidst these concerns of endless debts and deficits in DM?”

And it is more than just low debt that establishes EM fundamentals. Across a range of important metrics, EM has important strengths (and DM – important weaknesses). We show this in Exhibit 1 below, which showcases our “radar charts” that we use to capture a wide range of fundamental metrics, including solvency measures (like debt-to-GDP ratios), liquidity measures (like fiscal

or current account deficits/surpluses), and structural measures (like bank debt-equity ratios). In the radar chart, we show the results for the biggest 18 EMs, compared to the G-4 (as a proxy for DM). Each radial, or course, is one of many fundamental metrics (for which there is a legend). The dashed circle in the middle represents the global mean. The orange polygon is the result for the EM, and the green polygon is the result for the G-10 or DM. The results are in the form of a bulls-eye, meaning if a result is inside the dashed circle (representing the mean), then that result is *better-than-average*, and if it is outside the dashed circle – it is *worse-than-average*. And the units are standard deviations.

Looking at the chart, on a range of metrics, we believe EM is better than DM. Government debt-to-GDP (the top radial), for example, shows that DM debt is not just higher than the global mean, but higher by 2 *standard deviations*, while EM is in line with the global mean. The same is true for a range of other metrics, such as fiscal deficits, current account deficits, etc. Our point is that on a wide range of fundamental metrics (not just debt levels, however important they are), EM is in line—if not arguably superior—to DM.

Exhibit 1 – EM Fundamentals Compare Well to DM

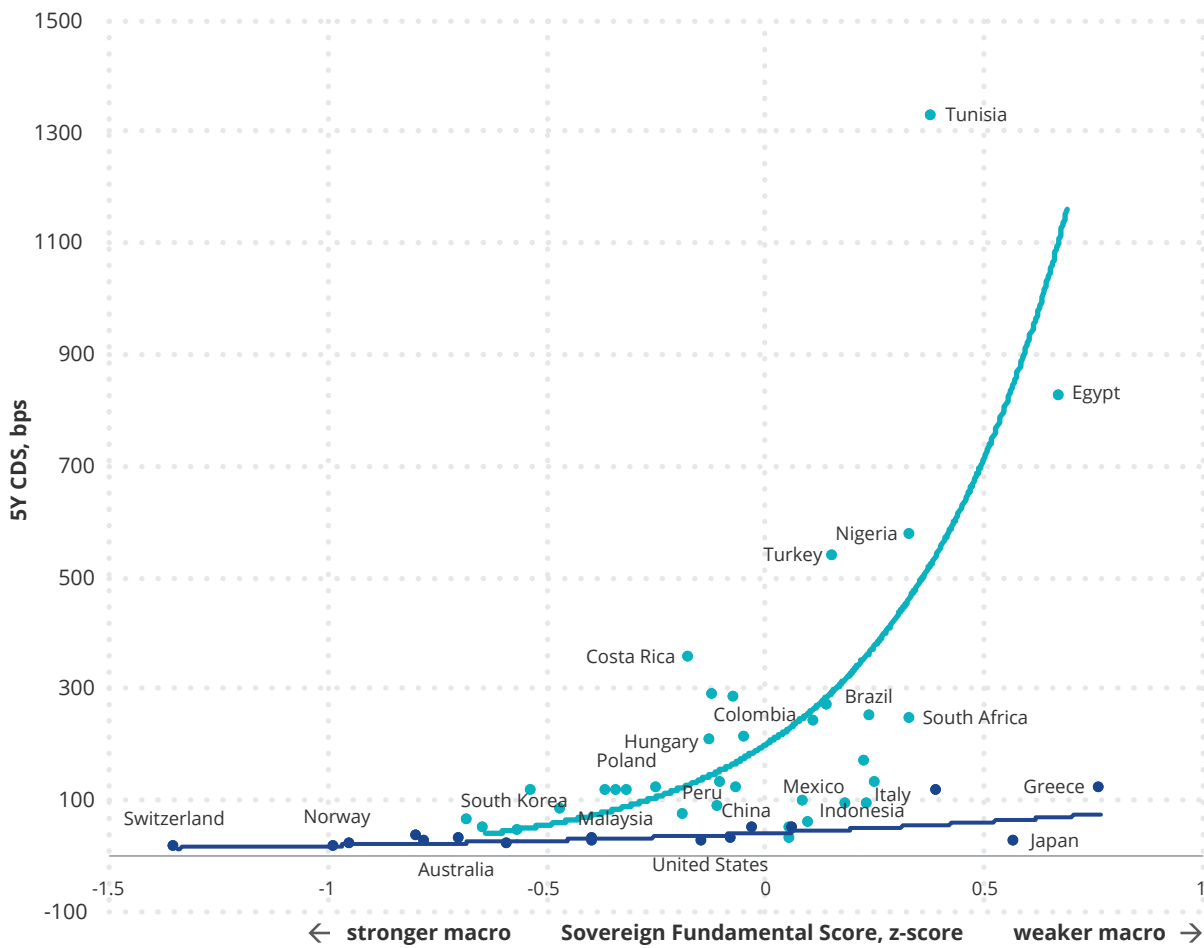


Source: VanEck Research, Moody's, IMF, World Bank, Bloomberg LP. Data as of December 31, 2022.

And the debt of EM yields more than the debt of DM – *even adjusted for fundamentals!* Just being called “EM” means your bonds may pay a premium without regard for their relative good fundamentals. We show this in Exhibits 2 and 3. On the X-axis is our proprietary fundamental score for countries, which is based on all the fundamentals we showed in our radar chart radials in Exhibit 1. On the left of the X-axis are countries with “strong” scores relative to other countries (e.g., low debt-to-GDP, low fiscal deficits, well-capitalized banking systems) and on the right are countries with “weak” scores.

In Exhibit 2, on the Y-axis we show the spread paid by hard currency bonds in those countries. We show the individual countries as well as a regression line representing countries that happen to be called “emerging markets”, and another regression representing countries that happen to be called “developed markets”. The EM trend regression line shows consistently higher spreads than DM, *even for EMs with the same fundamental score.*

**Exhibit 2 – EM Pays More Than DM in Hard Currency, Even Adjusted for Fundamentals**

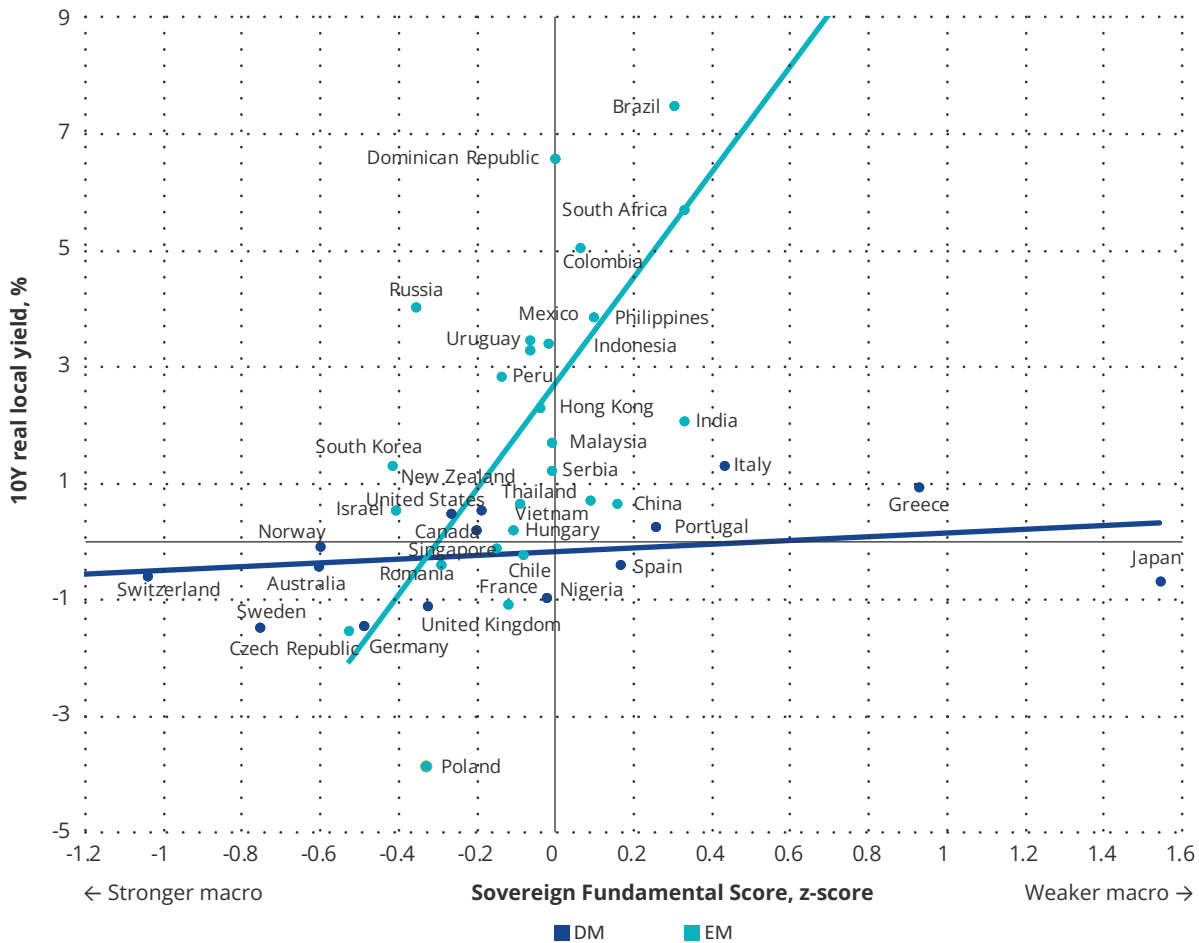


Source: VanEck Research, Moody's, IMF, World Bank, Bloomberg LP. Data as of December 31, 2022.

In Exhibit 3, we show the same thing on the X-axis – the fundamental score – and this time we put the yields on local currency bonds on the Y-axis. Again, we find the same result – *EM yields in local currency are consistently higher than yields in DM, even for EMs with the same fundamental score.* This is another powerful argument supporting

allocations to EM bonds, particularly in an era of central bank experimentation, rising debt and other risks that now characterize DM. One way to put it is that EM doesn't (generally speaking) have these risks with monetary experimentation—and pays you more anyway.

**Exhibit 3 – EM Pays More Than DM in Local Currency, Even Adjusted for Fundamentals**

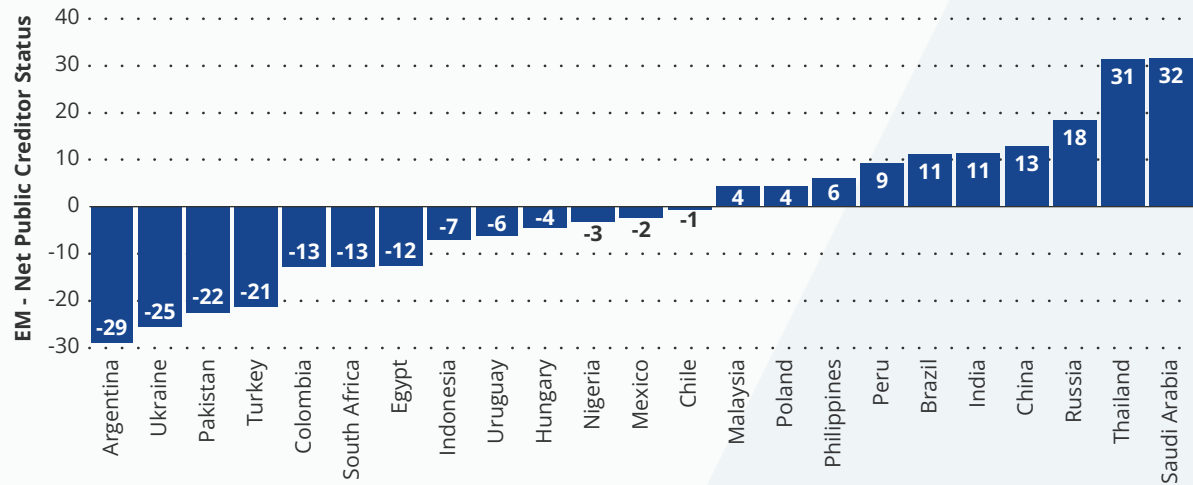


Source: VanEck Research, Moody's, IMF, World Bank, Bloomberg LP. Data as of December 31, 2022.

## The Extreme Example of EM Net External Creditor Status

**There is one place where EM's improved fundamentals deserve a special focus, and that is their net external creditor status.** Net creditor status measures, essentially, how much a government owes in dollars, relative to their resources in dollars. EM is filled with net external creditors, meaning countries that have more dollar assets than dollar liabilities. In other words, they could literally buy back their entire debt stocks. Exhibit 4 shows the net creditor status for the "EM average" as well as the specific countries that have more dollar assets than dollar liabilities.

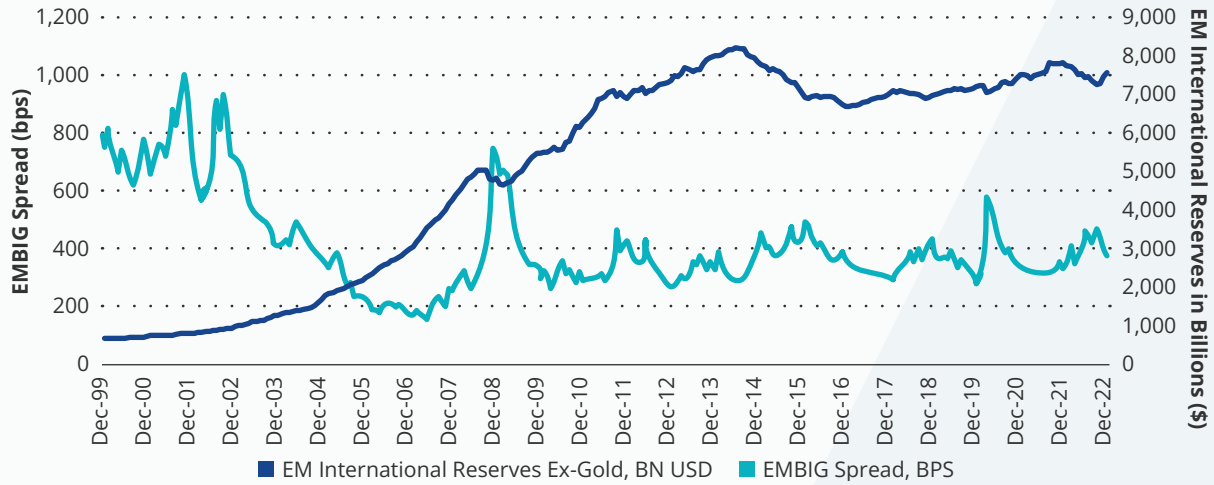
**Exhibit 4 – Net External Creditors in EM**



Source: VanEck Research, Moody's. Data as of December 31, 2022.

We can see how important this has been for EM hard currency bonds over the past few decades. In the "old days" (defined here as prior to the Asian debt crisis of 1997 and Russian debt crisis of 1998), dollar reserves were low, and spreads on the EMBIG were high and volatile. Those crises led to the so-called "Washington consensus" policy solutions, in which limits on debt and deficits were central. Also central was floating exchange rates, which meant countries didn't have to waste reserves defending a particular exchange rate. Of course, if the exchange rate weakness passed through to inflation, that could create problems, but they were to be solved by an independent central bank setting interest rates to curb inflation (and not finance their governments). And if fiscal policy was contributing to inflation, then it was to be curbed as well. This is an important chapter in the story of EM countries learning that lunch had to be earned – fundamentals, particularly manageable debt/spending levels and a central bank paying high real interest rates, made your lunch, or you went hungry. *By the way, could you imagine DM countries deciding on limits to debts and deficits in the face of a recession or depression?*

**Exhibit 5 – State-of-Nature Change – EM Reserves Up, Spreads Down**

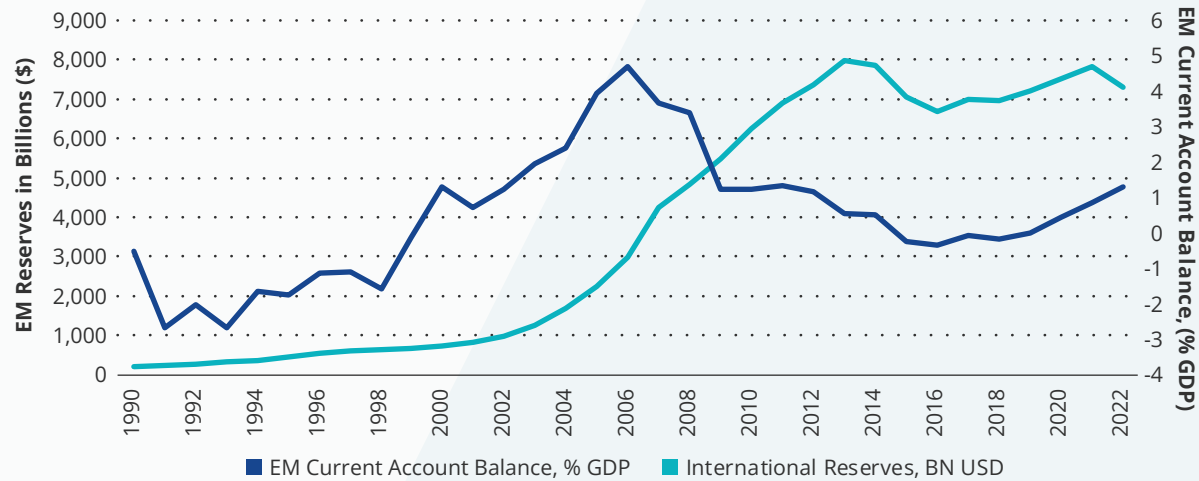


EMBIG Spread = EM Sovereign HC Spread

Source: VanEck Research, Bloomberg LP. Data as of December 31, 2022.

**This is important for one more reason: weak external accounts have created essentially every EM crisis, and they look far less likely now due to continued strengths in external accounts.** In addition to this net creditor status (which focuses on the accumulated stock of dollar assets against the accumulated stock of dollar liabilities), the annual flow of dollars into and out of EM has improved dramatically. This makes sense under floating exchange rate regimes, of course, as the exchange rate (as well as interest rates) are allowed to be set by the market. We show this in Exhibit 6.

**Exhibit 6 – Evolution of Reserves and Current Accounts in EM**



Source: VanEck Research, Bloomberg LP. Data as of December 31, 2022.

As a result, it is fair to conclude that hard currency debt is especially well-anchored in EM. It is empirically, as shown above. It is also the result of strong fundamentals, in particular more dollars than dollar debt. Moreover, the annual flow of dollars in or out of EM has been consistent with this strength continuing, if not improving. This gives EM countries a regular source of financing if needed, and EM investors a relatively safer way to express a positive EM view, if they want a lower-risk exposure.

## II. Historical Performance Points to Very Large Allocations to EMD, Whereas Most Investors Have Very Small Allocations

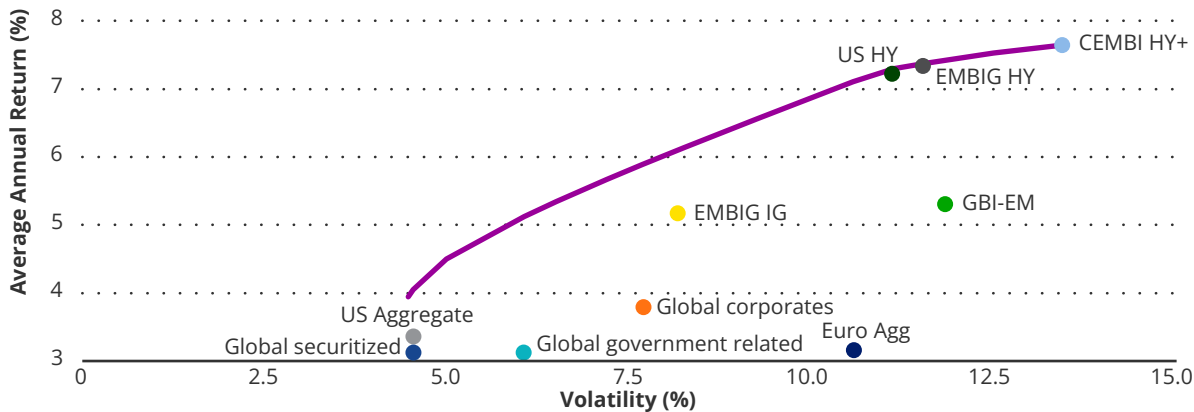
A commonly used asset-allocation framework is the efficient frontier, which shows the optimal portfolio of asset prices that offer the highest expected return for a given level of risk. For example, one may want to look at all the key fixed income asset classes (e.g. everything from the Treasuries to High Yield (HY)) and ask the question: “Based on history, how much of my fixed income allocation should have been in emerging markets bonds?” By analyzing historical returns, the efficient frontier line is the combination of fixed income asset classes (in our exercise) in a portfolio such that one could not have reduced volatility without sacrificing return, nor boosted return without increasing volatility by adjusting the mix of asset classes.

In the Exhibits below, we analyzed the historical returns and volatility of the key fixed income asset prices from 2003-2022. We tried to make our global fixed income universe as representative of the primary investment opportunities as possible (i.e., U.S. Treasuries, Euro Aggregate, Global Governments, U.S. High Yield, etc.). But our selections are,

of course, neither exhaustive nor the only possible ones. To make this exercise as “pure” as possible, we intentionally chose not to impose any constraints on the individual asset class weights. For example, a maximum allocation of 5% or 10% to smaller asset classes is a common rule-of-thumb that many institutions use. We’ll let others impose asset allocation artistry. We are looking only at what the efficient frontier tells us.

The first interesting observation is that EM hard currency has similar returns but half the volatility of U.S. High Yield. Exhibit 7 shows the frontier itself, while Exhibit 8 shows its conclusions. One thing that jumps out from Exhibit 7, the frontier itself, is the comparison between the EMBIG (hard currency sovereign debt) and High Yield. The EMBIG is in a similar return space as HY, but HY has roughly *double* the historical volatility.<sup>4</sup> We are *not* slamming HY; after all, it is *on* the frontier. We *are* saying, however, that *nobody* doubts HY’s role in a fixed income portfolio, and *too many* doubt EM’s role.

**Exhibit 7 – The Efficient Frontier (2003-2022)**



EMBIG IG = EM Sovereign HC, IG; GBI-EM = EM Sovereign LC; EMBIG HY = EM Sovereign HC, HY; CEMBI HY+ = EM Corporate HC, HY

Source: VanEck Research, Bloomberg LP. Data as of December 31, 2022.

The efficient frontier (using the assumptions above) also tells us that the optimal allocation to EM debt, based on its 2003-2022 history, should be *significantly higher* than that of typical institutional investor portfolios.<sup>5</sup> Exhibit 8 shows the specific asset allocation recommendations of the frontier. For example, for a fixed income portfolio with a low desired volatility of around 6.5, the optimal allocation to EM debt should have been 8%. If the desired volatility is slightly higher—let’s say around 8 (8.25 in the table)—the optimal allocation to EM debt is 23%. Typically U.S. pension funds have allocations of around 3%. Of course, we are not recommending 25-30% of a fixed income portfolio being allocated to EM debt. This is why we ran an “unbounded” model without imposing the “art” of asset allocation that often uses rule-of-thumb caps. We are only saying that most investors do not have anywhere near the optimal allocation to EM debt. *This is an important observation, given that many investors are revisiting their 60/40 models. We believe, EM debt should play a much larger relative role in fixed income portfolios, in our view.*

**Exhibit 8 – Frontier-Recommended Allocations, Across Volatility Levels**

**USD-based global fixed income portfolio’s efficient frontier and implied weights (CEMBI details)**

Data set - monthly, 2003-2022

	LOW RISK <										> HIGH RISK			
Portfolio Standard Deviation	4.48	4.54	5.00	6.06	6.50	7.19	7.68	8.25	9.25	10.58	11.13	11.55	12.50	13.43
GBI-EM	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EMBIG HY	0%	0%	0%	3%	8%	14%	18%	23%	31%	41%	55%	50%	39%	0%
CEMBI HY+	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	23%	61%	100%
Global Aggregate	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Global Treasury	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Global government related	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Global corporates	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Global securitized	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
US Aggregate	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
US HY	23%	25%	36%	47%	48%	49%	50%	51%	53%	55%	41%	27%	0%	0%
Euro Agg	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
US Treasury	76%	75%	64%	49%	44%	37%	32%	26%	16%	4%	0%	0%	0%	0%
CEMBI IG+	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EMBIG IG	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EM FI (GBI-EM, EMBIG, CEMBI)	0%	0%	0%	3%	8%	14%	18%	23%	31%	41%	59%	73%	100%	100%
EM HCD (EMBIG, CEMBI)	0%	0%	0%	3%	8%	14%	18%	23%	31%	41%	59%	73%	100%	100%

GBI-EM = EM Sovereign LC; EMBIG HY = EM Sovereign HC, HY; CEMBI HY+ = EM Corporate HC, HY; CEMBI IG+ = EM Corporate HC, IG  
 EMBIG IG = EM Sovereign HC, IG; EM FI (EM LC; EM Sovereign HC; EM Corporate HC); EM Hard Currency Debt (EM Sovereign HC; EM Corporate HC)

Source: VanEck Research, Bloomberg LP. Data Set - Monthly, 2003-2022.



### III. Structure of EM Debt – Liquidity, Default Rates, Recovery – Better Than the Image

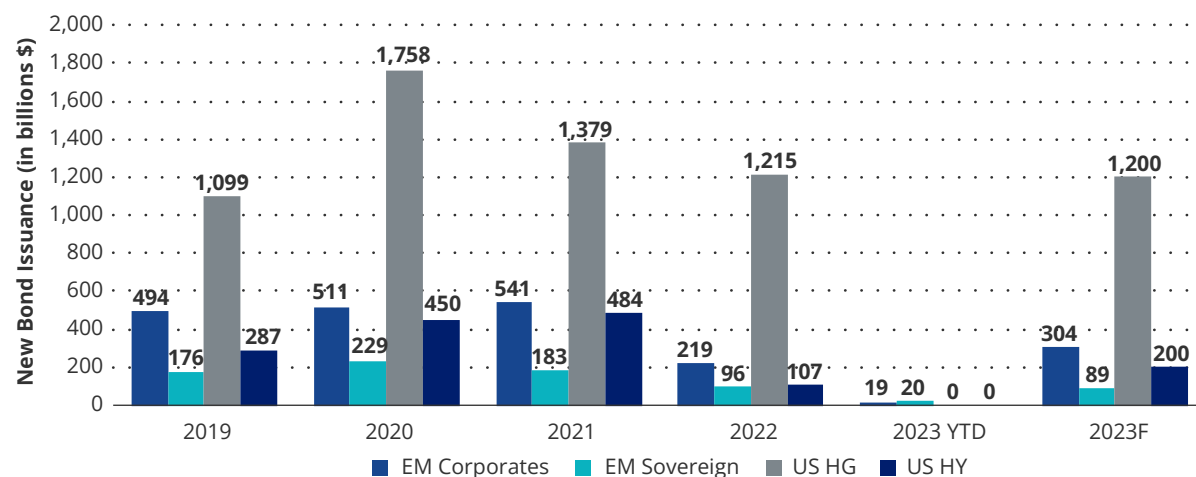
The last point we want to make is that the details of EM market structure are pretty good, especially relative to what we sense is EM’s image in many investors’ minds. We should note that many investors notice headlines pointing to political risks, and decide it is too much. Let’s start with point #1. How much are you paid for political risk in DM? Zero, correct? It is considered risk-free, no? (By the way, our radar charts in the European crisis showed most of Eurozone debt as having weak fundamentals and paying nothing for them. Well, that wouldn’t have been the right attitude in the European debt crisis, would it? And, we have shown above that EMs have learned and improved policy at every crisis, whereas DMs seem to issue more debt and offer lower interest rates at every crisis. Beyond this general observation, we should also note that when one examines the liquidity, default rates, and recovery values in EM corporate debt, EM looks pretty good.

Moving on to liquidity... First, U.S. and EM corporates are both traded by the same global financial institutions, mostly U.S. and some international banks. But EM corporates are *also* traded by EM banks, so there’s potentially an additional source of market making for EM corporates that doesn’t exist for U.S. corporates. EM sovereign debt in hard currency benefits from the same phenomenon as U.S. corporates – there are EM banks that also make markets, so one doesn’t only depend on U.S. banks. In other words, illiquidity is definitely a risk for EM corporates and sovereigns. However, in our view, it is not clear if the risk is any greater relative to developed markets, such as U.S. HY and Investment Grade (IG) debt. Please note that the methodology for measuring liquidity (from sources we’ve been able to find) differs between EM and U.S. corporates – EM corporate liquidity measures consider only liquid bonds, whereas U.S. corporates include the illiquid ones. So, while liquidity might be an issue for both EM and U.S. corporates, we believe that focusing on which one is better or worse leads to missing the point altogether – both have risks and those in EM look lower to us.

Second, EM’s higher reserves provide key support fundamentals. Of course, they mean the sovereign itself can buy back USD-denominated bonds. It also implies that the sovereign is maintaining a floating exchange rate. What this means is that under stress, the exchange rate weakens, perhaps yields rise, but that tends to be the end of the adjustment. Why? They solve the problem. A weaker exchange rate means a cheaper one, which means even better external accounts. Higher interest rates mean weaker growth (and, thus, even better external accounts due to declining imports), as well as lower inflation. Our point is not that you can’t lose money in EM local currency markets; our point is that liquidity is largely not the issue for EM local currency bonds. Finally, EM sovereign issuance in hard currency has been, and is expected to be, much smaller than net U.S. Investment Grade / High Yield issuance. Net bond issuance by U.S. corporates remains very large, despite slowing over the past three years. Hence, something will have to make up the difference if there are outflows from those funds. This is different for EM debt, however. Since EM sovereigns are often net creditors, outflows may be more manageable, with EM government debt management offices capable of buying back those debts and providing liquidity, if needed. We also show in Exhibit 9 below that EM corporate issuance is lower than U.S. corporate issuance.

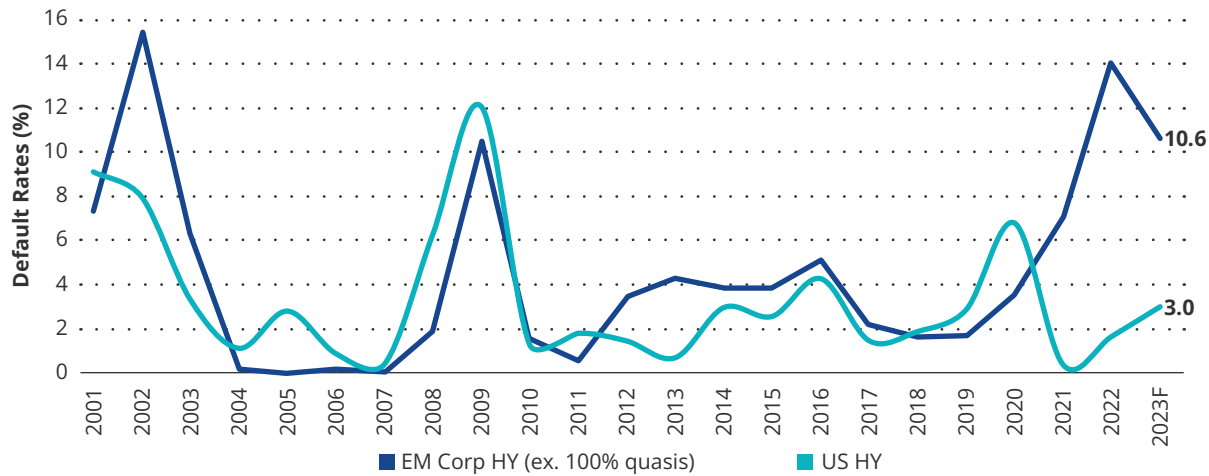
Moving on to default rates and recovery values, the bottom line is that they are in line, if not arguably better, in EM HY than in U.S. HY. There’s not much color to add here, beyond Exhibits 10 and 11. Exhibit 10 shows that default rates in EM HY corporates have been slightly lower than default rates in U.S. HY corporates in the past several years. Exhibit 11 shows recovery values in EM HY and in U.S. HY. Over the longer term, they are in line, whereas recently EM HY has been showing higher recovery values. Regardless, our point is that this data is not pointing to EM being some special risk case that deserves the higher premium they pay.

**Exhibit 9 – New Bond Issuance (in billions \$)**



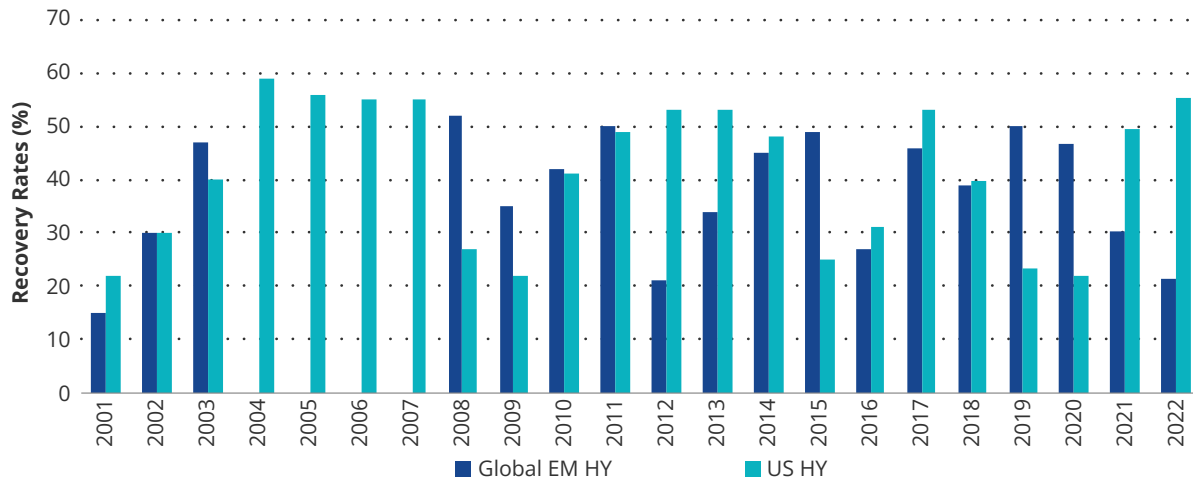
Source: JP Morgan. Data as of December 31, 2022.

**Exhibit 10 – Default Rates in EM HY and U.S. HY – EM HY Looks OK**



Source: JP Morgan. Data as of December 31, 2022.

**Exhibit 11 – Recovery Values in EM HY and U.S. HY – EM HY Looks OK**



Source: JP Morgan. Data as of December 31, 2022.

**IV. It’s Not Just You – EM Debt Should be Attractive to *Global* Investors**

Our view that EM debt is under-represented in fixed income allocations is not specific to any particular investor base, but applicable globally. This should be important to any reader, as a thesis is stronger if it applies to more than just one investor base (and more precisely, if the data points the same way for investors with P/Ls in currencies other than USD). Many audiences may want to allocate more to EM debt. What are we referring to, in particular? Most important, our conclusions are true in a range of base currency P/Ls. We ran the efficient frontier for Euro-denominated P/Ls (i.e., the same data, just in Euros, and for the European fixed income menu of options), and came to the same conclusion:

we believe there should be allocations to EM debt on the part of Euro-based investors. We ran the same frontier on AUD-denominated P/Ls, and came to the same conclusion – we believe there should be allocations to EM debt on the part of Australian dollar-based investors. We show the frontier and allocation recommendations for a Euro-based portfolio below, for those who want the details. (We should note that when we run these exercises, we use the actual fixed income menu for that particular country – for example, Aussie Govies are on the menu for the Australian exercise). The EM debt asset class is less expensive globally, in our opinion.

### Exhibit 12 – Recommended Allocations for EUR-based Portfolios

#### EUR-based portfolio's efficient frontier and implied weights

Data set - monthly, 2003-2022

Portfolio Standard Deviation	LOW RISK <										> HIGH RISK				
	3.66	4.01	4.25	4.50	4.82	5.01	5.50	6.11	7.50	8.50	9.50	10.00	11.43	13.71	
<b>GBI-EM</b>	0%	4%	8%	11%	14%	17%	22%	29%	42%	51%	34%	26%	13%	0%	
<b>EMBIG</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
<b>CEMBI HY+</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	42%	100%	
<b>Global Aggregate</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
<b>Global Treasury</b>	0%	0%	5%	26%	50%	59%	50%	40%	19%	0%	0%	0%	0%	0%	
<b>Global government related</b>	100%	84%	72%	45%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
<b>Global corporates</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
<b>Global securitized</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
<b>US Aggregate</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
<b>US HY</b>	0%	12%	15%	18%	22%	24%	28%	31%	39%	43%	66%	65%	45%	0%	
<b>Euro Agg</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	
<b>US Treasury</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
<b>CEMBI IG+</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
<b>EM FI (GBI-EM, EMBIG, CEMBI)</b>	0%	4%	8%	11%	14%	17%	22%	29%	42%	51%	34%	35%	55%	100%	
<b>EM HCD (EMBIG, CEMBI)</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	42%	100%	

**GBI-EM** = EM Sovereign LC; **EMBIG HY** = EM Sovereign HC, HY; **CEMBI HY+** = EM Corporate HC, HY; **CEMBI IG+** = EM Corporate HC, IG  
**EMBIG IG** = EM Sovereign HC, IG; **EM FI** (EM LC; EM Sovereign HC; EM Corporate HC); **EM Hard Currency Debt** (EM Sovereign HC; EM Corporate HC)

Source: VanEck Research, Bloomberg LP. Data Set - Monthly, 2003-2022.

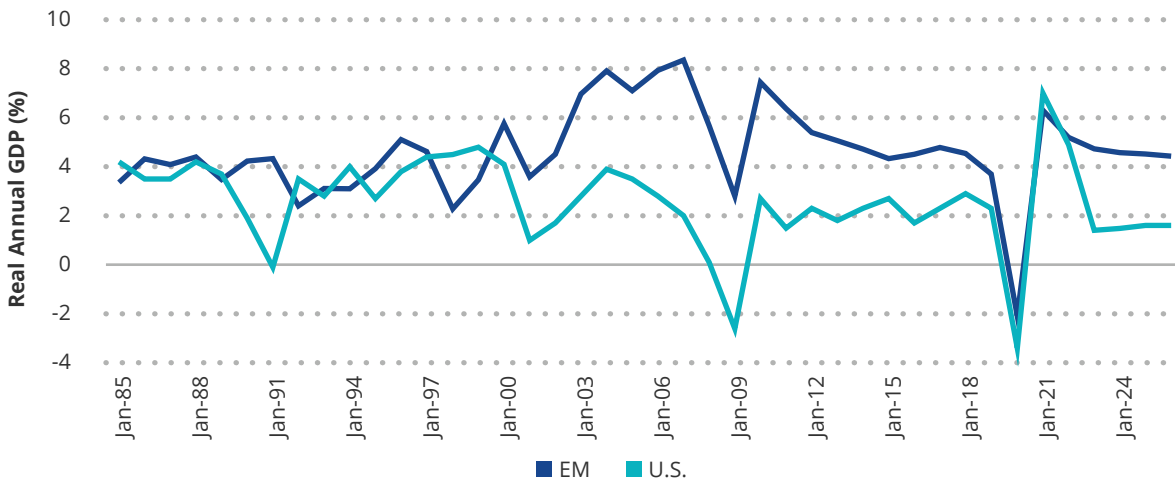
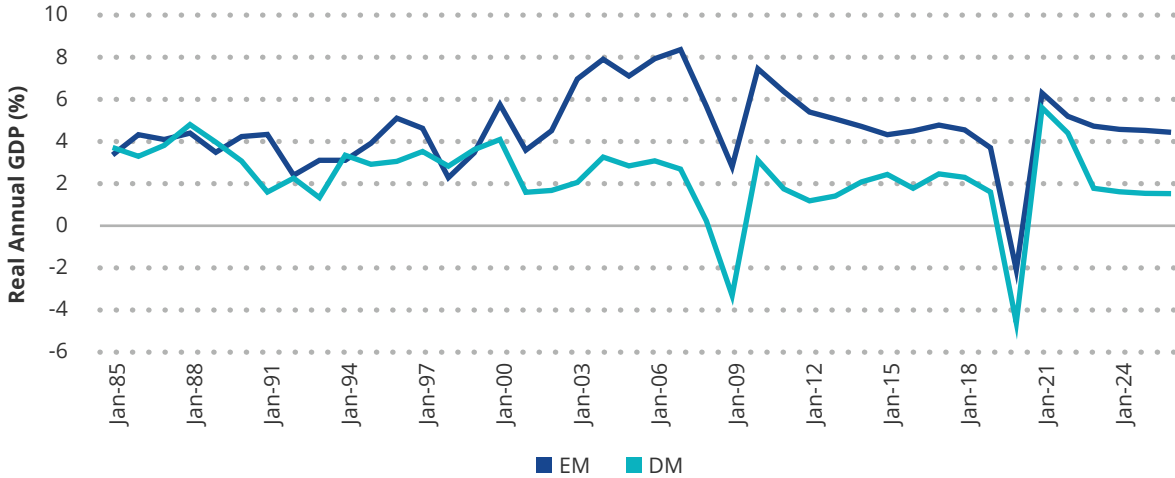
Somewhat related is the fact that many investors who are still wary of EM debt say they get their exposure via a global bond fund that allocates to EM debt. Let's put aside that global bond funds sometimes view "EM debt" as a kind of monolith, and tend to analyze it on a top-down basis (i.e., I like "risk," therefore I'll put some EM debt on, whereas dedicated EM funds will be more likely to simply find cheap companies on a bottom-up basis). The simpler challenge to accessing EM debt via global bond funds, though, is the basic conclusion of the efficient frontier – we find it rarely allocates enough to EM debt.

### Conclusion

In a world that is simultaneously worried about endless monetary experimentation and leverage in DM, but also looking for attractive yield, EM has answers. Many EMs have strong fundamentals that pay market-based yields that are high. DM debt, in many ways, is the opposite, with high leverage and limited compensation. This is why the 60/40 model is being re-evaluated—perhaps rightly so. But even if global debt deserves a lower-than-40 allocation, we believe EM debt deserves to be a bigger part of that 40 or whatever it becomes. We believe that historical allocations to EM debt proved to be too low. There is limited evidence that DMs are changing their experimental tune and, thankfully, plenty of evidence that EMs are sticking to their orthodox tune. Faites vos jeux!

# Appendix

Exhibit 13 – EM vs. DM, EM vs. U.S. Growth Trajectories



Source: VanEck Research, Bloomberg LP. Data Set – Annual, 1985-2026E.



<sup>1</sup>Source: VanEck Research, Bloomberg LP. Data as of 2022.

<sup>2</sup>Source: IMF Fiscal Monitor. Data as of October 2022.

<sup>3</sup>Source: Bloomberg LP. Data as of December 30, 2022. EMBI Global Diversified Yield-to-Maturity is 8.56% (JPGCBLYD Index), duration is ~7 years, so the comparable UST yield would be 10YR (3.87% USGG10YR Index). GBI-EM Yield-to-Maturity is 6.86% (JGENVHYG Index); duration is around 5 years, so you can use 5YR UST yield, which is 4% (USGG5YR Index).

<sup>4</sup>Source: VanEck Research, Bloomberg LP.

<sup>5</sup>Source: VanEck Research, Bloomberg LP.

## DISCLOSURES

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Morgan Government Bond Index-Emerging Markets Global Diversified (GBI-EM). **CEMBI HY+:** The J.P. Morgan Corporate Emerging Markets High Yield Bond index tracks U.S. dollar high yield bonds issued by emerging markets corporates. **CEMBI IG+:** The J.P. Morgan Corporate Emerging Markets High Yield Bond index tracks U.S. dollar investment grade bonds issued by emerging markets corporates. **EMBIG HY:** The J.P. Morgan EMBI Global Diversified High Yield index tracks returns for actively traded external high yield debt instruments in emerging markets, and is also J.P. Morgan's most liquid U.S. dollar emerging markets high yield debt benchmark. **EMBIG IG:** The J.P. Morgan EMBI Global Diversified Investment Grade index tracks returns for actively traded external investment grade debt instruments in emerging markets, and is also J.P. Morgan's most liquid U.S. dollar emerging markets investment grade debt benchmark. **Global Aggregate:** Bloomberg Global-Aggregate Total Return Index Unhedged USD is a sub-index of the Bloomberg Global Aggregate Index, which is a flagship measure of global investment grade debt from twenty-four local-currency markets. **Global Treasury:** The Bloomberg Global Treasury Index tracks fixed-rate, local currency government debt of investment grade countries, including both developed and emerging markets. **Global Government Related:** Bloomberg Global Aggregate Government Related Total Return Index Value Unhedged USD tracks global government debt issues. **Global Corporates:** The Bloomberg Global Aggregate Corporate Index is a flagship measure of global investment grade, fixed-rate corporate debt. **Global Securitized:** The Bloomberg Global Aggregate - Securitized Index tracks Securitized (Class 1= Securitized) bonds from the flagship Global Aggregate Index. **US Aggregate:** The Bloomberg US Aggregate Bond Index is a broad-based flagship benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable bond market. **US HY:** The Bloomberg US Corporate High Yield Bond Index measures the USD-denominated, high yield, fixed-rate corporate bond market. **Euro Aggregate:** The Bloomberg Euro-Aggregate Index is a benchmark that measures the investment grade, euro-denominated, fixed-rate bond market, including treasuries, government-related, corporate and securitized issues. Inclusion is based on currency denomination of a bond and not country of risk of the issuer. **US Treasury:** The Bloomberg US Treasury Index measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury. **US IG:** The Bloomberg US Corporate Bond Index measures the investment grade, fixed-rate, taxable corporate bond market. It includes USD denominated securities publicly issues by US and non-US industrial, utility and financial issuers. Information has been obtained from sources believed to be reliable but J.P. Morgan does not warrant its completeness or accuracy. The Index is used with permission. The index may not be copied, used or distributed without J.P. Morgan's written approval. Copyright 2014, J.P. Morgan Chase & Co. All rights reserved. The **Barclays Capital U.S. Corporate High-Yield Bond Index** is composed of fixed-rate, publicly issued, non-investment grade debt. Barclays Capital U.S. Corporate Investment Grade Index consists of publicly issued, fixed rate, nonconvertible, investment grade debt securities. The **Barclays Capital U.S. Treasury Index** is an unmanaged index of public obligations of the U.S. Treasury with a remaining maturity of one year or more. The **MSCI All Country World Index** is an unmanaged, free float-adjusted market capitalization weighted index composed of stocks of companies located in countries throughout the world. It is designed to measure equity market performance in global developed and emerging markets. The index includes reinvestment of dividends, net of foreign withholding taxes. The **S&P 500 Index® (SPX)** includes 500 leading companies in the United States and captures approximately 80% coverage of available market capitalization.

HC = Hard Currency; LC = Local Currency; HY = High Yield; IG = Investment Grade

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