S. KENNETH LEECH
Chief Investment Officer

KENNETH J. WINSTON
Chief Risk Officer

Managing Risk in Changing Volatility Environments

Executive Summary

- Markets display distinct regimes of low volatility and of high volatility. They spend comparatively little time at the average.
- Managing risk across changes in volatility regimes is challenging: current risk levels have persistence and can't be ignored, but the possibility of a switch to a very different regime can't be ignored either.
- Western Asset uses both standard risk assessments (that project forward the current environment) and approaches that help understand possible behaviors in a changed risk environment.
- Among other techniques, we find that we can gain insights about changed risk environments from:
  - Scenario analysis, whereby a current portfolio is assessed in extreme environments, both historical and hypothetical
  - Fundamental analysis of the credit cycle, whereby we use forward-looking indicators of the credit cycle to help form a view as to when defaults will start to pick up
  - Examining market and instrument structure to determine where there can be price action that has a disproportionate disconnect from fundamentals in stressed environments
- The current risk environment is relatively calm. We do not expect it to stay this way, so we maintain vigilance by using such methods to evaluate risks to our portfolios.

Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is long past the ocean is flat again. —John Maynard Keynes

The Danger of Calm Seas

Managing investment risk may seem to be the most difficult when markets move rapidly and volatility is high. In practice, however, it is often low volatility environments that are more challenging to navigate. In these environments, backward-looking (ex-post) performance shows great risk-adjusted returns, while forward-looking risk estimates (ex-ante) look benign and scream "take more risk" to fully utilize available risk budgets. But the bigger risks may lie dormant below the surface calm of the markets. When Keynes's ocean is flat, we cannot simply expect it to stay that way.

Estimates of risk that project forward the current risk environment may be right for a while—perhaps for a long while—but then they will be very wrong. Therefore, special care is required to evaluate risk/reward tradeoffs when constructing portfolios in changing volatility environments. A prudent investment manager is quite humble about his or her ability to predict exactly what the future will bring. That should lead to staying alert even—especially—in the calm seas of a low-volatility environment. But the prudent manager should also have rock-solid confidence about his or her ability to predict that the low-volatility environment will end.

Unfortunately, this predictive confidence does not often extend to when or how. A low-volatility environment is not a no-volatility environment. As each frisson hits the markets, managers need to decide whether to sail through it or head for shore.

If the manager is right about what areas will have problems but is wrong about the timing, clients won't receive the appropriate performance. If the investment manager is right about the timing but is wrong about the cause of a volatility regime switch, the manager will take the wrong kinds of protective actions: think of insuring your house against fire the day before it gets hit by a flood. Because low-volatility environments can be prolonged, estimates of risk that assume markets will settle down after each shock can't be ignored. But because they end, analyses can't be restricted to that assumption; other metrics and scenarios that shed light on possible regime changes need to be examined.

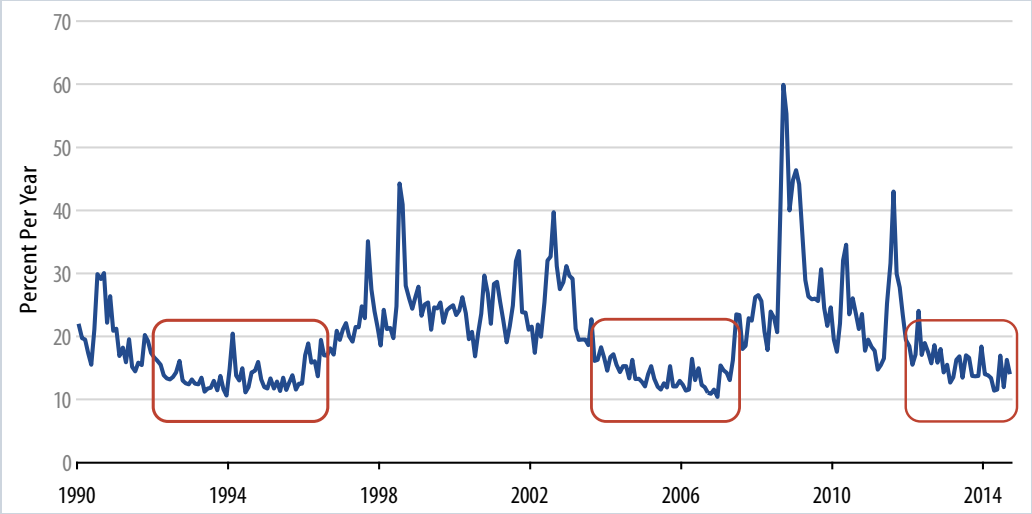
In this white paper, we'll describe some of the methods that Western Asset uses to manage risk in changing volatility environments. This topic will be explored in four sections:

- A Review of Volatility Regimes
- Case Study: Risk Assessments Not Influenced By the Current Environment
- Case Study: Analysis of the Credit Cycle
- Case Study: Disconnect Between Fundamentals and Prices

Volatility Regimes

Like the man whose head is in the oven while his feet are in the freezer, financial markets can display behavior that cannot be well understood by looking at averages. The unfortunate man may have a healthy average temperature but his longevity is limited. Financial markets have an average level of volatility, but that average is the result of long periods of apparent calm that are punctuated by more turbulent regimes.

Exhibit 1
US Stock Market Volatility – CBOE VIX® Index



Source: Bloomberg. As of 31 Oct 14

The average volatility level in Exhibit 1 is about 20, but note that the graph does not spend very much time at the average. Rather, there are prolonged periods of subdued volatility (circled in red) and complementary prolonged periods of heightened volatility. This is called "volatility clustering;" it's a phenomenon first noticed by Benoit Mandelbrot in 1963. It has been found in virtually every financial market studied since then.

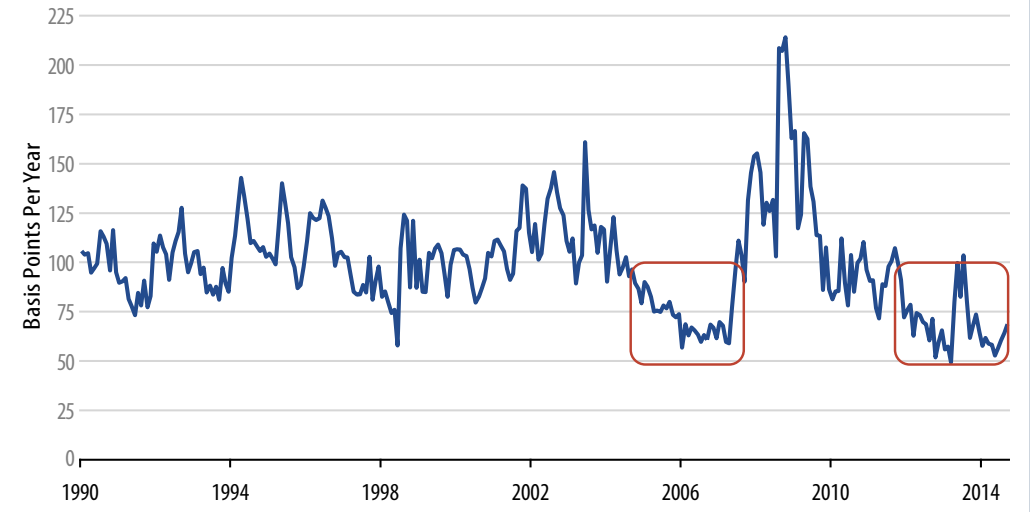
The two previous sustained low-volatility regimes in Exhibit 1 were the five years from December 12, 1991 to December 11, 1996 and the nearly four years from October 3, 2003 to July 25, 2007. The current low-volatility regime in equity—defined as a period when the CBOE VIX® Index is below 20 except for brief shocks—started on June 26, 2012 and has been underway for more than two years at this writing in December 2014.

One view of capital markets is that equity represents the "risk-on" end of the spectrum and interest rates represent the "risk-off" end. That is an oversimplification, but many capital market volatilities can be approximated by some combination of these two volatilities. Exhibit 2 therefore shows the complement to Exhibit 1, i.e. option-implied interest rate volatility.

Exhibits 1 and 2 show that equity and rate volatility have both been in a low regime since about 2012, with a brief interruption for the Taper Tantrum in mid-2013. The last time the two volatilities were simultaneously in a low regime ended—not at all happily—in 2007.

Exhibits 1 and 2 also show that low volatility does not mean no volatility. For example, October 2014 saw a vertiginous round trip in markets. From October 8 to October 24, 2014 US stocks went down 5% to an October 15 low, and then reversed course and moved back to almost exactly where they started. US Treasury 10-year rates dropped shockingly from 2.35% on October 8 to an intraday 1.86% on October 15—a

Exhibit 2
US Treasury Yield Volatility – Merrill Lynch MOVE© Index



Source: Bloomberg. As of 31 Oct 14

move of 49 basis points (bps), or equivalent to two Federal Reserve (Fed) easings. By October 24, rates were back roughly to where they started the ride, at 2.29%. Markets managed to come to terms with the end of the third round of quantitative easing (QE3) in the US and a downward oil price shock, but not without displaying a transient shock to volatility.

Both equity and rates experienced volatility spikes accompanying the October 2014 market moves. But, in the context of more systemic and lasting volatility episodes like the second half of 2011, these spikes barely register. And compared with the global financial crisis of 2007-2009, volatility that seemed terrifying in October 2014 would have been a welcome oasis of calm.

Is the low-volatility regime that started in 2012 coming to an end? This regime was the result of unprecedented policy experimentation. The US Federal Reserve, the European Central Bank (ECB); the Banks of England, Japan, and China; the Swiss National Bank; the Reserve Banks of India, Australia, and New Zealand—all extended various degrees of monetary accommodation (or threatened monetary accommodation) at various times.

In addition to policy experiments, geopolitical conflicts could trigger a shift. While this remains a possibility, our view is that the US will continue to have mildly positive growth and Europe will range between mild recession and just above stall speed. A Chinese slowdown is also occurring, but we think this will be manageable. We do expect an increase in volatility as the protective cover of Fed buying is removed and monetary policy reverts to normal,[1] but this should be mitigated by increasing activity by the ECB and Bank of Japan. We do not expect a sustained regime switch to the crisis levels of 2007-2009.

While the policy experiments play out, capital markets are, in many ways, failing to perform their job of reflecting the consensus estimates of market participants. A noticeable effect of massive money creation has been the repression of capital market volatility. Managing through these misleading markets requires customized techniques that won't be fooled by the manipulation.

1 US Federal Reserve Chair Yellen: "This normalization [of monetary policy] could lead to some heightened financial volatility." http://www.federalreserve.gov/newsevents/speech/yellen20141107a.htm

Time-Independent Risk Assessments

At Western Asset, we use a number of quantitative and qualitative tools to shed light on risks that may not be apparent in the current environment. One such tool is scenario analysis.[2]

We can take a portfolio that we now hold and "transport" it to a different environment. We can't transport the actual holdings; a fixed-income portfolio's holdings may not have existed in a past environment and might mature or expire in a future environment. Instead of transporting actual holdings, we transport general exposures when we do this type of analysis.

Historical scenarios allow us to estimate what would have happened if we had held a current portfolio in a turbulent past environment. Our thinking is similar to government aviation agencies that investigate crashes: no one expects the exact circumstances of a previous crash to be repeated, but we can learn a lot from studying these events.

We also apply hypothetical scenarios that we may think are unlikely, but less unlikely than standard statistics would indicate. For example, while we do not think that the eurozone will break up—instead, we believe that it will navigate through its problems, although not painlessly—we have tried to anticipate what might happen to rates, credit spreads, FX rates and other key variables if the eurozone were to break up. This is not an exact science—rational people can differ on how to instantiate the same qualitative narrative in numbers—but with care, we should be able to get a reasonable (although inexact) view of what might happen.

Exhibit 3 gives an example of a suite of scenarios for a Western Asset Global Credit portfolio.

We have grouped the systematic exposures in the portfolio into two broad categories: macro and credit. Macro exposures consist of rates, inflation, and currency; credit exposures comprise spreads from agencies and sovereigns; corporates; financials; emerging markets (EM); and asset- and mortgage-backed securities.

2 See *Managing Extraordinary Risk*, Western Asset white paper, February 2013.

Exhibit 3
Scenarios for a Western Asset Global Credit Portfolio

	Scenario	Rates	Agency / Sovereign Spreads	Corporate Spreads	Financials	Emerging Market	ABS/MBS	Inflation	Currency	Macro	Credit	Shock Total	Total inc Yield
Hypothetical	Growth Surprise	56	-14	46	101	-46	17	0	-5	37	118	156	161
	ECB Liquidity Support	-13	-8	23	73	-46	8	0	-2	-24	59	35	40
	Eurozone Controlled Breakup	-83	16	-40	-209	39	-17	0	-10	-77	-227	-304	-299
	European Continued Uncertainty	-22	16	2	-175	48	-17	0	-8	-14	-142	-156	-151
	Eurozone Disorderly Breakup	11	16	-87	-272	48	-17	0	-6	21	-328	-307	-302
Historical	1997 Asian Financial Crisis	-49	3	-15	-1	0	-31	0	-4	-51	-47	-99	-94
	1998 Russian Crisis	14	2	-65	-32	0	-31	0	-11	5	-128	-123	-118
	LTCM Collapse	-12	-0	-24	-10	0	-9	0	-2	-14	-43	-57	-52
	Lehman (Sep-Oct '08)	10	28	-82	-222	109	-30	0	-17	21	-225	-204	-199
	QE Tapering Fear 2013	15	4	-14	-19	14	-3	0	-9	10	-22	-12	-7
	Euro Crisis adds IT & ES 2011	-65	10	-32	-172	35	-14	0	-18	-73	-183	-256	-251
Desk	Desk Central +1SD	84	0	47	102	-29	24	0	25	109	143	252	257
	Desk Central -1SD	35	0	-11	-26	-5	-9	0	0	35	-53	-18	-13
	Desk Central Case	57	0	18	63	-17	8	0	12	69	71	141	146
	Desk Pessimistic	25	0	-47	-116	9	-8	0	-5	21	-162	-142	-137
	Desk Optimistic	54	0	43	75	-26	13	0	24	77	104	182	187
	Desk Stagflation	50	0	-36	-83	9	-1	0	-5	45	-111	-66	-61
	Desk EM Stress	29	0	8	-8	32	6	0	-10	19	38	57	62

Source: Western Asset. Results are in basis points of return

Some of the hypothetical scenarios shown were developed on a firmwide basis; these are applied (where possible) to many different Western Asset strategies across the world. Other hypothetical scenarios were developed in conjunction with the portfolio management and risk management teams working on a specific portfolio. For example, the "desk central" scenario shown in Exhibit 3 was developed by Western Asset's London credit portfolio management team in conjunction with the London risk management team. It expresses the desk's view of the most likely future financial course relevant to Global Credit portfolios. If that situation occurs, the last column of the table shows that we expect the portfolio to outperform its benchmark by 146 bps. The target alpha for the portfolio is 100 bps.

In addition to the central case, the portfolio and risk teams have developed two alternate scenarios for this strategy: a pessimistic case and an optimistic one. In addition, some possibly disturbing shocks have been played out in the numbers to reflect stagflation and EM stress. Although our portfolios have been positioned to succeed when there is no stagflation, we want to know how much downside there may be if this situation were to occur, both over a short- or long-term period.

The only way for us to position a portfolio so that it never underperforms the benchmark is to match the benchmark. If we take risk to get reward, there will necessarily be cases in which the portfolio underperforms. So we don't want to see portfolios that never underperform in any future scenario, but rather, want to determine whether or not there are scenarios for which the underperformance is unreasonable. What is unreasonable? That depends on the portfolio's risk tolerance.

One risk tolerance indicator is the portfolio's target tracking error to its benchmark. For the Global Credit portfolio analyzed in Exhibit 3, the target is 200 bps a year. That helps us put scenarios in context: the worst scenario shown in Exhibit 3 is a disorderly eurozone breakup, with a projected loss of 302 bps. The ratio of scenario loss to target tracking error is 302/200=1.5.

For comparison, the spread widening in the Bank of America-Merrill Euro Corporate Option-Adjusted Spread Index was 365 bps from June 2007 to November 2008. The standard deviation of spread changes in the year from June 2006 to June 2007 was 7 bps/year. The ratio—comparable to the 1.5 ratio of the previous paragraph—was a spectacular factor of 51.[3]

Thus, when we see a scenario as unlikely and as extreme as a disorderly eurozone breakup representing a far smaller ratio for the portfolio than for a general spread indicator, we do not feel that the portfolio is taking undue "tail risk" in this area. Of course, there could be another scenario that causes more damage, but across the unlikely-but-not-impossible suite of scenarios that we are considering, we do not see any unreasonable outcomes. This helps us to become more comfortable with the risks being taken, even if circumstances were to change.

The Inevitable End of the Credit Cycle

The credit cycle seems irrevocable. A crash occurs. Stung by non-performing loans and erosion of capital, lenders tighten standards so that even highly creditworthy borrowers struggle to obtain new funds. Economic activity is sharply lower than usual. However, eventually—as monetary stimulus kicks in and/or the banking sector recapitalizes—some enterprises begin to sputter back to life and some lenders emerge from their defensive shells. A reasonable Goldilocks period ensues when lending is neither too hot nor too cold.

But, as time passes and memories of the crash fade, the search for higher yield encourages a series of tiny steps away from prudent standards. No one step seems systemically threatening, but after some time, these

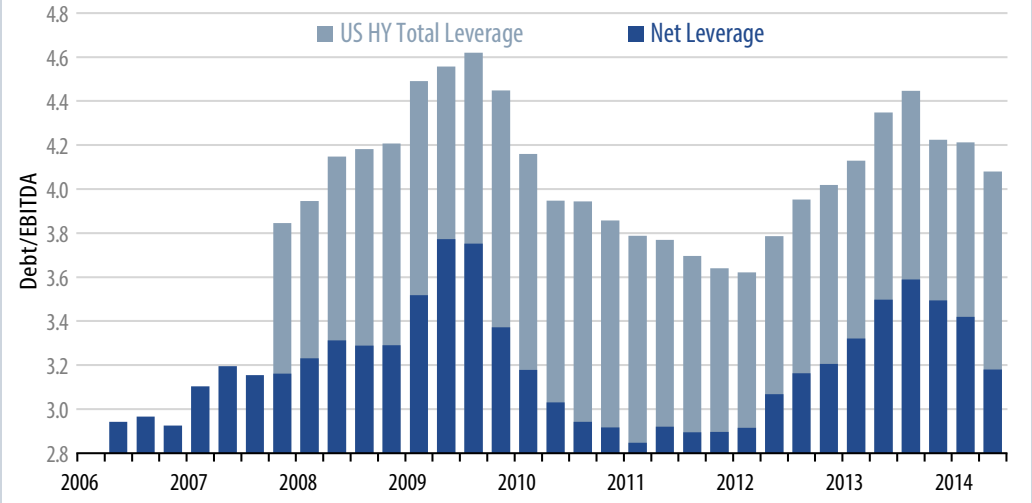
3 Bloomberg/BofA Merrill, spread series ER00.

steps cumulatively add up to a considerable distance. Loans are made for ventures that will succeed only in a rapidly growing economy. Eventually, the economy stutters slightly, and the feedback loop through risky ventures failing causes a crash. Repeat cycle.

This gloomy economic Groundhog Day process has been observed since the beginning of human recordkeeping. And from the dawn of civilization to this day, a common feature of credit cycle analyses is that they work quite well in hindsight. It's much harder to predict stage transitions in advance, or even contemporaneously. We can see that we're past the 2008 crash phase and out of the early recovery phase. Are we now in an early part of the Goldilocks period? Or are we actually past the Goldilocks period? What are the appropriate positions to take for the stage we are in, and what are the consequences if we're wrong?

These concerns occupy Western Asset's credit portfolio managers and credit risk experts. To supplement volatility-based analyses of credit risks, credit risk managers looked at a number of fundamental indicators of credit cycle progress. Exhibit 4 shows average leverage in the US high-yield market. The deleveraging phase triggered by the global financial crisis saw high-yield company total leverage decline from 4.6 in 3Q09 to the cycle low of 3.6 in 1Q12. Attracted by low interest rates and declining credit spreads, companies scrambled to issue debt as EBITDA growth was projected. Gross leverage reached 4.4 by 3Q13. As the projected EBIDTA growth was subsequently realized, leverage trended back down to reasonable levels. It should be noted that precise numbers differ depending on the source; Exhibit 4's source is Deutsche Bank.

Exhibit 4
Average Leverage in US High-Yield Market

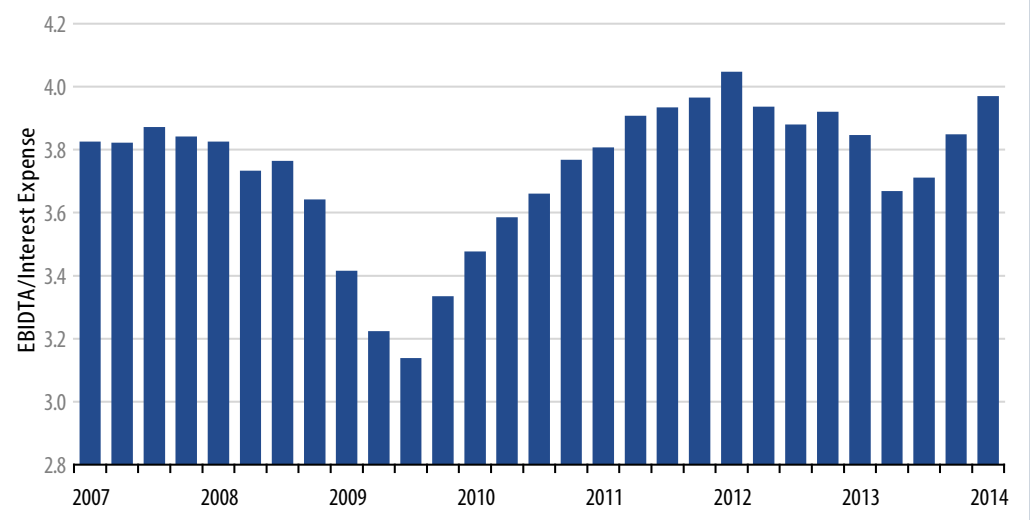


Source: Deutsche Bank. As of 30 Jun 14

Another benign indicator is shown in Exhibit 5. Interest coverage in US high-yield is close to the highest level since statistics began, largely a result of the ultra-low cost of debt.

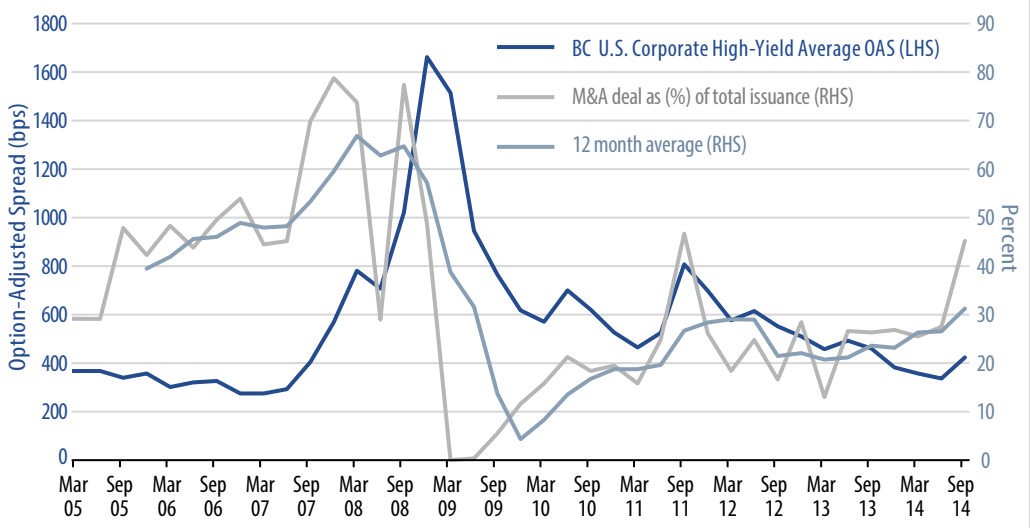
These headline fundamentals are comforting. But leading indicators of future risky outcomes can sometimes be found in measures of aggressive issuance. Issuance has been larger than normal, but when debt financing is used to refinance existing debts, working capital, or capex, it is not necessarily bad for bondholders. But when financing is used for dividend payments or mergers and acquisitions, it tends to increase default risk. As of September 30, 2014, issuance of high-yield bonds to finance mergers and acquisitions was rising, as shown in Exhibit 6.

Exhibit 5
Interest Coverage in US High-Yield



Source: Deutsche Bank. As of 30 Jun 14

Exhibit 6
High-Yield Index OAS vs M&A Issuance



Source: LCD. As of 30 Sep 14

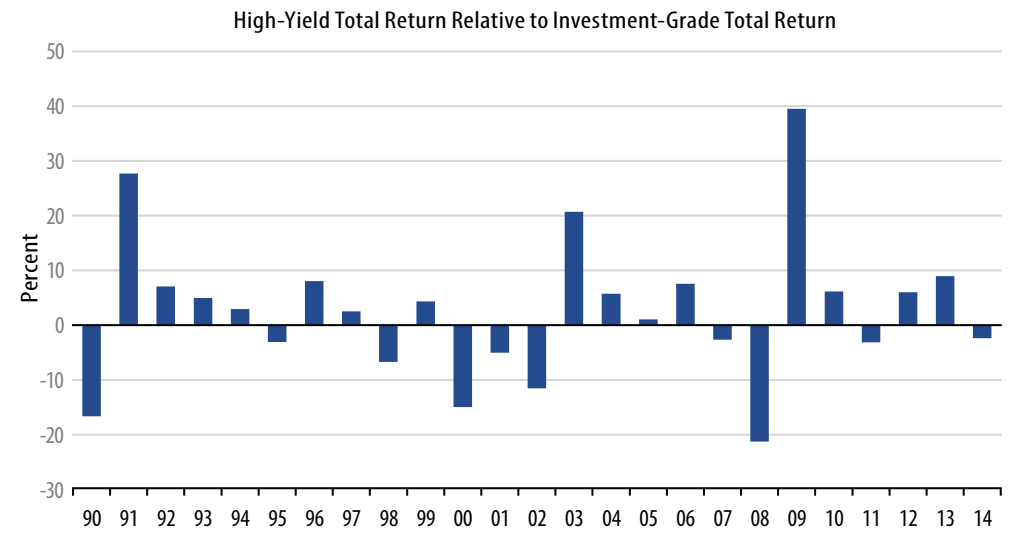
The trailing one-year average is rising but not yet at pre-crisis levels. This suggests a maturing of the credit cycle as lenders become less selective about what kinds of activities they will finance, but not yet to an unsustainable level. Other indicators of lender relaxation, such as leveraged buyouts, PIK (payment in kind) bonds; and covenant-lite loans, among others, suggest an aging Goldilocks period, although not yet the frothy levels seen before the 2007-2009 crisis. Thus credit-cycle indicators produce a mixed picture: not totally benign but not yet presaging an end to the cycle.

In a similar vein, Western Asset's Global Credit Committee regularly meets to consider the state of the markets, including the progress of the credit cycle. In a recent meeting, the Committee noted that credit spreads begin to widen well in advance of a pickup in defaults. The previous default spike in early 2009 is a clear example of this, and shown in Exhibit 7.

Exhibit 7
In the 2009 Cycle, Spreads Bottomed 2.5 Years Before Defaults Topped

Source: Barclays

Exhibit 8
High-Yield Typically Outperforms Investment-Grade Early in a Cycle, But Not Necessarily in Back Half



Source: Barclays

The Committee also noted that higher beta credit moves first as the cycle shifts, as shown in Exhibit 8.

Western Asset believes that investors need to guide their portfolios through a credit cycle with a strong view of what the environment will be like six to nine months out. Given the lead-lag relationship between credit pricing and credit fundamentals, we need to keep looking for any inflection points that suggest default risk will be building. At this writing, we don't yet see these inflection points in the nine-month window. In our view, the current (December 2014) backdrop for credit remains favorable. We expect the strong underlying corporate fundamentals that drove the impressive returns enjoyed by credit investors since the recovery started in 2009 to remain in place for the near future.

When we begin to think that the environment six to nine months forward will show decay, we will need to become much more defensive. Indicators such as those cited above (leverage, interest coverage, issuance type, and many others) will be taken into account to help us anticipate the turn. We believe that the severity of the 2007–2009 experience is likely to cause an overreaction in terms of managerial oversight and risk avoidance behavior when the turn does occur. While we think this cycle will be prolonged, we do not think that the credit cycle has been repealed.

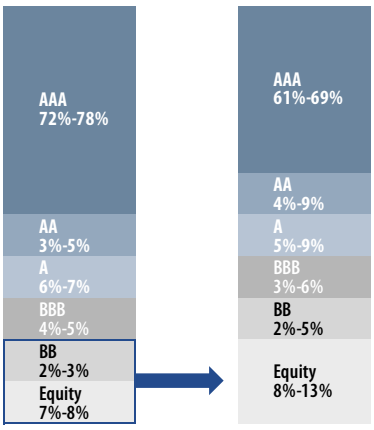
The Disconnect Between Fundamentals and Pricing

Keynes was a quotable fellow. We opened this paper with words about calm and stormy seas, but perhaps his most famous quote is the rueful observation that, "The market can stay irrational longer than you can stay solvent." This was based on his own—highly leveraged—trading experiences. But the spirit of the observation transcends leveraged strategies. Like all other market participants, Western Asset's clients have varying degrees of risk tolerance: some can wait a long time for a solid investment thesis to manifest itself in market prices. Others cannot.

Solvency in a leveraged world translates to risk tolerance in an unleveraged world. Our version of Keynes's sentiment might be:

If you exceed your client's risk tolerance, the market can stay irrational longer than your client will stay with you.

Exhibit 9
CLO Structure: 2.0 vs Legacy



Key Changes Expected in the New CLO Structure

Leverage
- 8-12x leverage vs 10-13x in 2006-2007 vintage transactions
- ~10%-15% additional subordination to "AAA"

Reinvestment Period
- 3-4 years vs 5-7 years in 2006-2007 vintage transactions

Portfolio Construction
- Focus on liquid, broadly syndicated, first lien, senior secured loans
- No structured product exposure
- 2014 deals that are Volcker compliant do not allow bonds

Capital Structure and Certain Terms Comparison

Deal Term/Feature	1.0 (Legacy)	2.0 (New Issue)
AAA Subordination (par basis)	22%-26%	35%-42%
AAA Par Coverage	125%-135%	[150-170]%
AAA Pricing	LIBOR + 22-25 bps	LIBOR +145-165 bps
Mezz/Sub tranches	Distributed via capital markets; little manager retention	Portion of equity tranche likely retained by manager
Reinvestment Period	6-7 years	3-4 years
Non-Call Period	3 years	1.5-2 years
Min. 1st Lien Assets	80%-85%	90%+
Max Non-1st Lien Assets	10%-20%	<10%
Caa/CCC Assets	10%-15%	<10.0%
High Yield Bonds	10%-20%	5%-10% (0% Volcker compliant deals)
Structured Products	3%-5%	0%

Source: Morgan Stanley

It may not be as catchy as Keynes's version, but it does capture the focus of our risk management program: we want to align the degree of reward-seeking in client portfolios with the degree of risk-taking that each client expects.

A case in point: Western Asset has found value for many clients in collateralized loan obligations (CLOs). We are both an originator of CLOs and a buyer of CLO tranches. Post-crisis, these collections of bank loans have been significantly strengthened. CLO version 2.0 is shown in Exhibit 9. In addition to increased structural protection, there is increased transparency into the collateral. When buying CLO tranches, Western Asset is taking advantage of this increased transparency when its analysts inspect the collateral.

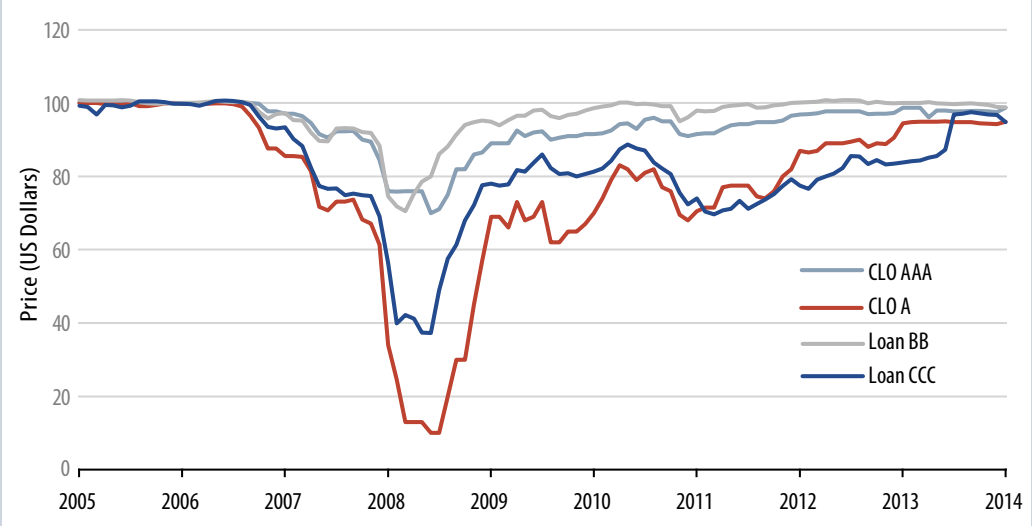
Structured credit mimics the structure of a corporation, where the less senior claims on corporate assets (equity, preferred) support the more senior claims (senior and secured debt). The assets of a corporation are facilities and equipment, intellectual property, reputation, etc.; the assets of structured credit securities are loans, bonds, mortgages and other credit instruments. In particular, the "assets" (normally called collateral) of a CLO are below-investment-grade secured loans that banks make to corporations.

How can below-investment-grade loans become AAA securities? If you buy the AAA tranche of a post-crisis (version 2.0) CLO, a minimum of 34% (and up to 42%) of the underlying loans have to get completely wiped out with no recovery before your security is affected. The worst high-yield default rate ever—during the Great Depression—was less than half of that.[4] And there is usually substantial recovery after default, especially since bank loans are secured by specific assets. Below AAA tranches are tranches decreasing in credit rating as the subordination decreases. But given the strengthening of the post-crisis CLO structures, a replay of the global financial crisis would not impair the collateral of any tranche that is BB rated or higher.

So the fundamentals of these products can be very good if they pass our credit analysis. But we know that prices of structured finance vehicles were badly affected by the global financial crisis. We also know that, due to post-crisis regulation, dealer capital is much thinner than pre-crisis. Could there be a technical run on CLOs when volatility returns to the market? Consider Exhibit 10.

4 *Annual Default Study: Corporate Default and Recovery Rates, 1920-2013.* Moody's Investor Service. Exhibit 30. The year 1933's speculative-grade default rate was 15.756%, the highest ever in the study.

Exhibit 10
CLO and Loan Index Levels



Source: S&P/LSTA, Bank of America, Morgan Stanley

The red line on the graph shows the price of A rated CLO tranches through the crisis. They started close to 100 in 2006. At the depths of the credit crisis, these investment-grade securities fell to about 10 cents on the dollar. It took about five years (until early 2013) for them to recover fully. In fact, the fundamentals had been sound, but the price action for CLOs was shocking. Compare that with CCC loans—decidedly sub-investment-grade—shown by the blue line. They only fell to about 35 cents on the dollar. Their fundamentals were worse, but their crisis behavior was better. The penalty for the opacity of crisis-era structured finance was enormous.

This is an opportunity wrapped in an enigma. In a future turbulent environment, what will triumph? The better fundamentals and transparency of CLO 2.0s? Or will the decreased liquidity of secondary market fixed-income trading—the result of increased regulatory demands on dealer capital—cause CLOs to go into freefall as they did in the credit crisis?

Our view is that properly analyzed CLOs can provide significant value to clients, but that the agency credit ratings are doubly misleading. The fundamentals of many CLOs are probably better than the ratings would indicate, while the possible price action in a turbulent environment could be worse until the market steadies itself. To deal with these conflicting influences, the risk management and portfolio management groups undertook a review of portfolio risk tolerances. Sensitive portfolios that might not be able to ride out a pricing storm while waiting for the solid CLO fundamentals to emerge were identified; these portfolios were directed to other opportunities even when the CLO tranche's rating would allow it to be purchased in that portfolio. Portfolios with the appropriate risk tolerance, on the other hand, are allowed to take advantage of the risk premia built into CLO pricing.

Conclusion

Across virtually all global fixed-income markets, we have seen a prolonged period of subdued volatility. Markets are never entirely calm and there have been episodes of volatility spikes, but these have not persisted to the levels seen in global risk spikes such as the latter half of 2011, and certainly not to the levels of the global financial crisis of 2007-2009.

Paradoxically, this lower-risk environment makes it more difficult to manage risk. Standard risk measures that project forward the current environment are informative for as long as the current environment persists. That can be a long time; previous lower-volatility environments have lasted for years. But eventually, such environments end. We must use a more comprehensive toolbox to assess the risks in our portfolios under regime change.

We showed three examples of the techniques that we use at Western Asset:

- We evaluate scenarios whose results do not depend on the current volatility environment.
- We estimate where we are in the credit cycle. Currently we expect a prolonged credit cycle, but we continue to monitor market-independent measures of fundamental credit behavior to get a forward look at when credit spreads may start to react.
- We identify instruments with very solid fundamentals that may display an unusual disconnect between those fundamentals and pricing. For some clients these instruments are opportunities to be seized, but for others with lower risk tolerances these are avoided.

These techniques all use information that is exogenous to the current market environment and are necessary because unprecedented global policy experiments have distorted the usual signaling of consensus future expectations that markets usually provide. The ocean is relatively flat now, but it will not stay that way.

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.

Western Asset Management Company Distribuidora de Títulos e Valores 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.