# Reconstructing Bond Investing to Align with New Global Debt Realities

*By*

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ASSET MANAGEMENT

## Executive Summary

The global financial crisis and sluggish recovery threw into relief a new set of global financial and economic realities for bond investors that had been gathering momentum for the last 30 years. As developed world economies took on more debt, financed in large part by growing surpluses in emerging economies, traditional notions of "risk-free" sovereign debt in developed economies and "riskier" sovereign debt in the emerging world were turned upside down. This global financial somersault in credit conditions has important implications for treasury bond investors like central banks, insurance companies and pension funds. Investing in issuance-weighted sovereign bond indexes exposes investors to a high degree of concentration risk in the most heavily indebted countries. At the same time, old divisions between developing world and developed world asset classes are blurring, as economies in both camps experience very different trajectories of growth and fiscal health as, say, South Korea and Greece. Those new realities are often not reflected in bond benchmarks or fixed income investment strategies.

At Standish, we take a much more holistic approach to global bond investing across the entire capital structure. Our quantitative analysis team worked with Barclays Capital to construct a new, all-encompassing GDP-weighted bond index that is designed to better represent the changing macro landscape around the world. The Barclays World GDP Index adds corporate credit and emerging market dollar debt to create a benchmark that incorporates all developed and emerging market fixed income on a GDP-weighted basis. Its GDP-weighting allows for a greater proportion of high-growth economies than indexes weighted by debt issuance and therefore is more closely aligned with global growth realities. We believe this more comprehensive approach, which can be customized to suit individual objectives, provides greater diversification and the potential for higher risk-adjusted returns than the standard benchmark for global bond investing. This broader universe also presents greater opportunity for active managers to generate excess return. The following discussion describes how Standish views the new global bond topography and how we have adapted our active investment approaches as we seek to maximize our skill in capturing alpha opportunities wherever they arise.

Our philosophy at Standish is that bond investors should take a holistic approach, especially when it comes to sovereign debt markets. For us, there is one global fixed income market in which to capture beta, and that includes emerging markets (EM) and developed markets (DM). We believe investors seeking additional alpha in the sovereign debt market should consider managers who have the ability to extract value from around the globe, from both developed countries and emerging markets.

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As the line between emerging and developed markets becomes increasingly blurred, we think combining sovereign debt markets significantly increases risk diversification. By contrast, managing separate "emerging" and "developed" sleeves runs the risk of alpha dilution or excessive risk concentration. We believe sovereign debt portfolios are best managed versus a broad-based index that includes every sovereign issuer weighted by each one's contribution to global output. Beta generated by this benchmark has the potential to deliver more attractive return per unit of volatility than a market-weighted DM benchmark. In addition to more efficient beta, a global GDP-weighted benchmark offers broader opportunity for an active manager to deliver excess return.

## Obsolete Labels

Distinguishing emerging markets from developed markets is increasingly difficult as their macro conditions change. Even the two main index providers, Barclays Capital and JP Morgan, define emerging markets differently. JP Morgan considers countries emerging if the World Bank classifies them as low/middle income for at least two consecutive years. Meanwhile, Barclays defines as "emerging" a country with a sovereign rating at or below BBB+; prior to January 2006 it was BBB-. That use of credit ratings as a defining characteristic is problematic when arguably half of the 52 countries rated investment grade are classified by Standard and Poor's as emerging markets. Meanwhile, heavily indebted "developed" world countries like Greece and Portugal also defy neat categorization.

Recognizing that "emerging markets" no longer does justice to a highly diversified universe of investment opportunities, Standish uses a combination of four variables to identify what we refer to as Assets Tied to Economies of Risky Countries ( or ASTERISCS℠).[1] ASTERISCS are characterized by one or more of the following attributes.

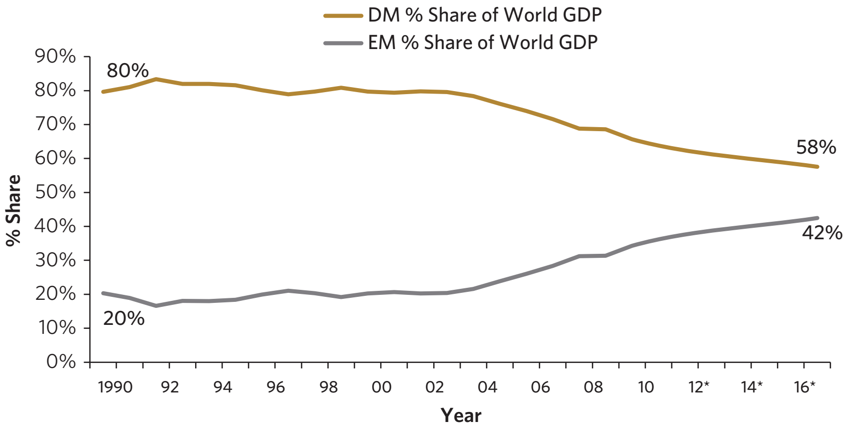
1. Income Levels: Middle to low income per capita as defined by the World Bank. This is consistent with the JP Morgan Emerging Market Bond Index.
2. Governance: Non-democratic political regime creates the potential for a sudden shift in geopolitical risk.
3. Geopolitical Risk: The country has a significant level of real or potential unrest either internally or in its geographic region.
4. Impaired Creditworthiness: The country has defaulted on its obligations or the potential for a default on its obligations is heightened (e.g., Greece and Portugal).

1 The term ASTERISCS was coined by our head of emerging market debt investing, Alexander Kozhemiakin. See his analysis in "Emerging Markets as ASTERISCS," BNY Mellon Asset Management, October 2011. ASTERISCS is a service mark of Standish Mellon Asset Management Company, LLC.

Regardless how an investor defines "emerging," it is clear that the sources of the world's economic output are converging. According to the International Monetary Fund, since 2003 EM's share of world output has grown from 20% to nearly 40% today (Exhibit 1).

We believe developed markets continue to have an important, though no longer exclusive, place in a global investor's fixed income portfolio.

**Exhibit 1 – Income Convergence, Percentage Share of World GDP**




Source: International Monetary Fund, World Economic Outlook Database, April 2012. *Forecasted.

## Benefits of DM Debt: Capital Safety and Liquidity

We believe developed markets continue to have an important, though no longer exclusive, place in a global investor's fixed income portfolio. By and large, DM debt is more likely to provide safety of capital and deeper liquidity than less mature markets, though even here there are exceptions.

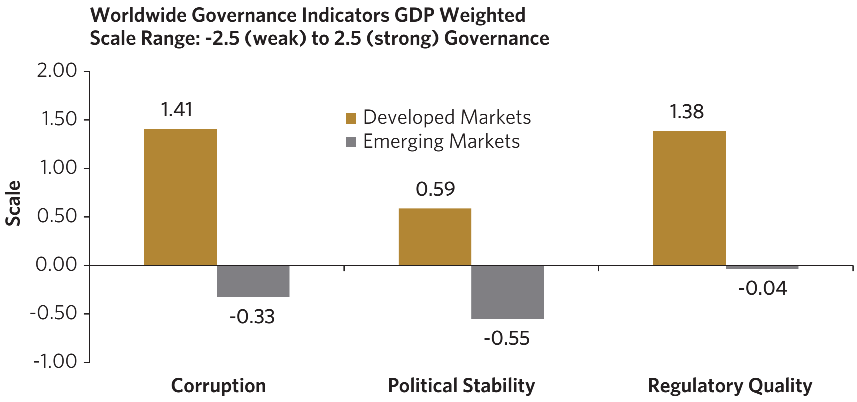
For this research, we focused on three of the World Bank's six "governance indicators" for 213 countries to measure the level of capital safety:

1. Corruption: Measures the perception that public power is used for private gains.
2. Political Stability: Measures the perception that the government will be destabilized or overthrown.
3. Regulatory Quality: Measures the perception that the government can implement policies that promote private sector development.

These indicators are based on survey results from public purpose organizations across the globe. Countries receive a score ranging from strong (2.5) to weak (-2.5) governance/capital safety. The GDP-weighted scores for the DM versus EM categories, as defined by Standish, clearly demonstrate the strength of the institutional controls and processes in developed countries, which are relatively weaker in emerging countries.

The developed markets tend to offer not only a friendlier environment for capital but also greater liquidity.

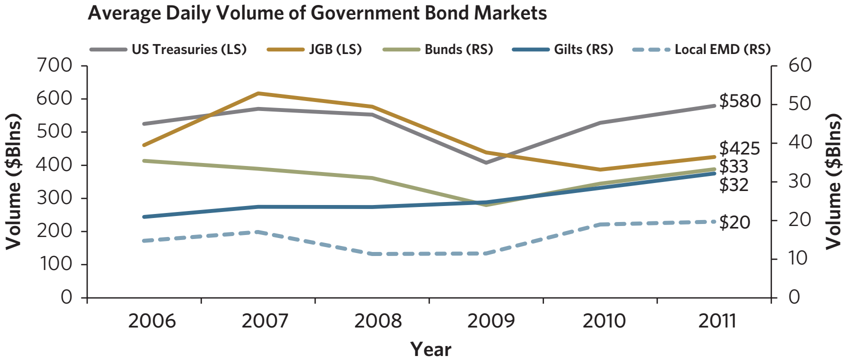
**Exhibit 2 – Developed Markets Offer More Stable Governance**




Source: Standish, The World Bank Group as of December 2011.

The developed markets tend to offer not only a friendlier environment for capital but also greater liquidity. According to the Emerging Markets Trade Association (EMTA), the average daily volume of trades for local emerging markets debt was $20 billion per day in 2011, compared with $580 billion for U.S. Treasuries (Exhibit 3). Liquidity is also far deeper in the Japanese government bond (JGB) market, where $425 billion is turned over on a daily basis. The UK gilts and German bund markets each experience roughly 1.5x times the daily turnover of all local emerging markets debt (Exhibit 3).

**Exhibit 3 – Developed Markets Have Superior Liquidity**



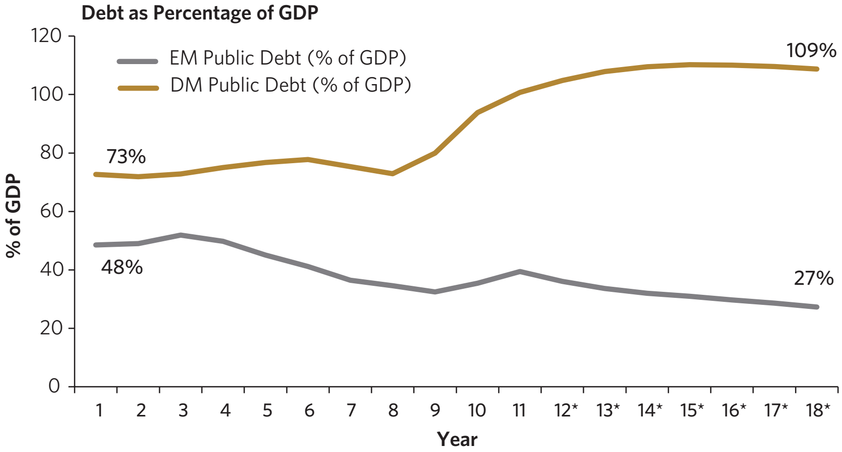

Source: Standish, SIFMA, JSDA, Deutsche-Finanzagentur, DMO, EMTA, December 2011.

## Growing DM Indebtedness

Offsetting the relative safety and liquidity of DM debt, are the combined risks of growing indebtedness and its sluggish effects on growth and other macro fundamentals (Exhibit 4).

Relative income declines and the sharp growth in leverage have made developed markets increasingly risky investments, with heightened credit rating risk.

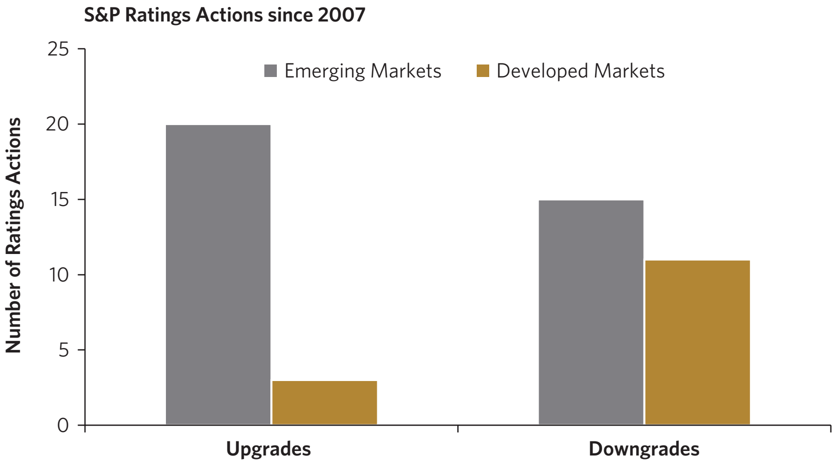
**Exhibit 4 – Fiscal Divergence**




Source: International Monetary Fund, World Economic Outlook Database, April 2012. *Forecasted.

Relative income declines and the sharp growth in leverage have made developed markets increasingly risky investments, with heightened credit rating risk. Standish's credit ratings are generally lower than those of the established credit rating agencies, whose downgrades have exceeded upgrades since the global financial crisis. In our view, the potential for continued deterioration in DM fundamentals, and ensuing bond market volatility, argues for a portfolio strategy that dynamically allocates between EM and DM debt exposures.

**Exhibit 5 – Emerging Markets Upgrades**




Source: Standish, Standard & Poor's December 2011.

## Emerging Markets: Yield and Credit Quality

By contrast, we believe the risk/return trade-off is favorable for EM debt. Yields are higher than in developed countries, allowing for better carry as well as the opportunity for valuation improvements. Moreover, emerging markets have significantly more flexibility in managing economic growth with changes to monetary policy. On average, EM policy rates have more than a 600-basis point margin compared with those in developed countries, allowing for a significant magnitude of easing in order to stimulate GDP should growth wane. The low and declining levels of external debt mean that emerging markets have less reliance on financing from foreign investors, leaving room for additional borrowing should the need arise during periods of fiscal stress.

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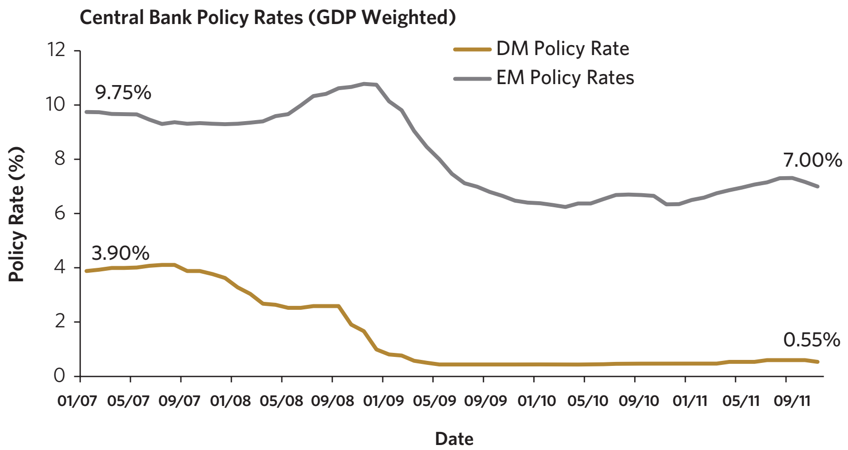
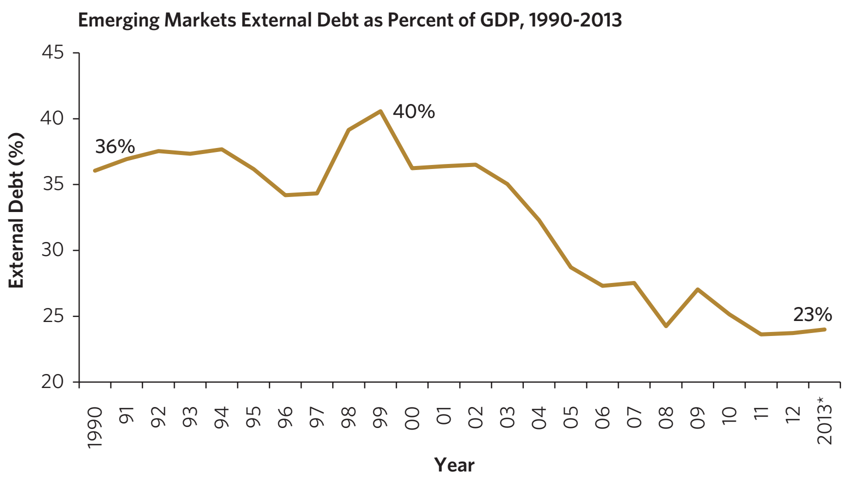
**Exhibit 6 – EM Central Banks Have Greater Rate Flexibility Than DM Counterparts**




Source: Standish, International Monetary Fund, December 2011.

**Exhibit 7 – External Financing Easier for EM**




Source: International Monetary Fund, World Economic Outlook Database, April 2012. *Forecast

## EM + DM = Greater Diversification and Alpha Potential

In periods of rising growth and/or inflation, we would expect to see positive returns from EM currency (EM FX), and EM credit spreads.

Given these differences, we believe combining DM and EM debt exposures creates greater risk diversification as the two asset classes have fundamentally different risk profiles and respond differently to the same macroeconomic conditions. The Sharpe ratio (return per unit of volatility) improves with a combined EM and DM portfolio, and investors can achieve a more efficient beta source by expanding the opportunity set across EM and DM.

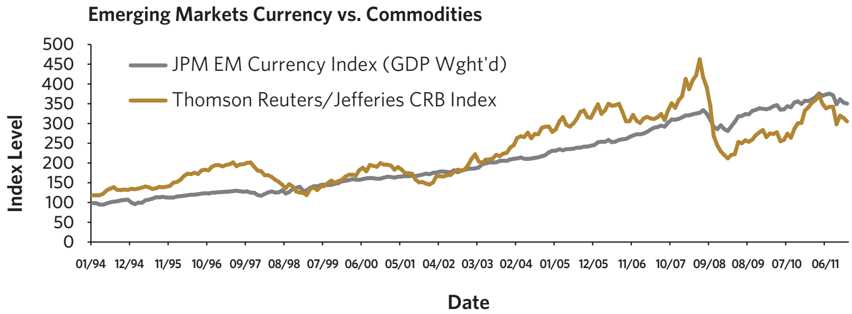
We can illustrate the power of this diversification by looking at how changes in growth and inflation differently affect EM vs DM interest rates and currencies. (Exhibit 8). In many cases, expected returns are offset between EM and DM scenarios. In periods of rising growth and/or inflation, we would expect to see positive returns from EM currency (EM FX), and EM credit spreads. Since many emerging economies are commodity exporters, an increase in capital flows would be expected to benefit the country's currency (see Exhibit 9). At the same time, accelerated growth should push down credit risk premiums. Conversely, we would expect that developed market rates would benefit from a subdued inflation outlook as savers' future consumption would not be threatened. Furthermore, rising commodity prices can serve as a tax on the consumer, hampering growth and putting downward pressure on developed market currencies. During these periods of falling growth, we would expect rates to fall in all countries as central bankers cut rates to increase the demand for credit.

**Exhibit 8 – Scenario Square**

| | | Variable | |
|---|---|---|---|
| | | Growth | Inflation |
| Direction | Increasing | EM FX | EM FX |
| | Falling | DM Rates<br>Local EM Rates | DM Rates |

Source: Standish

**Exhibit 9 – EM FX Moves with Commodities**

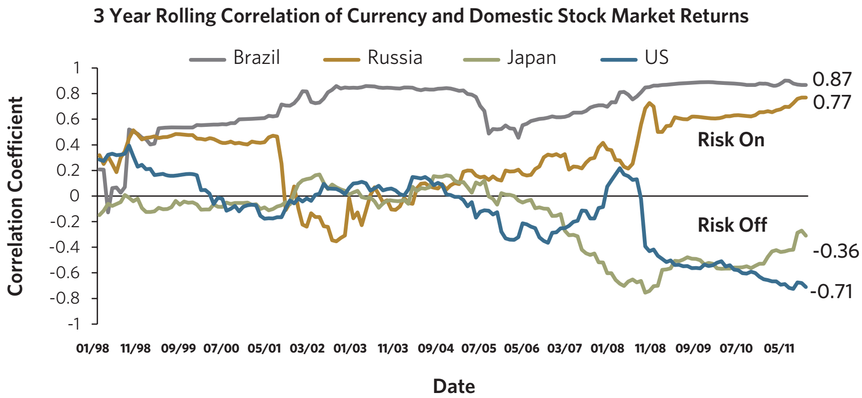



Source: Standish, JPMorgan, Thomson Reuters, Bloomberg, as of 12/31/2011.

Emerging countries typically benefit from an environment where investors are comfortable taking greater risk with the expectation of higher return; developed country currencies, as represented below by Japan and United States, rally in a flight to quality, or “risk-off” environments.

DM and EM currencies have opposite correlations relative to their local equity markets. Specifically, as Exhibit 10 shows, the three-year rolling *negative* correlation of the USD with the S&P 500 is currently -0.71 as of December 31, 2011. The higher-yielding EM currencies (the Brazilian real and Russian ruble) have three-year rolling *positive* correlations ranging from 0.77 to 0.87 with their respective equity markets. Emerging countries typically benefit from an environment where investors are comfortable taking greater risk with the expectation of higher return; developed country currencies, as represented below by Japan and United States, rally in a flight to quality, or “risk-off” environments.

**Exhibit 10 – Risk On and Risk Off**




Source: Standish, MSCI, Bloomberg as of 12/31/11. As measured by the Bovespa Index in Brazil, the RTS Index in Russia, The Niikei Index in Japan, and the S&P 500 Index in the U.S.

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## Alpha Maximization

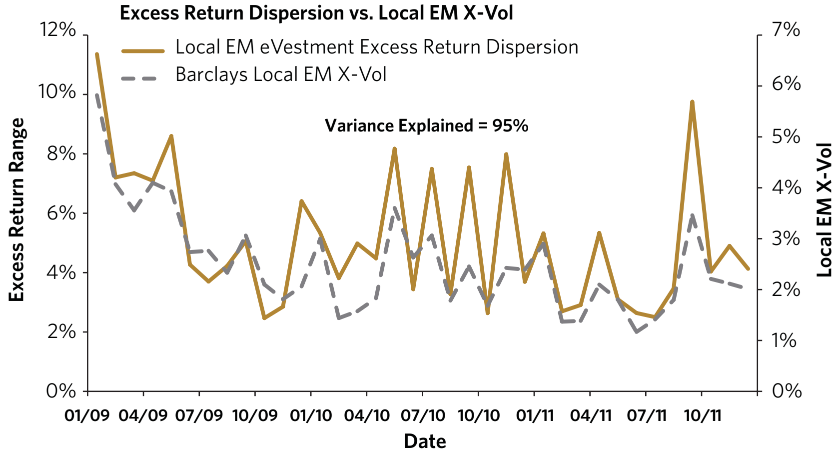
We believe that combining the universe of EM and DM debt opportunities allows investors to construct more efficient benchmarks as well as maximizing the potential for alpha generation. To generate alpha you need to have manager skill and volatility. In our view there is a better way of measuring volatility than traditional time series approaches that will allow us to better seek alpha opportunities across a combined EM and DM universe.

In a time series, typically over a full or rolling-time period, each observation is ordered chronologically and the standard deviation is taken. The frequency of observations is at a user's discretion (e.g., nanoseconds, days, or months). The shortcoming is that it can take a long time to obtain a significant number of observations. For example, if you use monthly observations it will take almost three years to have what statisticians would consider a significant number of observations. Seemingly, any information gleaned from that data is going to be stale by the time an investor draws any conclusions on alpha opportunities.

We think a better gauge of volatility (or alpha opportunities) is "cross-sectional volatility" (X-Vol). Unlike time series calculations, cross-sectional volatility measures dispersion among constituents in a data set at one point in time. Weighted average standard deviation across all data points is measured, with X-Vol representing the value that encompasses one standard deviation of the dispersion of the data. For example, if the X-Vol of a given benchmark's monthly return equals 1%, two-thirds (one standard deviation) of the benchmark's holdings are within 1% of the index return for that month.

Measuring X-Vol provides us with a real-time look at alpha opportunities within an asset class. There is a direct correlation between the X-Vol of the benchmark and the alpha opportunities for active managers. In Exhibit 11, we compare the range of excess returns for managers in the eVestment Alliance Local EM universe versus the X-Vol of the benchmark for each month since 2009. We find that the beta for the range of excess return for local EM managers versus X-Vol of the local EM benchmark has been equal to 2. For example, using the multiplier 2, if the X-Vol of the Local EM benchmark goes to 4% in a given month, then the range of excess returns shoots to 8%. If you further assume that the return of the benchmark is 0% and the managers' excess return is evenly distributed around the benchmark, then some managers had excess returns as high as +4%, while others underperformed by -4%. Those are vastly different experiences for an investor!

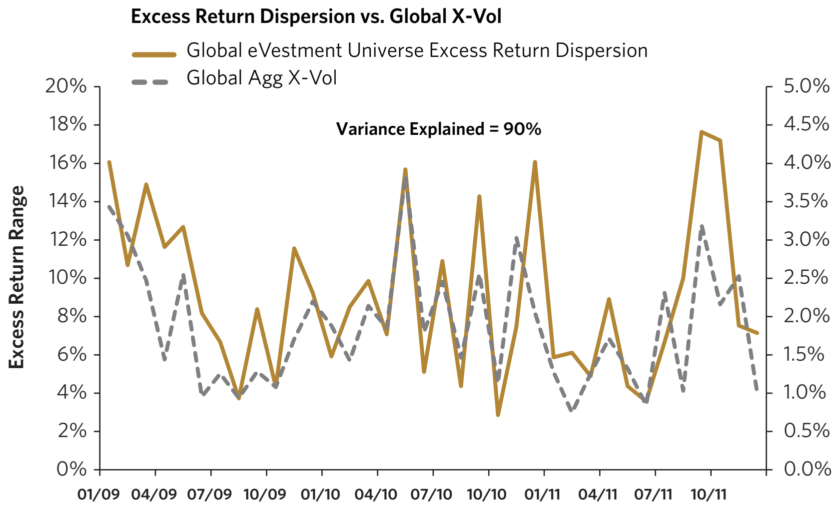
**Exhibit 11 – Alpha Opportunities in Local EM**




Source: Standish, eVestment Alliance, Barclays as of 12/31/11.

The outcome is similar for measuring managers against the Barclays Global Aggregate except that the estimated beta versus X-Vol is 4. If X-Vol reaches 4%, then the range of excess return for managers is predicted to reach 16% (Exhibit 12). The reason for the higher beta in the Barclays Global Aggregate universe is potentially due to (a) a lower correlation of the holdings within the universe; or (b) more non-benchmark holdings within managed portfolios (e.g., high yield bonds).

**Exhibit 12 – Alpha Opportunities in Global Bonds**



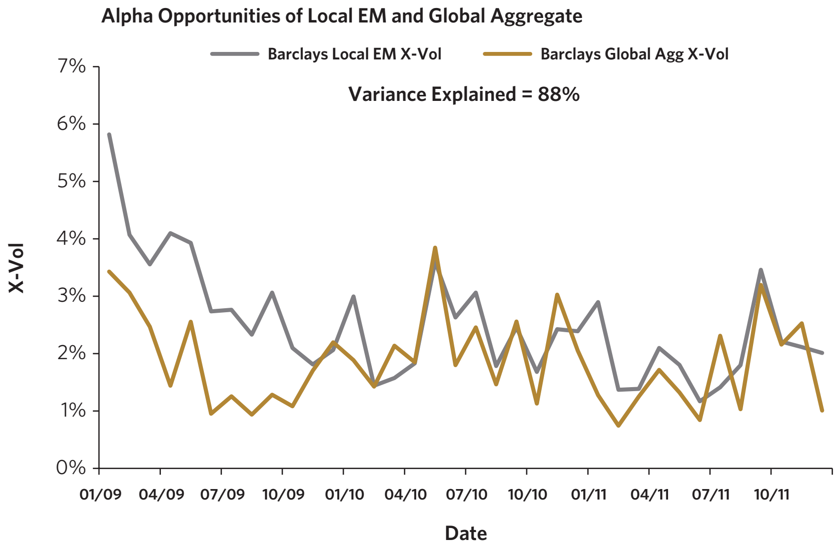

Source: Standish, eVestment Alliance, Barclays as of 12/31/11.

To mitigate the potential for alpha dilution and/or exaggerated return streams, the most efficient benchmark for a fixed income mandate should include the broad opportunity set; in a sovereign debt portfolio, this includes both DM and EM.

## Avoid Alpha Dilution or Risk Concentration

Alpha opportunities between Global and EM move together (Exhibit 13). If EM and Global allocations are split between two managers who are expressing different opinions on the scenario square, then the potential for alpha dilution or excessive risk concentration exists. Using the example above, if X-Vol spikes to 4%, the excess returns in EM will range from -8% to +8%; while excess return in Global will range from -16% to +16%.

**Exhibit 13 – Alpha Opportunities Move Together**




Source: Standish, eVestment Alliance, Barclays as of 12/31/11.

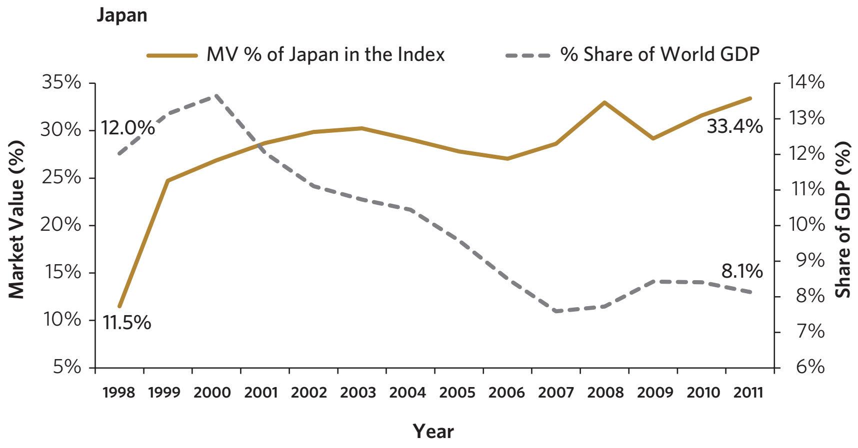
These different views expressed by the two managers will result in return streams that counteract each other. The degree of alpha lost depends on the level of conviction expressed in the managers' views (size of active risk). To mitigate the potential for alpha dilution and/or exaggerated return streams, the most efficient benchmark for a fixed income mandate should include the broad opportunity set; in a sovereign debt portfolio, this includes both DM and EM.

## Identifying the Most Efficient Benchmark

The conventional weighting scheme for benchmarks is by market capitalization. This has the adverse effect of high idiosyncratic risk concentrations; as more debt is issued by an entity the investor will experience an increased passive allocation. If the passive allocation increases to an "uncomfortable level," investors often cap the issuer concentration at an arbitrary level, without regard to a country's fundamental contribution to the global economy or market risk.

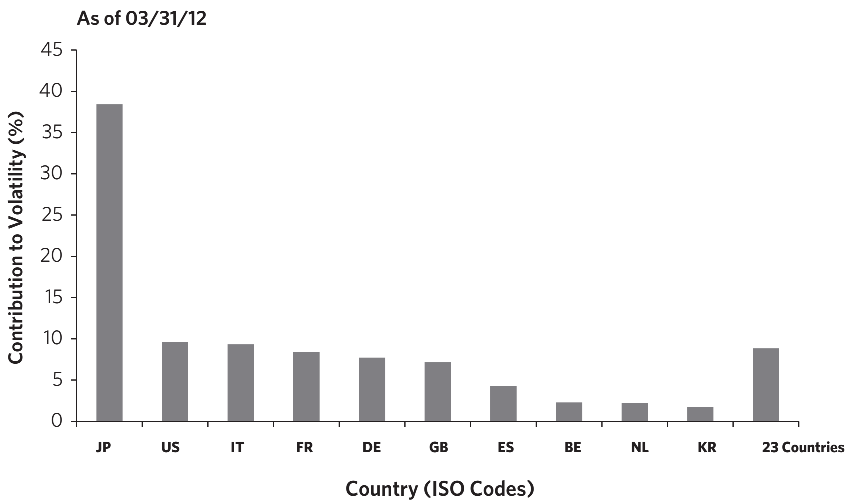
One of the best examples of a run-away cap-weighted index is Japan's weighting in the Barclays Global Treasury Index. Since 1998, the market value percentage of Japan in the Global Treasury Index has increased from 11.5% to 33.4% at the end of 2011; at the same time, Japan's share of world output has decreased by 33%. Japan accounts for 38% of the volatility in the Barclays Global Treasury Index.

**Exhibit 14 – Benchmark and Fundamentals Diverge**




Source: Standish, Barclays as of 12/31/11. Percentages represent year-end data points and are not representative of fluctuations within that year.

**Exhibit 15 – Country Contribution to the Volatility of the Barclays Global Treasury Index**




Source: Standish, Barclays as of 3/31/12.

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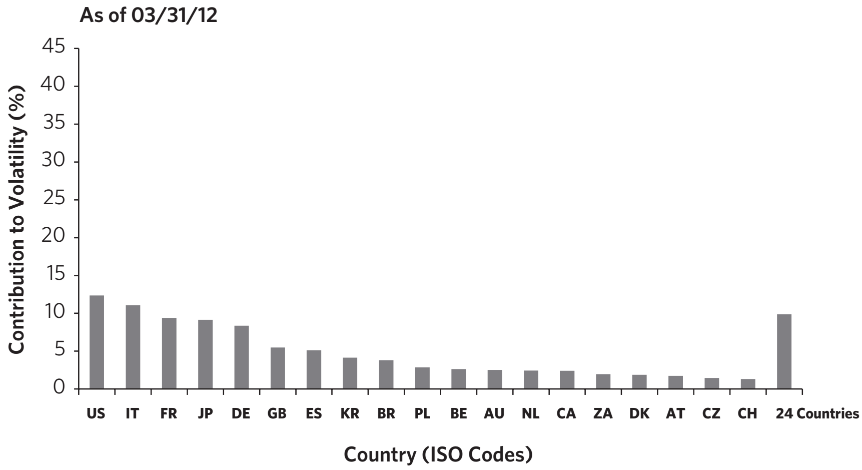
In lieu of a capitalization-weighted benchmark, we think a GDP-weighted index like the Barclays GDP-Weighted Treasury Universal Index offers a more efficient world treasury benchmark. EM and DM local currency debt are combined into one benchmark, with each country's share dictated by its contribution to global output, rather than its outstanding debt level. This index, with its broader opportunity set and fundamental weightings, rationalizes each country's contribution to risk (Exhibit 15). The Barclays GDP-Weighted Treasury Universal Index greatly enhances risk diversification, with Japan contributing only 9% to benchmark volatility. The United States is the largest risk contributor, at 12% of benchmark volatility.

The ex-ante Sharpe ratio highlights the increase in beta efficiency of moving to a GDP-weighted representation of the market. As of March 31, 2012, the Barclays Global Treasury Index had a yield of 1.66% with an annualized volatility of 6.89%, for a Sharpe ratio of 0.24. Meanwhile, the Barclays GDP-Weighted Treasury Universal yielded 2.71% with annualized volatility of 6.23%, a superior Sharpe ratio of 0.43. That is nearly an 80% increase in beta efficiency.[2]

**Exhibit 16 – Country Contribution to the Volatility of the Barclays GDP Weighted Treasury Universal Index**




Source: Standish, Barclays as of 3/31/12.

2 Calculations are from Standish based on Barclays data as of March 31, 2012.

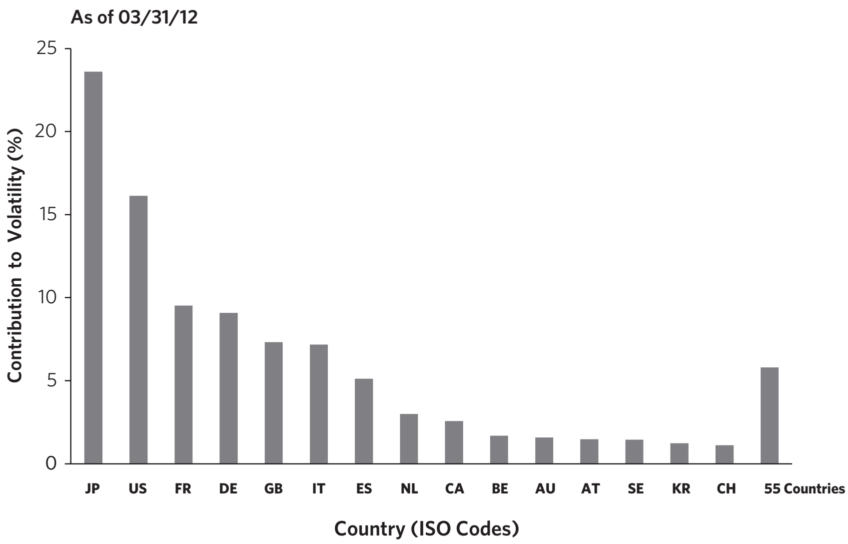
## Beyond the Treasury Index: World GDP Benchmark

While we have focused on sovereign debt, we think fixed income investors today should take a holistic view of global bond investing across the entire capital structure.

While we have focused on sovereign debt, we think fixed income investors today should take a holistic view of global bond investing across the entire capital structure. Expanding the opportunity set well beyond the Barclays GDP-Weighted Treasury Universal Index, Standish worked with Barclays to incorporate all developed and emerging market fixed income on a GDP-weighted basis into a new index. This World GDP Index includes the Barclays Global Aggregate, as well as local EM currency and EM dollar assets. Similar to the Global GDP-Weighted Treasury Index, the World GDP Index establishes a region's weighting based on its GDP. To ensure ample liquidity, each country is weighted according to its market value within its region.

The World GDP Index adds two new risk vectors: corporate credit and emerging market dollar debt. The additional diversification results in an ex-ante Sharpe ratio of 0.51 (2.93% yield/ 5.78% annualized volatility), versus the Barclays Global Aggregate ex-ante Sharpe ratio of 0.37 (2.17% yield/5.78% annualized volatility). The World GDP Index offers a 37% higher beta efficiency than Barclays Global Aggregate, and a 20% improvement over the Barclays GDP-Weighted Treasury Universal. Like the Treasury Index, the World GDP Index country allocations are far less concentrated than the market-capped alternative. The risk contribution of Japan in the World GDP benchmark drops to 10% from 24% in the Global Aggregate. The World GDP benchmark's top volatility contributor is the United States at 13%.[3]

**Exhibit 17 – Country Contribution to the Volatility of the Barclays Global Aggregate Index**

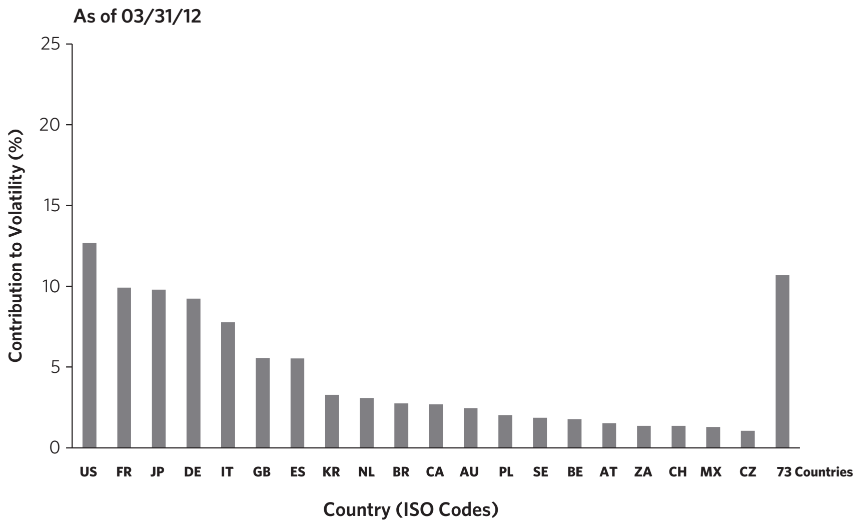



Source: Standish, Barclays as of 3/31/12.

3 Calculations are from Standish based on Barclays data as of March 31, 2012.

We believe this greater representation of EM components better reflects the macro realities of our rebalancing global economy and provides greater alpha opportunities for global bond investors.

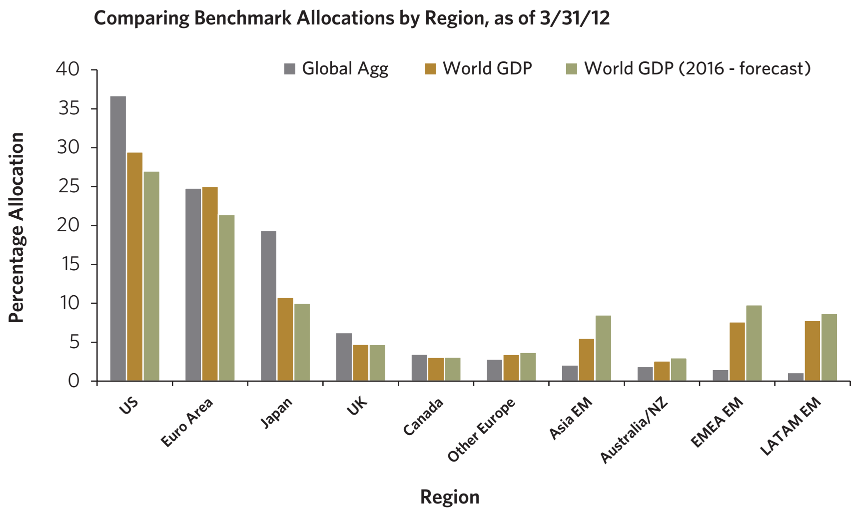
**Exhibit 18 – Country Contribution to the Volatility of the Barclays World GDP Index**




Source: Standish, Barclays as of 3/31/12.

The Barclays World GDP Index is markedly different from the Barclays Global Aggregate. In the latter index, the allocation to EM countries is 4.7%, while it comprises 20.9% of the World GDP Index as of March 31, 2012. Based on IMF country level GDP projections, the EM allocation in the World GDP Index is expected to increase to 27% by 2016. Most of that growth in EM allocation will come at the expense of the United States and the EU, whose concentration will contract by 2.4% and 3.6%, respectively. We believe this greater representation of EM components better reflects the macro realities of our rebalancing global economy and provides greater alpha opportunities for global bond investors.

**Exhibit 19 – EM Allocations in the Barclays Benchmarks**




Source: Standish, Barclays as of 3/31/12.

As stronger growth potential and healthier credit profiles shift to the emerging world, investors should likewise shift their opportunity sets to embrace the new realities of a rebalancing world economy.

## Conclusion

We believe there are a number of risk and return benefits to taking a more holistic approach to global bond investing using these more comprehensive benchmarks. The combination of developed and emerging markets with GDP fundamental weighting provides the potential for a higher level of return per unit of risk than the standard benchmark for global bond investing. The new benchmark provides greater representation to growing economies as opposed to countries that are simply issuing more debt. Fundamental benchmarks can be used to passively diversify revenue sources and/or limit concentration risk. Moreover, the approach can be customized to suit an investor's unique objectives. As stronger growth potential and healthier credit profiles shift to the emerging world, investors should likewise shift their opportunity sets to embrace the new realities of a rebalancing world economy.

### Disclosure

Standish compensated Barclays to develop the Barclays World GDP Index.

## Index Definitions

**Barclays Global Treasury Index** captures all developed market domestic sovereign issues that are denominated in local currency. All issues are fixed rate, nonconvertible debt with at least one year remaining to maturity. The minimum outstanding amounts vary by country. The amounts for each market equate to $500 mm in the Euro Zone, JPY 1 Trillion for Japanese yen, and roughly $500mm for all other issuers.

**Barclays GDP Weighted Global Treasury Universal Index** combines The Barclays Global Treasury Index and the Barclays local Emerging Markets sovereign debt index. Each country is placed into one of ten regions. Each region is assigned a weighting based on its relative share of GDP. Countries within those regions are then weighted base on their share of debt outstanding.

**Barclays Global Aggregate Index** provides a broad-based measure of the global investment-grade fixed income markets. The three major components of this index are the U.S. Aggregate, the Pan-European Aggregate, and the Asian-Pacific Aggregate Indices. The index also includes Eurodollar and Euro-Yen corporate bonds, Canadian government, agency and corporate securities, and USD investment grade 144A securities.

**Barclays World GDP Weighted Index:** has the same underlying bonds and inclusion rules as its market value weighted counterpart, which is a blend of flagship Global Aggregate, Global EM and EM Local Currency Government indices. This multicurrency global benchmark offers expanded spread sector security coverage, including bonds from the treasury, government-related, corporate, and securitized sectors. The index contains more than 14,200 securities with a market value greater than $42trn, including 32 different local currency debt markets and 94 different countries of risk as of April 30, 2012.

The GDP Weighted Index weighs index-eligible country blocs by the size of their economies, rather than the total amount of outstanding debt and borrowing. Only GDP of countries with meaningful representation (>0.25% by market value or local currency eligibility) in the overall index will contribute to a country bloc's fixed GDP weight. After GDP weights are applied at a country bloc level, all index-eligible securities within each bloc are market value weighted in order to best reflect the investment choice set available to investors in that bloc.

Specific details on GDP weighted index rules and construction methods can be found in *Barclays Capital GDP Weighted Bond Indices*, November 2009

**Global eVestment Universe:** Global Fixed Income products that invest in bonds anywhere in the world but never employ any type of currency hedging in the portfolio. The expected benchmarks for this universe would include the Barclays Capital Global Aggregate Un-Hedged or the Citigroup WGBI Un-Hedged. Managers in this category will typically indicated a "Hedging Strategy" equal to Un-Hedged.

**Local EM eVestment Universe:** Fixed Income products that invest primarily in emerging market bonds that are issued in the sovereign currency.

The **JP Morgan Government Bond Index-Emerging Markets (GBI-EM)** indices are comprehensive emerging market debt benchmarks that track local currency bonds issued by Emerging Market governments. The index was launched in June 2005 and is the first comprehensive global local Emerging Markets index. As Emerging Market governments look increasingly toward their domestic market for sources of finance, investors are looking more closely at local markets in search for higher yield and greater diversification.

**Thomson Reuters/Jefferies CRB Index** is comprised of 19 commodities and calculates the excess return using an arithmetic average of commodity futures prices with monthly rebalancing.

**JP Morgan EM Currency Index (GDP-weighted):** Standish used the country level returns for the 23 countries in the JPM Emerging Markets Index Plus (ELMI+) Index. The index tracks the total return for local currency denominated money market instruments in emerging markets. In countries with established money markets the index will use forward foreign exchange contracts to calculate total return.

**S&P 500 Index** is an index of 500 stocks chosen for market size, liquidity and industry grouping, among other factors. The S&P 500 is designed to be a leading indicator of US equities and is meant to reflect the risk/return characteristics of the large cap universe.

The **Bovespa Index** tracks around 50 Brazilian stocks traded on the São Paulo Stock, Mercantile and Futures Exchange.

The **Japanese Nikkei Index** is an index of 225 leading stocks traded on the Tokyo Stock Exchange.

The **RTS Index (RTSI)** is an index of 50 Russian stocks that trade on the RTS Stock Exchange in Moscow.

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