Morgan Stanley

INVESTMENT MANAGEMENT

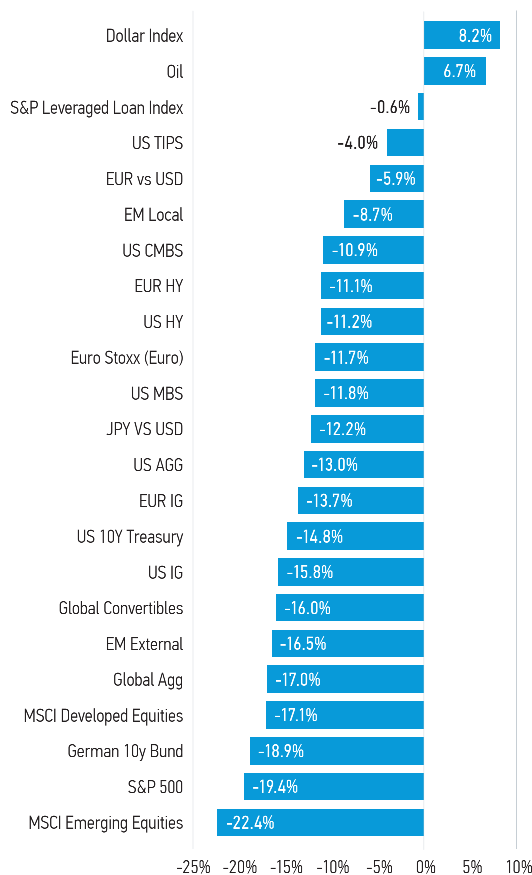
Global Fixed Income Bulletin

2022: Good-Bye, Farewell, Amen!

FIXED INCOME TEAM | MACRO INSIGHT | JANUARY 2023

2022 ended with a bang; unfortunately not a good one! December proved to be a fitting end to a terrible year for bonds and financial assets in general, with yields up significantly once again. Optimism based on declining inflation, weaker growth, and less hawkish central banks proved to be illusory. The Fed, European Central Bank and Bank of England all raised rates 50 basis points (bps). The ECB emphasized they were far from done, with their multi-year inflation forecast still above target. The Fed appeared to backtrack a bit on their November comments about wanting to wait and see how previous tightening was impacting the economy before committing to additional rate hikes. The change of tone was noticeable. Not surprisingly, European bonds were hit particularly hard, with French 10-year yields up over 70 bps on the month and Germany not far behind. U.S. Treasuries did reasonably well, with 10-year yields up only 27 bps. Credit markets bucked the trend a bit with U.S. investment grade and European credit markets marginally tighter on the month. U.S. high yield was the outlier, with spreads over 20 bps wider on main indexes. Securitized markets also did well in spread terms, as they continued to play catch up to the corporate credit markets. Equities, after staging an impressive rally over late summer and early fall, also did terribly, with the S&P 500 down almost 6% on the month.

DISPLAY 1
Asset Performance Year-to-Date



Note: USD-based performance. Source: Bloomberg. Data as of December 31, 2022. The indexes are provided for illustrative purposes only and are not meant to depict the performance of a specific investment. **Past performance is no guarantee of future results.** See pages 7-8 for index definitions.

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Why did yields rise so significantly? Several factors were at work. First was continued hawkishness from central banks. It might have been wishful thinking more than fact-based analysis, but markets expected some softening in actions/rhetoric from the Fed and ECB. No such luck. Second was the surprising action by the Bank of Japan (BoJ) to adjust their yield curve control (YCC) policy. They increased the top end of the range on 10-year government bonds (JGBs) to 50 bps from 25 bps. While not such a large move in absolute terms, it was earth shattering given prevailing expectations. The move hinted at more adjustments to come in 2023, both in terms of yield curve targets as well as conventional monetary policy. This change improves the attractiveness of Japanese government bonds to domestic investors, who may decide to allocate less to offshore markets. This worry, in addition to the worry that another major central bank was about to embark on a tightening path of an unknown amount, boosted anxiety and volatility.

If increased nervousness about central banks was not enough, other forces were also at work. China decided to abruptly drop their zero-Covid strategy and move immediately to a world with no Covid restrictions at all. While this was expected to happen in 2023, it was expected to be gradual. Although this may have some short-term negative impact on growth, it will also accelerate the reopening of the economy, boosting growth, domestically and abroad, and maybe slow down global disinflationary forces. Chinese equities took the policy change well, suggesting optimism about getting the economy back on track.

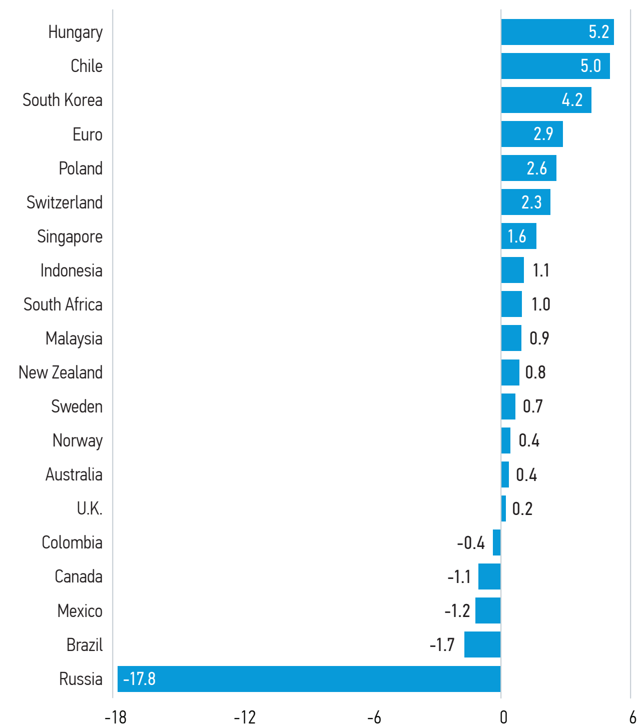
The actions in China and Japan had a particularly negative impact on Australian dollar bonds. The Australian central bank (RBA) had become one of the most dovish G10 central banks, supporting their bond market. But, the China reopening and revised BoJ policy sent shivers through the Australian bond market, causing Australian 10-year yields to rise over 50 bps, reversing their previously strong performance versus U.S. Treasuries.

Another notable development in December was the continued weakness in the U.S. dollar. A combination of valuation, increased hawkishness of other central banks (ECB, BoJ, in particular), and continued decent growth outside the U.S. boosted non-U.S. economies, hurting their bonds, but helping their currencies. We believe that a weaker dollar is an important indicator that the worst is past for the global economy, particularly for emerging markets.

DISPLAY 2

Currency Monthly Changes Versus U.S. Dollar

(+ = appreciation)



Note: Positive change means appreciation of the currency against the USD. Source: Bloomberg. Data as of December 31, 2022.

There is some good news. Yields are higher than they were at the end of November (let alone the beginning of 2022), boosting 2023 expected returns, the U.S. dollar is no longer going up, and credit spreads are meaningfully wider than they were in early 2022. And, in a truly historic way, the stock of negative yielding bonds has gone to zero for the first time since 2014! A notable achievement, putting income back into fixed income, which can help provide a greater cushion for unexpected negative surprises. It only took a record setting sell-off and the worst returns in over 100 years to do it. May negative yields rest in peace.

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DISPLAY 3

Major Monthly Changes in 10-Year Yields and Spreads

COUNTRY	10-YR YIELD LEVEL (%)	MONTH CHANGE (BPS)	10-YR SPREAD (BPS)	MONTH CHANGE (BPS)
			(Spread over USTs)	
United States	3.87	+27		
United Kingdom	3.67	+51	-20	+24
Germany	2.57	+64	-130	+37
Japan	0.42	+17	-345	-10
Australia	4.05	+52	18	+25
Canada	3.30	+36	-57	+9
New Zealand	4.47	+39	60	+12
EUROPE			(Spread over Bunds)	
France	3.12	+71	54	+7
Greece	4.62	+47	205	-17
Italy	4.72	+84	214	+20
Portugal	3.59	+71	102	+7
Spain	3.66	+72	109	+8
EM	**10-YR LOCAL YIELD (%)**	**MTD CHANGE (BPS)**	**SPREAD (BPS)**	**MTD CHANGE (BPS)**
EM External Spreads			444	-14
EM Corporate Spreads			393	+4
EM Local Yields	6.89	-23		
			(Spread over USTs)	
Brazil	12.69	-5	881	-32
Colombia	13.01	-5	914	-32
Hungary	9.05	+76	518	+49
Indonesia	6.92	0	304	-27
Malaysia	4.04	-7	17	-34
Mexico	9.02	-19	515	-46
Peru	7.97	+25	410	-2
Poland	6.85	+26	297	-1
South Africa	10.79	-1	691	-28
CREDIT			**SPREAD (BPS)**	**MTD CHANGE (BPS)**
U.S. IG			130	-3
EUR IG			167	-14
U.S. HY			469	+21
EUR HY			493	-14
SECURITIZED				
Agency MBS			145	0
U.S. BBB CMBS			483	+7

Positive Neutral Negative

Source: Bloomberg, JPMorgan. Data as of December 31, 2022.

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Fixed Income Outlook

From a bond market perspective, 2023 starts in a stronger, more secure place. Yields are materially higher and spreads wider, suggesting much better 2023 performance and a much more comfortable cushion against unexpected shocks. Even if government bond yields go up this year, it is unlikely they will go up enough to offset their carry/income. It is very rare for bonds to have negative returns two years in a row. But 2022 was weird. Extrapolating anything from last year may be challenging.

The global monetary policy tightening cycle will likely end by mid-year, significantly reducing policy uncertainty. The likely dispersion of policy rates relative to expectations will be much lower in 2023, e.g., will the Fed funds rate be 4.75% or 5.25%.

Uncertainties do remain, but they have more to do with recession rather than inflation/monetary policy outcomes. The question "how hard a landing will economies have in 2023?" will determine the direction and magnitude of yield and spread movements. Last year reminded everyone that inflation shocks are bad for almost all financial assets. Inflation at decades highs required interest rates at decade highs. High interest rates increase real yields, which undermine valuations across credit and equities. That said, we have never had a year with double digit negative returns in both bonds and equities. 2023 has to be a lot better, doesn't it?

We think so. Yields are much higher, closer to their pre-pandemic average. We expect 2023 will be a much stronger year for fixed income and we think it will generate decent positive returns. There is no doubt in our mind that fixed income should be back in fashion given yield levels and ongoing uncertainty about equities, and likely much less dispersion in possible outcomes.

The first bit of uncertainty is how much more central banks will hike rates. The good news is that whatever they do, it will be a lot less than in 2022 and a lot of what they will do is already expected. Indeed, several emerging market central banks have ended their hiking cycles believing they have done enough to bring down inflation. So monetary policy shocks are likely to be a lot less. But, markets remain generally more dovish than central banks, creating the possibility of unpleasant surprises.

For example, while the peak Fed funds rate anticipated by the market is only 25 bps lower than what the Fed has forecasted, there is a major disagreement. The Fed believes this number, approximately 5%, is likely the floor, while the market not only believes it is the peak but will fall significantly over the course of late 2023 into 2024. If the Fed is right, meaning the U.S. economy is stronger and/or inflation will remain sticky, the U.S. bond market will need to reprice. This would likely take U.S. Treasury 10-year yields back over 4%. The good news is that the likely poor outcome is only about a 50-bps increase. Much less than 2022 and less detrimental to returns given higher starting yields. Similar analysis applies to other developed country bond markets.

It is also possible that central banks have done enough to slow aggregate demand sufficiently to entrench the disinflationary trend. Central banks have made tremendous progress in getting policy rates into restrictive territory. They raised policy rates at a pace not seen for 40 years, helping push real rates, the more important indicator of monetary tightness, up substantially.

The major disagreement between the market and the Fed remains how long rates will have to stay at 5%. It is in the Fed's interest to talk tough to keep financial conditions restrictive during the disinflationary process. But the market believes, and history supports, that the Fed will reverse course once inflation is back on track towards 2% and/or monthly job growth turns negative. This reflexivity will contain any rises in long-term yields. The biggest risk to this otherwise sanguine outlook is continued stickiness in inflation and wages.

The fixed income sector we are most upbeat on is the securitized market, despite high interest rates and the risk of a recession in the U.S. and Europe. The securitized market consists primarily of residential and commercial mortgage-backed securities and asset-backed securities. Yields on most of these bonds are double last year's, with spreads materially wider than in corporate credit markets (except for CCC-rated corporate bonds). We believe credit concerns are overdone and yields (either through spread compression or lower government yields) will end 2023 lower. Our favorite category of securitized credit remains non-agency residential mortgages, despite expectations that U.S. home prices will likely fall in 2023. In addition, we prefer U.S. opportunities over European opportunities given valuations and economic risks, including policy risks.

Corporate credit markets had their worst performance on record in 2022. At current valuation levels, investment grade bonds appear neither rich nor cheap. But yield levels look attractive, which should attract investor interest. While we do not think investment grade credit spreads will trade meaningfully lower in 2023, the yield on offer provides good risk mitigation against rate shocks or even a mild recession, given the strong starting point of corporate fundamentals. We are buyers on weakness.

A similar analysis supports high yield credit markets, albeit with more risk stemming from a possible 2023 recession. That said, we do not see a major recession and expect slow/below trend growth with gradually rising unemployment. Default rates are likely to rise but not spike, as expected in a traditional recession. This potential recession, if it occurs, will likely look different as nominal GDP and wage growth remains strong. With high yield indexes yielding around 9%, there is ample room for spreads to widen and still generate mid-single digit returns, if not higher. Moreover, it would also be highly unusual to have two years of negative high yield returns in a row.

The U.S. dollar looks like it has peaked. Further weakness may take time, particularly if the Fed follows through on NOT cutting rates in 2023. Emerging Market (EM) bonds continue to gain in attractiveness, and we expect local markets and FX to outperform. Real yield differentials to U.S. Treasuries remain at historically wide levels. China's reopening should be quite positive for EM in general and helpful for the global economy. On the negative side, a stronger Chinese economy may make it harder for developed market central banks to bring down inflation. EM external remains the least favored sector in the EM fixed income complex.

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	MONTHLY REVIEW	OUTLOOK
Developed Market Rate/ Foreign Currency	Yields ended the year higher following a broad sell-off during December, as economic data remained relatively strong, central banks demonstrated that they are still committed to hiking as much as necessary, and Japan modified its yield curve control policy. The U.S. 10-year closed at 3.88%, around 225 bps higher than the level at which it started the year. During the month, the Fed slowed its pace of hiking as expected, raising the policy rate by 50 bps. Similarly, the BoC, SNB, BoE, and ECB all also opted for 50 bps hikes. Notably, the BoJ surprised markets by adjusting its yield curve control policy, widening the allowable deviation from the 0% target for the 10-year yield to 50 bps from 25 bps previously. As a result, Japanese government bonds, unrestricted by the limit, immediately sold off to a level more consistent with fundamental pricing, while the Japanese Yen strengthened.[1]	While the Fed has officially stepped down its pace of hikes, the future path of rates is more important. How high and for how long central banks will go will largely depend on growth and inflation conditions. In our view, the rates market is priced close to fair; however, central banks have been clear in their determination to keep rates high, and while inflation will continue to come down from the earlier peak, inflation and labor market data prints are still indicating that the economy is overheated. If that continues, inflation may remain higher than central bankers find comfortable. As a result, the risk for rates still seems to be for them to go marginally higher. The U.S. dollar has benefited from tighter Fed policy and growing global growth concerns. With that said, the dollar strength trend has stopped and started reversing over the past couple months. We think that dollar weakness could continue for now.
Emerging Market Rate/ Foreign Currency	Emerging markets debt (EMD) continued to rebound in December supported by the less hawkish Fed and weakening U.S. dollar. China announced a reversal of its zero-Covid policy at the beginning of the month, which markets cheered. Technicals continued to recover as hard currency flows turned positive and local flows plateaued.[2]	Following the strong rally to close out the year, we believe there is additional value to be gained from EMD in 2023. We see attractive opportunities particularly in local rates, as real yield differentials between emerging and developed markets remain near historical highs. Fundamentals continue to improve, technicals are turning positive, and valuations remain compelling. China's move away from a zero-Covid policy and its announcement of substantial support for the property sector will support growth and likely flow through to the broader EM market.

[1] Source: Bloomberg. Data as of December 31, 2022.

[2] Source: Bloomberg. Data as of December 31, 2022. EM corporates represented by **The JP Morgan CEMBI Broad Diversified Index.**

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	MONTHLY REVIEW	OUTLOOK
Corporate Credit	Euro IG spreads outperformed U.S. IG spreads in the rally this month, as the marginal news was deemed positive; mainly driven by signals of the market understanding better central bank comments, and the potential for China to re-open. The dominant driver of the rally was swap spread tightening, with the 10-year spread 9 bps tighter at +64 bps. The iTraxx Europe, in contrast, underperformed as it drifted 3 bps wider in the month, closing at +91 bps, leading to underperformance of derivatives versus cash.[3] The strong tone in U.S. and global high yield markets extended into the first two weeks of December. However, the tone shifted after the Fed's December meeting. In addition, the supply/demand balance weakened in December due to renewed outflows from retail funds in the bottom half of the month. The lowest quality segment of the market continued to generally underperform in December. The top performing sectors for the month were banking, basic industry and insurance.[4] Global convertibles fell in December, amid rising rates and the latest Covid spread, as the Refinitiv Global Convertibles Focus Index fell 1.71%. Convertibles performed in between global stocks and global bonds to complete the worst annual convertible returns since 2008.	Looking forward, our base case view is that we are compensated to own credit as we view corporate fundamentals to be resilient and the macro backdrop to likely improve as monetary policy pivots and China re-opens. We view companies as having built liquidity and implemented cost efficiencies under the Covid-era. We expect margins to be pressured and top line revenue to be challenging (as evidenced by Q3 numbers), but, given the starting point we believe corporates will be able to manage a slowdown without significant downgrades or defaults (base case low default and mild recession). In the high yield market, spread widening seems to be the most likely path forward due to several factors, including a shift higher in the Fed Funds terminal rate, a tightening in global liquidity and financial conditions and slowing global economic growth. We believe the positives for convertibles heading into 2023 are a market poised to rebound off its bond floor, and strong impetus to bring new balanced paper as rates continue to rise.
Securitized Products	Agency MBS spreads were unchanged in December, and securitized credit spreads tightened during the month. Securitized credit spreads lagged much of the corporate credit spread tightening in the fourth quarter and continue to look attractive on a relative value basis. New issue securitized supply remains very low as loan origination in both residential loans and commercial loans has declined substantially. Securitized fundamental credit remains stable—delinquencies are rising slowly, but remain low from a historical basis, and do not appear to be threatening to the thick levels of structural credit protection for most securitized assets. U.S. home prices have fallen ~5% from the peak in June.[5]	Our fundamental credit outlook remains positive overall. We expect home prices to fall another 5-10% in 2023. U.S. residential credit remains our favorite sector, despite our expectations of home price declines, with a strong preference for seasoned loans (originated in 2020 or earlier) due to the sizable home price appreciation over the past few years. We remain more cautious of commercial real estate, which continues to be negatively impacted in the post-pandemic world and could also be impacted by a recession. We are biased to own U.S. over Europe as risk-adjusted opportunities look more compelling in the U.S. U.S. and European securitized spreads are comparable across similar asset classes, but risks of a more severe recession appear greater in Europe.

[3] Source: Bloomberg Indices: U.S. Corporate Index and the European Aggregate Corporate Index. Data as of December 31, 2022.

[4] Source: J.P. Morgan and Bloomberg US Corporate High Yield Index. Data as of December 31, 2022.

[5] Source: Bloomberg. Data as of December 31, 2022.

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Risk Considerations

Diversification neither assures a profit nor guarantees against loss in a declining market.

There is no assurance that a portfolio will achieve its investment objective. Portfolios are subject to **market risk**, which is the possibility that the market values of securities owned by the portfolio will decline and that the value of portfolio shares may therefore be less than what you paid for them. Market values can change daily due to economic and other events (e.g. natural disasters, health crises, terrorism, conflicts and social unrest) that affect markets, countries, companies or governments. It is difficult to predict the timing, duration, and potential adverse effects (e.g. portfolio liquidity) of events. Accordingly, you can lose money investing in a portfolio. **Fixed-income securities** are subject to the ability of an issuer to make timely principal and interest payments (credit risk), changes in interest rates (interest rate risk), the creditworthiness of the issuer and general market liquidity (market risk). In a rising interest-rate environment, bond prices may fall and may result in periods of volatility and increased portfolio redemptions. In a declining interest-rate environment, the portfolio may generate less income. **Longer-term securities** may be more sensitive to interest rate changes. Certain **U.S. government securities** purchased by the strategy, such as those issued by Fannie Mae and Freddie Mac, are not backed by the full faith and credit of the U.S. It is possible that these issuers will not have the funds to meet their payment obligations in the future. **Public bank loans** are subject to liquidity risk and the credit risks of lower-rated securities. **High-yield securities (junk bonds)** are lower-rated securities that may have a higher degree of credit and liquidity risk. **Sovereign debt securities** are subject to default risk. **Mortgage- and asset-backed securities** are sensitive to early prepayment risk and a higher risk of default, and may be hard to value and difficult to sell (**liquidity risk**). They are also subject to credit, market and interest rate risks. The **currency market** is highly volatile. Prices in these markets are influenced by, among other things, changing supply and demand for a particular currency; trade; fiscal, money and domestic or foreign exchange control programs and policies; and changes in domestic and foreign interest rates. Investments in **foreign markets** entail special risks such as currency, political, economic and market risks. The risks of investing in **emerging market** countries are greater than the risks generally associated with foreign investments. **Derivative instruments** may disproportionately increase losses and have a significant impact on performance. They also may be subject to counterparty, liquidity, valuation, and correlation and market risks. **Restricted and illiquid securities** may be more difficult to sell and value than publicly traded securities (liquidity risk). Due to the possibility that prepayments will alter the cash flows on **collateralized mortgage obligations (CMOs)**, it is not possible to determine in advance their final maturity date or average life. In addition, if the collateral securing the CMOs or any third-party guarantees are insufficient to make payments, the portfolio could sustain a loss.

DEFINITIONS

Basis point: One basis point = 0.01%.

INDEX DEFINITIONS

The indexes shown in this report are not meant to depict the performance of any specific investment, and the indexes shown do not include any expenses, fees or sales charges, which would lower performance. The indexes shown are unmanaged and should not be considered an investment. It is not possible to invest directly in an index.

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The **Bloomberg Euro Aggregate Corporate Index (Bloomberg Euro IG Corporate)** is an index designed to reflect the performance of the euro-denominated investment-grade corporate bond market.

The **Bloomberg Global Aggregate Corporate Index** is the corporate component of the Bloomberg Global Aggregate index, which provides a broad-based measure of the global investment-grade fixed income markets.

The **Bloomberg US Corporate High Yield Index** measures the market of USD-denominated, non-investment grade, fixed-rate, taxable corporate bonds. Securities are classified as high yield if the middle rating of Moody's, Fitch, and S&P is Ba1/BB+/BB+ or below. The index excludes emerging market debt.

The **Bloomberg US Corporate Index** is a broad-based benchmark that measures the investment grade, fixed-rate, taxable, corporate bond market.

The **Bloomberg US Mortgage Backed Securities (MBS) Index** tracks agency mortgage-backed pass-through securities (both fixed-rate and hybrid ARM) guaranteed by Ginnie Mae (GNMA), Fannie Mae (FNMA) and Freddie Mac (FHLMC). The index is constructed by grouping individual TBA-deliverable MBS pools into aggregates or generics based on program, coupon and vintage. Introduced in 1985, the GNMA, FHLMC and FNMA fixed-rate indexes for 30- and 15-year securities were backdated to January 1976, May 1977 and November 1982, respectively. In April 2007, agency hybrid adjustable-rate mortgage (ARM) pass-through securities were added to the index.

Consumer Price Index (CPI) is a measure that examines the weighted average of prices of a basket of consumer goods and services, such as transportation, food and medical care.

Euro vs. USD—Euro total return versus U.S. dollar.

German 10YR bonds—Germany Benchmark 10-Year Datastream Government Index; **Japan 10YR government bonds**—Japan Benchmark 10-Year Datastream Government Index; and **10YR US Treasury**—US Benchmark 10-Year Datastream Government Index.

The **ICE BofAML European Currency High-Yield Constrained Index (ICE BofAML Euro HY constrained)** is designed to track the performance of euro- and British pound sterling-denominated below investment-grade corporate debt publicly issued in the eurobond, sterling

The **ICE BofAML US Mortgage-Backed Securities (ICE BofAML US Mortgage Master) Index** tracks the performance of US dollar-denominated, fixed-rate and hybrid residential mortgage pass-through securities publicly issued by US agencies in the US domestic market.

The **ICE BofAML US High Yield Master II Constrained Index (ICE BofAML US High Yield)** is a market value-weighted index of all domestic and Yankee high-yield bonds, including deferred-interest bonds and payment-in-kind

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securities. Its securities have maturities of one year or more and a credit rating lower than BBB-/Baa3, but are not in default.

The **ISM Manufacturing Index** is based on surveys of more than 300 manufacturing firms by the Institute of Supply Management. The ISM Manufacturing Index monitors employment, production inventories, new orders and supplier deliveries. A composite diffusion index is created that monitors conditions in national manufacturing based on the data from these surveys.

Italy 10-Year Government Bonds—Italy Benchmark 10-Year Datastream Government Index.

The **JP Morgan CEMBI Broad Diversified Index** is a global, liquid corporate emerging markets benchmark that tracks US-denominated corporate bonds issued by emerging markets entities.

The **JPMorgan Government Bond Index**—emerging markets (**JPM local EM debt**) tracks local currency bonds issued by emerging market governments. The index is positioned as the investable benchmark that includes only those countries that are accessible by most of the international investor base (excludes China and India as of September 2013).

The **JPMorgan Government Bond Index Emerging Markets (JPM External EM Debt)** tracks local currency bonds issued by emerging market governments. The index is positioned as the investable benchmark that includes only those countries that are accessible by most of the international investor base (excludes China and India as of September 2013).

The **JP Morgan Emerging Markets Bond Index Global (EMBI Global)** tracks total returns for traded external debt instruments in the emerging markets and is an expanded version of the EMBI+. As with the EMBI+, the EMBI Global includes US dollar-denominated Brady bonds, loans and eurobonds with an outstanding face value of at least $500 million.

The **JP Morgan GBI-EM Global Diversified Index** is a market-capitalization weighted, liquid global benchmark for US-dollar corporate emerging market bonds representing Asia, Latin America, Europe and the Middle East/Africa.

JPY vs. USD—Japanese yen total return versus US dollar.

The **Markit ITraxx Europe Index** comprises 125 equally weighted credit default swaps on investment grade European corporate entities, distributed among 4 sub-indices: Financials (Senior & Subordinated), Non-Financials and HiVol.

The **Nikkei 225 Index (Japan Nikkei 225)** is a price-weighted index of Japan's top 225 blue-chip companies on the Tokyo Stock Exchange.

The **MSCI AC Asia ex-Japan Index (MSCI Asia ex-Japan)** captures large- and mid-cap representation across two of three developed markets countries (excluding Japan) and eight emerging markets countries in Asia.

The **MSCI All Country World Index (ACWI, MSCI global equities)** is a free float-adjusted market capitalization weighted index designed to measure the equity market performance of developed and emerging markets. The term "free float" represents the portion of shares outstanding that are deemed to be available for purchase in the public equity markets by investors. The performance of the Index is listed in US dollars and assumes reinvestment of net dividends.

MSCI Emerging Markets Index (MSCI emerging equities) captures large- and mid-cap representation across 23 emerging markets (EM) countries.

The **MSCI World Index (MSCI developed equities)** captures large and mid-cap representation across 23 developed market (DM) countries.

Purchasing Managers Index (PMI) is an indicator of the economic health of the manufacturing sector.

The **Refinitiv Convertible Global Focus USD Hedged Index** is a market weighted index with a minimum size for inclusion of $500 million (US), 200 million (Europe), 22 billion Yen, and $275 million (Other) of Convertible Bonds with an Equity Link.

The **Russell 2000® Index** is an index that measures the performance of the 2,000 smallest companies in the Russell 3000 Index.

The **S&P 500® Index (US S&P 500)** measures the performance of the large-cap segment of the US equities market, covering approximately 75 percent of the US equities market. The index includes 500 leading companies in leading industries of the U.S. economy.

S&P CoreLogic Case-Shiller US National Home Price NSA Index seeks to measure the value of residential real estate in 20 major US metropolitan areas: Atlanta, Boston, Charlotte, Chicago, Cleveland, Dallas, Denver, Detroit, Las Vegas, Los Angeles, Miami, Minneapolis, New York, Phoenix, Portland, San Diego, San Francisco, Seattle, Tampa and Washington, D.C.

The **S&P/LSTA US Leveraged Loan 100 Index (S&P/LSTA Leveraged Loan Index)** is designed to reflect the performance of the largest facilities in the leveraged loan market.

The **S&P GSCI Copper Index (Copper)**, a sub-index of the S&P GSCI, provides investors with a reliable and publicly available benchmark for investment performance in the copper commodity market.

The **S&P GSCI Softs (GSCI soft commodities) Index** is a sub-index of the S&P GSCI that measures the performance of only the soft commodities, weighted on a world production basis. In 2012, the S&P GSCI Softs Index included the following commodities: coffee, sugar, cocoa and cotton.

Spain 10-Year Government Bonds—Spain Benchmark 10-Year Datastream Government Index.

The **Thomson Reuters Convertible Global Focus USD Hedged Index** is a market weighted index with a minimum size for inclusion of $500 million (US), 200 million euro (Europe), 22 billion yen, and $275 million (Other) of convertible bonds with an equity link.

U.K. 10YR government bonds—U.K. Benchmark 10-Year Datastream Government Index. For the following Datastream government bond indexes, benchmark indexes are based on single bonds. The bond chosen for each series is the most representative bond available for the given maturity band at each point in time. Benchmarks are selected according to the accepted conventions within each market. Generally, the benchmark bond is the latest issue within the given maturity band; consideration is also given to yield, liquidity, issue size and coupon.

The **US Dollar Index (DXY)** is an index of the value of the United States dollar relative to a basket of foreign currencies, often referred to as a basket of US trade partners' currencies.

The **Chicago Board Options Exchange (CBOE) Market Volatility (VIX) Index** shows the market's expectation of 30-day volatility.

There is no guarantee that any investment strategy will work under all market conditions, and each investor should evaluate their ability to invest for the long-term, especially during periods of downturn in the market.

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