Bonds Live to Die Another Day: Still One of the Best Diversifiers During Equity Weakness

ANDREW CORMACK
Portfolio Manager

Introduction and Background

The Australian pension industry is one of the fastest growing holders of retirement assets globally. Between 2005 and 2015 pension assets grew at an annualised rate of 9.2%, outpacing the global average by 3.9%, with total system assets projected to exceed $3.5 trillion by 2025. Growth in assets can be attributed almost entirely to expansion in the Australian superannuation system, which is designed to meet the government’s long-term objective of moving retired Australians away from dependence on the state pension and increasing the level of national savings. Currently employers must contribute a minimum of 9.5% of employee wages into such schemes, rising by a further 0.5% each year after 2021 until it reaches 12% by 2025. Compulsory and voluntary superannuation savings have had a transformative impact on household balance sheets whereby superannuation savings have now become households’ largest asset outside of the family home.

As the Australian population ages, there are growing concerns the industry does not have sufficient capacity to meet the demands of citizens in retirement. Savers must choose between increasing their level of savings today at the cost of current consumption or seeking higher returns on their existing stock of assets. Faced with this dilemma and to ensure they are receiving value for money, savers are becoming increasingly critical of investment managers’ performance. Complicating matters further, extraordinarily easy global central bank policies implemented in the aftermath of the global financial crisis (GFC) have inflated global equity valuations and pushed global bond yields to historic lows. In short, the assets that savers own to generate capital growth and income (equity) look expensive and the assets that savers own to provide a hedge (bonds) also look expensive (see Exhibit 1).

Executive Summary

- Global bond yields have fallen to record lows at the same time as most developed equity markets have hit new highs. Investors are worried that bonds have lost their diversifying qualities.
- In this paper we provide the historical context and discuss what drives the equity bond correlation. We conclude that, under Western Asset's investment outlook, bonds retain their place as one of the best and most reliable hedges to equity market risk.
- We look at foreign equity exposure from the perspective of an Australian investor and how currency unhedged exposures may behave during future equity drawdowns.
- We also discuss alternative hedging strategies away from traditional bond beta and conclude investors should seek a multitude of diversification strategies to reach their investment goals.

With traditional assets appearing overvalued (and by extension benchmarked strategies looking less appealing) the search for returns has understandably led to an increase in allocations to alternative assets and

strategies, funded from both growth and defensive allocations. Though these asset classes vary in form and function, their inclusion generally increases the risk attributes of the broader portfolio.

Investors are seeking alternative ways to mitigate equity volatility and manage drawdown risk away from traditional sources of diversification like bonds. These include so called tail-risk protection strategies that extensively use derivative contracts and currency strategies that rely heavily on historical correlations being maintained as well as consistent investment manager skill in identifying opportunities. In this paper, we challenge a growing perception that bonds no longer offer adequate diversification, provide a perspective on alternative hedging strategies and discuss Western Asset’s approach to reducing volatility across its Global Total Return (GTR) strategy.

**Derivative Strategies—Equity Puts**

Equity puts are, without a doubt, an excellent hedge to equity risk. However, short-dated options, which are highly desirable due to their very high sensitivity to changes in price (gamma), are expensive to hold as they suffer from significant time decay. Like a car insurance policy that pays out in the unlikely event of a collision, the majority of the time the owner of the insurance policy is just paying premiums away each month. We demonstrate this in Exhibit 2. The red line shows the return series of a strategy in which $100 is invested monthly in a fixed number of at-the-money (ATM) S&P 500 puts with the blue line showing the S&P 500 total return index. On the few occasions when the S&P 500 suffered drawdowns, the insurance policy (ATM puts) produced a positive return evidenced by the small upward spikes in the red line. However, over time the cost of insurance for these infrequent drawdowns more than outweighed the benefits. After 5 years the $100 investment was worth less than $40!

This suggests an unsophisticated approach to hedging equity drawdowns using options is not an efficient use of investor capital. A more sophisticated approach that uses algorithms to exploit dislocations in volatility skew may suit investors needs more appropriately. Seeking an actively managed tail-risk hedging strategy that can partially offset the cost of insurance by earning back part or all of the annual premium can successfully protect investors’ assets from the negative volatility that causes large, unforeseen losses.

**The Historical Case for Bonds**

It is well known that including a bond allocation to an equity portfolio has greatly improved the portfolio risk and reward characteristics over the last 30 years. Exhibit 3 shows Australian equity and bond returns.

---

2 For bond returns, we used the Merrill Lynch Australian Government 10+ Index.
between 1985 and 2015 and how the total return/risk ratio varies as the allocation to bonds is increased.

An investment split 30% in equities and 70% in bonds has produced a higher return than equities alone with approximately half the volatility. The correlation\(^3\) of bonds with equities has been negative over this time period; combining two negatively correlated assets together in a portfolio should reduce total volatility because the movement of one asset can be expected to mitigate some of the movements of the other. The correlation has not always been negative. Exhibit 4 shows the relationship over a 100-year history using US bonds and stocks and highlights periods where the correlation has been very positive.

Accurately predicting how this correlation will behave going forward will be crucial for equity investors using bonds for diversification. Studies have found inflation to be an important variable that drives the equity-bond correlation.\(^4\) Periods of high inflation tend to coincide with positive return correlations. Intuitively this makes sense because high inflation erodes the real value of future bond coupons and pushes bond prices down and yields up. Equities perform well during periods of moderate inflation but struggle when inflation is high as companies find it hard to pass through costs to consumers, negatively impacting profitability and dividend payments. Equally important is the level of yields. High inflation pushes up yields making it more

---
\(^3\) Correlation is the tendency of the returns of an asset to move in the same direction as another asset.
costly for companies to borrow and negatively impacts the net-present-value of future dividend payments. Clearly there are a number of secular and business-cycle factors that will influence the correlation going forward, but unless inflation rises substantially over the medium term, we believe it is unlikely the long-term correlation will become meaningfully positive.

How Is the Equity-Bond Correlation Likely to Behave Going Forward?
Western Asset believes aging populations, large debt overhangs and muted global real GDP growth will keep global inflation low for the foreseeable future. We think US bond yields are unlikely to rise above what is currently priced into the forward markets and will produce low but positive returns. Global monetary policies are likely to stay accommodative and to continue to support a slow but stable global recovery. This should be an environment that is typically supportive of positive equity and corporate bond returns. Given our expectation for positive risk asset performance and low, but positive, expectations for bond returns, it is plausible to assume the correlation over the medium term will be low but positive. This does not mean that bonds have lost their diversification benefits.

The Equity-Bond Correlation and Drawdowns
The global recovery has faced a number of setbacks since the GFC. Recent periods of lower equity valuations have coincided with fears over a sharp slowdown in China, bouts of severe weakness in oil and other commodity prices, fears about the weakening of peripheral European bank balance sheets and the decision by the UK electorate to leave the EU to name a few. These shocks highlight the fragility of the recovery and investors should expect intermittent periods of flight-to-quality over the medium term.

This is when bonds can really work for equity investors, because the equity-bond correlation consistently moves decisively more negative during periods of flight-to-quality. 5

We examined the returns of US equities and bonds over the last 35 years. Exhibit 5 shows US Treasuries produced positive returns in eight of the 10 largest drawdown periods. We expect this relationship to hold if equity markets were to suffer another setback. The 30-year US yield is currently 2.2%, low when compared with the 30-year average of 5.8%, but high when compared with 30-year German yields of 0.45% or Japanese yields of 0.15%. 6 We think 30-year US yields could fall another 50 basis points (bps) or 100 bps in the event of a large equity drawdown. The current 30-year US Treasury bond has a duration of 22 years so

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct-07</td>
<td>Feb 09</td>
<td>-50.9%</td>
<td>16.8%</td>
<td>Easing</td>
</tr>
<tr>
<td>Aug-00</td>
<td>Sep 02</td>
<td>-44.7%</td>
<td>29.0%</td>
<td>Easing</td>
</tr>
<tr>
<td>Aug-87</td>
<td>Nov 87</td>
<td>-30.2%</td>
<td>2.6%</td>
<td>Easing</td>
</tr>
<tr>
<td>Nov-80</td>
<td>Jul 82</td>
<td>-23.8%</td>
<td>17.0%</td>
<td>Easing</td>
</tr>
<tr>
<td>Apr-11</td>
<td>Sep 11</td>
<td>-16.3%</td>
<td>25.5%</td>
<td>Easing</td>
</tr>
<tr>
<td>Jun-98</td>
<td>Aug 98</td>
<td>-15.4%</td>
<td>4.1%</td>
<td>Easing</td>
</tr>
<tr>
<td>May-90</td>
<td>Sep 90</td>
<td>-14.3%</td>
<td>0.1%</td>
<td>Easing</td>
</tr>
<tr>
<td>Jun-83</td>
<td>May 84</td>
<td>-10.4%</td>
<td>-7.7%</td>
<td>Tightening</td>
</tr>
<tr>
<td>Jul-15</td>
<td>Sep 15</td>
<td>-8.4%</td>
<td>1.5%</td>
<td>Tightening</td>
</tr>
<tr>
<td>Jan-94</td>
<td>Mar 94</td>
<td>-7.0%</td>
<td>-8.1%</td>
<td>Tightening</td>
</tr>
</tbody>
</table>

Source: Bloomberg, Merrill Lynch, Western Asset

5 Gulko (2002)
6 As of 14 July 2016
a 100 bps fall in yields would produce a return of 22%, still capable of fully offsetting potential losses from a substantial bear market in equities.

The analysis in Exhibit 5 highlights two equity drawdown periods when bonds produced negative returns. Both coincided with periods of Federal Reserve (Fed) policy tightening. This suggests that owning US duration when the Fed is tightening rather than easing its monetary policy stance is less likely to provide adequate diversification in times of equity market stress. In a recent paper, “The Fed Waits on Rates,” Western Asset Portfolio Manager John Bellows outlined the Fed’s recent retreat from its hawkish rhetoric in May. With ongoing doubts about the Fed’s growth and inflation outlook, Western Asset believes the Fed’s stance remains focussed on risk management and that policy rates will remain on hold unless and until there is a material change in this outlook. We expect additional monetary easing measures from the European Central Bank, Bank of England and the Bank of Japan.

We therefore believe US bonds continue to provide diversification against equity exposure despite very low levels of bond yields. Western Asset’s global portfolios remain overweight US duration to provide ballast and diversification against spread sectors.

How Does the Australian Dollar Behave During Equity Drawdowns?
Australian investors face the additional complication of currency exposure when investing in global equities. Under the assumption of uncovered interest parity, movements in bilateral exchange rates should approximate the returns of the interest differential between two countries. The forward exchange rate used when hedging foreign currency exposure should be close to the realised spot rate over the specified investment horizon. Therefore, over long time horizons, Australian investors in foreign equities should be indifferent between unhedged and fully hedged currency exposure. However, over shorter time horizons, uncovered interest parity does not hold. Exhibit 6 highlights the wide dispersion of returns over a 1-year horizon between an investment in the S&P 500 by an Australian investor on a fully hedged and unhedged basis. Return dispersion is smaller and more stable over longer time periods.

Over the last 25 years the correlation between the US dollar/Australian dollar exchange rate and the S&P 500 has been -38%7 (see Exhibit 7). Intuitively this makes sense because rising global equity prices tend to coincide with stronger global growth. The emergence of China as the world’s second largest economy and its insatiable appetite for commodities has been a boon for Australia, boosting its terms of trade and push-
ing up the value of the Australian dollar. Consequently, declines in global equity prices have coincided with
global growth fears pushing down commodity prices. Increased risk aversion during these periods and the
Australian economy’s high reliance on commodity-based revenues have tended to decrease the demand
for higher-yielding currencies such as the Australian dollar.

Exhibit 7 shows the 5-year negative correlation has been falling back towards zero since 2013. This would
suggest an Australian investor in the S&P 500 maintaining a long-term allocation on an unhedged basis
should be thoughtful that the Australian dollar may not depreciate during global equity weakness as it has
in the past. One plausible explanation for this recent phenomenon could be that quantitative easing by the
major global central banks has artificially increased equity prices at the same time as slower global growth in
emerging markets, and China in particular, has constrained the demand for commodities. Another explana-
tion could be associated with the valuation of the Australian dollar relative to the US dollar.

Exhibit 8 shows the US dollar appreciated versus the Australian dollar in six of the eight largest US equity
drawdown periods. The average US dollar appreciation during episodes when the Australian dollar was over-
valued was 24.6% compared with an average return of just 1.1% when the Australian dollar was undervalued.8

8 We define over/undervaluation as the spot bilateral exchange rate over or under long-run purchasing power parity (PPP).
The current Australian dollar valuation is close to long-run purchasing power parity (PPP) (Exhibit 9). This could suggest the Australian dollar is less likely to depreciate meaningfully versus the US dollar during an equity market selloff. Investors should be thoughtful about their current equity hedge ratio as this analysis would imply hedging a proportion of foreign equity exposure back to the Australian dollar may be appropriate at this juncture.

**Yield Curve Strategies**

Where investors hold duration along the yield curve has consequences for portfolio diversification. Typically when bond yields fall due to a global growth shock or other exogenous factors the yield curve bull steepens. This is because markets price in potential central bank rate cuts which impact the short ends of yield curves more than the long end. Today, most developed central bank policy rates are close to zero and whilst central banks are not constrained by the zero bound (as evidenced in Europe and Japan) the scope for additional rate cuts is limited. This dynamic means investors tend to focus purchases further out along the yield curve when buying duration. Exhibit 10 plots the monthly change in the shape of the US Treasury 5/30s yield curve slope, against the monthly change in the US Treasury 10-year yield, controlled for monthly falls in yields.

---

**Exhibit 9**

**Australian Dollar PPP**

![Graph showing PPP with standard deviations](source: Bloomberg, Western Asset. As of 31 May 16)

**Exhibit 10**

**Changes in Yield Curve Slope**

![Graph illustrating the relationship between changes in US 5/30s yield curve slope and change in US Treasury 10-Year Yield](source: Bloomberg, Western Asset)

---

9 When a curve bull steepens, yields on short-dated bonds fall by more than longer-dated bonds.

10 The difference between 30-year yields and 5-year yields.
greater than -0.2%. In periods where the fed funds rate is below 1%, the curve tends to bull flatten and for periods when the fed funds rate is above 1% the curve bull steepens.

Investors can use this to their advantage. One such strategy would be to implement a yield curve flattening position, which we believe has attractive asymmetric characteristics when used as a diversifier to equity risk. The above analysis suggests the yield curve is likely to bull-flatten\(^\text{11}\) during periods of equity market weakness. In the event equity markets perform well and markets price in the possibility of a less accommodative Fed we would expect the yield curve to bear-flatten\(^\text{12}\) as it has done during previous Fed interest rate hiking cycles.

**Country Strategies**

Investors should be equally thoughtful about where they own bonds. In Japan and Germany, 10-year bond yields are negative, implying hold-to-maturity investors are willing to accept a nominal capital loss to hold these assets. Diversification benefits become impaired as bond yields approach zero because the deposit rate acts as a floor.

---

\(^{11}\) When a curve bull-flattens, yields on long-dated bonds fall by more than shorter-dated bonds.

\(^{12}\) When a curve bear-flattens, yields on short-dated bonds rise by more than longer-dated bonds.

---
best performing bond markets were the UK and US (where 10-year yields were still positive). Going forward, holders of German or Japanese government bonds are unlikely to gain diversification benefits during equity market drawdowns. However, with US and Australian yields well above European and Japanese levels, we currently believe US and Australian bond markets are still attractive diversifiers (Exhibit 12).

**The Importance of an Active Approach**

Some investors are concerned that bonds no longer provide adequate diversification to equity allocations. Western Asset believes bonds are still an attractive diversifier, especially during periods of flight-to-quality. One takeaway from this note is that there are a number of alternative ways to manage equity and spread product volatility away from traditional long duration strategies. We haven’t ranked the alternatives in any particular order because the efficacy of each strategy will depend on a number of factors such as the stage in the economic cycle, the catalyst for the equity drawdown and the cost of implementing each strategy. For example, if an investor is fearful of an imminent Fed hiking cycle they should avoid duration strategies but might want to consider curve flattening strategies, long US dollar strategies or diversifying duration into markets where the interest cycle is stable or easing. If the Australian dollar valuation is high, and equity market implied volatility low, an Australian investor may wish to unhedge a greater proportion of foreign equity exposure and buy equity put protection.

To mitigate negative returns in the event yields do eventually rise investors need to take an active approach and utilise a number of the diversification strategies discussed in this note. Western Asset’s Global Total Return (GTR) strategy provides a solution to this problem. GTR takes its risk market exposure via investment-grade corporate and emerging market bonds. Whilst the volatility of these sectors is considerably lower than that of equity markets the need for adequate diversification is equally important. The strategy utilises the majority of the hedging strategies discussed above to smooth portfolio volatility over a market cycle. Over its 10-year track record, GTR has returned 5.49% per annum with a Sharpe ratio of 1.0. A number of the diversification strategies discussed above have been implemented in order to achieve this Sharpe ratio. To demonstrate this we have shown the portfolio return attribution across the 10 calendar years since the portfolio’s inception (Exhibit 13).

![Exhibit 13 Portfolio Return Attribution Across 10 Calendar Years](image)

In years when a certain part of the portfolio was producing negative total returns, the portfolio had sufficient diversification in other strategies to either minimize, or in most cases, fully offset the drawdown. Examples of some of the strategies implanted are highlighted in Exhibit 14.

---

The GTR strategy cannot use equity derivatives.

---
Conclusion

Derivative strategies aimed at protecting investors from negative market events, such as buying equity puts, can offer a more precise hedge to equity risk, but adopting a systematic approach to buying insurance produces large negative total returns over time.

Historical evidence shows adding a bond allocation to an equity portfolio greatly reduces volatility without sacrificing returns.

Western Asset believes the global economy will continue to produce slow but unspectacular growth. Inflation is likely to remain benign. Bonds should produce low but positive returns over the medium term and the equity-bond correlation is likely to be low but positive. Western Asset believes the correlation will still move meaningfully negative during periods of flight-to-quality. Bonds remain one of the best diversifiers of equity risk.

Our analysis shows bond allocations provide less diversification during Fed tightening cycles. Correctly identifying the fundamental economic landscape will be crucial in determining future bond returns. Western Asset’s view is the Fed remains on hold unless and until there is a material improvement in the growth and inflation outlook and the Feds’ dovish stance should continue to support bond valuations.

Investors need to be thoughtful about which country they own and where duration is held along the yield curve. Currently Western Asset advocates holding US duration as ballast against equity risk premium and prefers allocations to longer-dated US Treasuries.

For Australian investors the question to hedge or unhedge the currency exposure of foreign equity allocations adds additional complications to the discussion. History suggests the Australian dollar depreciates during periods of global equity weakness. Investors need to be thoughtful whether this relationship is likely to hold in the future.

Adopting a more flexible approach utilizing duration, yield curve, country and currency strategies as part of an actively managed total return approach can greatly increase the chances of providing income as well as ballast against equity market weakness.

Western Asset’s GTR strategy has a proven track record in delivering strong risk-adjusted returns over a 10-year track record and could be a good fit for investors looking for the diversification benefits of bonds but are fearful of current valuations.
Past results are not indicative of future investment results. Investments are not guaranteed and you may lose money. This publication is for informational purposes only and reflects the current opinions of Western Asset Management. Information contained herein is believed to be accurate, but cannot be guaranteed. Opinions represented are not intended as an offer or solicitation with respect to the purchase or sale of any security and are subject to change without notice. Statements in this material should not be considered investment advice. Employees and/or clients of Western Asset Management may have a position in the securities mentioned. This publication has been prepared without taking into account your objectives, financial situation or needs. Before acting on this information, you should consider its appropriateness having regard to your objectives, financial situation or needs. It is your responsibility to be aware of and observe the applicable laws and regulations of your country of residence. Potential investors in emerging markets should be aware that investment in these markets can involve a higher degree of risk.

Western Asset Management Company Distribuidora de Títulos e Valores Mobiliários Limitada is authorised and regulated by Comissão de Valores Mobiliários and Banco Central do Brasil. Western Asset Management Company Pty Ltd ABN 41 117 767 923 is the holder of the Australian Financial Services Licence 303160. Western Asset Management Company Pte. Ltd. Co. Reg. No. 200007692R is a holder of a Capital Markets Services Licence for fund management and regulated by the Monetary Authority of Singapore. Western Asset Management Company Ltd is a registered financial instruments dealer whose business is investment advisory or agency business, investment management, and Type II Financial Instruments Dealing business with the registration number KLFB (FID) No. 427, and members of JIAA (membership number 011-01319) and JITA. Western Asset Management Company Limited (“WAMCL”) is authorised and regulated by the Financial Conduct Authority (“FCA”). In the UK this communication is a financial promotion solely intended for professional clients as defined in the FCA Handbook and has been approved by WAMCL.
Global Total Return Composite

Composite Inception Date: 01/01/2006  |  Composite Creation Date: 03/31/2013

<table>
<thead>
<tr>
<th>No. of Accts</th>
<th>Gross Total Return</th>
<th>Net Total Return</th>
<th>Benchmark Total Return</th>
<th>Gross Total 3-Yr St Dev</th>
<th>Benchmark Total 3-Yr St Dev</th>
<th>Mkt. Value (US$mil)</th>
<th>Percentage of Firm Assets</th>
<th>Firm Assets (US$mil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>1</td>
<td>5.03%</td>
<td>4.41%</td>
<td>-a-</td>
<td>-a-</td>
<td>$83</td>
<td>0.02%</td>
<td>$510,172</td>
</tr>
<tr>
<td>2007</td>
<td>1</td>
<td>5.89%</td>
<td>5.26%</td>
<td>-a-</td>
<td>-a-</td>
<td>$88</td>
<td>0.01%</td>
<td>$621,493</td>
</tr>
<tr>
<td>2008</td>
<td>1</td>
<td>5.99%</td>
<td>5.57%</td>
<td>-a-</td>
<td>-a-</td>
<td>$93</td>
<td>0.02%</td>
<td>$505,660</td>
</tr>
<tr>
<td>2009</td>
<td>1</td>
<td>9.23%</td>
<td>8.58%</td>
<td>-a-</td>
<td>-a-</td>
<td>$94</td>
<td>0.02%</td>
<td>$482,218</td>
</tr>
<tr>
<td>2010</td>
<td>2</td>
<td>7.31%</td>
<td>6.67%</td>
<td>-a-</td>
<td>-a-</td>
<td>$91</td>
<td>0.02%</td>
<td>$453,909</td>
</tr>
<tr>
<td>2011</td>
<td>2</td>
<td>4.79%</td>
<td>4.17%</td>
<td>-a-</td>
<td>-a-</td>
<td>$98</td>
<td>0.02%</td>
<td>$443,140</td>
</tr>
<tr>
<td>2012</td>
<td>2</td>
<td>10.53%</td>
<td>9.88%</td>
<td>-a-</td>
<td>-a-</td>
<td>$95</td>
<td>0.02%</td>
<td>$461,891</td>
</tr>
<tr>
<td>2013</td>
<td>2</td>
<td>-0.98%</td>
<td>-1.57%</td>
<td>-a-</td>
<td>-a-</td>
<td>$84</td>
<td>0.02%</td>
<td>$451,632</td>
</tr>
<tr>
<td>2014</td>
<td>2</td>
<td>7.47%</td>
<td>6.84%</td>
<td>-a-</td>
<td>-a-</td>
<td>$82</td>
<td>0.02%</td>
<td>$466,036</td>
</tr>
<tr>
<td>2015</td>
<td>4</td>
<td>1.17%</td>
<td>0.57%</td>
<td>-a-</td>
<td>-a-</td>
<td>$361</td>
<td>0.06%</td>
<td>$433,747</td>
</tr>
</tbody>
</table>

Description: Western Asset's Global Total Return Composite includes portfolios that employ actively, team-managed investment approach around a long-term, value-oriented investment philosophy. The strategy utilizes an opportunistic fixed-income approach, independent of any traditional bond index benchmark, which seeks to maximize total return through active macro strategies and tactical asset allocation across the global fixed-income opportunity set. It does this primarily by identifying relative value among securities and sectors in the investment-grade global fixed-income and currency markets. Strategies employed include duration and yield curve positioning, currency allocation / hedging, relative-value trading as well as sector rotation and issuer selection; while emphasizing macro strategies.

Objective: Seeks to maximize total return consistent with the current market environment independent of market direction and outperform the global broad market over the course of a market cycle.

Benchmark Description: The Composite is not measured against a benchmark as accounts that may comprise the Composite are measured on an absolute return basis. There is no benchmark available that appropriately reflects the guidelines of all accounts within the Composite.

Base Currency: USD  |  Composite Minimum: No minimum asset size requirement.

Current Fee Schedule: .60 of 1% on the first $100 million, .40 of 1% on amounts over $100 million.

Examination Period: The Composite has been examined for the period from January 1, 2014 to December 31, 2015.

Western Asset claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Western Asset has been independently verified for the periods from January 1, 1993 to December 31, 2015.

Verification assesses whether (1) the Firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the Firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The verification and performance examination reports are available upon request.

For GIPS® purposes, the Firm is defined as Western Asset, a primarily fixed-income investment manager comprised of Western Asset Management Company, Western Asset Management Company Limited, Western Asset Management Company Pty Ltd., Western Asset Management Company Ltd, Western Asset Management Company Pte. Ltd, and Western Asset Management Company Distribuidora de Títulos e Valores Mobiliários (DTVM) Limitada, with offices in Pasadena, New York, London, Singapore, Tokyo, Melbourne, São Paulo, Hong Kong, and Dubai. Each Western Asset company is a wholly owned subsidiary of Legg Mason, Inc. ("Legg Mason") but operates autonomously, and Western Asset, as a Firm, is held out to the public as a separate entity. Western Asset Management Company was founded in 1971.

The Firm is comprised of several entities as a result of various historical acquisitions made by Western Asset, and their respective performance has been integrated into the Firm in line with the portability requirements set forth by GIPS.

The Composite is valued monthly. The Composite returns are the asset-weighted average of the performance results of all the accounts in the Composite. Gross-of-fees returns are presented before management fees, but after all trading expenses. Net of fees results are calculated using a model approach whereby the current highest tier of the appropriate strategy's fee schedule is used. This model fee does not reflect the deduction of performance-based fees. The portfolios in the Composite are all actual, fee-paying and performance fee-paying, fully discretionary accounts managed by the Firm for at least one full month. Investment results shown are for taxable and tax-exempt accounts and include the reinvestment of all earnings. Any possible tax liabilities incurred by the taxable accounts have not been reflected in the net performance. Composite performance results are time-weighted net of trading commissions and other transaction costs including non-recoverable withholding taxes. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.

The returns for the accounts in the Composite are calculated using a time-weighted rate of return adjusted for weighted cash flows. The returns for the commingled funds in the Composite are calculated daily using net asset values (NAV), adding back the funds' total expense ratio or equivalent. Trade date accounting is used since inception and market values include interest income accrued on securities held within the accounts. Performance is calculated using asset values denominated in a base currency. Composite market value at year-end presented in the schedule are translated to U.S. dollars using end of year exchange rates.

Composite returns are measured against a benchmark. The benchmark is unmanaged and provided to represent the investment environment in existence during the time periods shown. For comparison purposes, its performance has been linked in the same manner as the Composite. The benchmark presented was obtained from third party sources deemed reliable but not guaranteed for accuracy or completeness. Benchmark returns and benchmark three-year annualized ex-post standard deviation are not covered by the report of independent accountants.

Internal dispersion is calculated using the asset-weighted standard deviation of annual gross returns of those portfolios that were included in the Composite for the entire year. For each annual period, accounts with less than 12 months of returns are not represented in the dispersion calculation. Periods with five or fewer accounts are not statistically representative and are not presented. The three-year annualized ex-post standard deviation measures the variability of the composite and the benchmark returns over the preceding 36-month period. The three-year annualized ex-post standard deviation is not presented for periods where 36 monthly returns are not available for the composite or the benchmark. Any gross total three-year annualized ex-post standard deviation measures prior to 2011, included within the "Examination Period" identified above, are not covered by the report of independent accountants.

Past investment results are not indicative of future investment results.

Western Asset’s list of composite descriptions is available upon request. Please contact Jan Pieterse at 626-844-9977 or jan.pieterse@westernasset.com. All returns for strategies with inception prior to January 1, 2006 are available upon request.

For more information on Western Asset visit our website at www.westernasset.com