Goldman Sachs Asset Management

White Paper
February 2014

The Role of Alternatives in the Age of Volatility: Redefining Diversification for Defined Contribution Plan Participants

At Goldman Sachs Asset Management, we partner with institutions and their advisors every day to deliver thoughtful, dependable solutions to help participants achieve financially secure retirements.

Executive Summary

The shift from defined benefit (DB) pension plans to defined contribution (DC) plans as the primary vehicles for retirement savings has been well documented.[1] Since the passing of the Pension Protection Act of 2006 (PPA) that introduced qualified default investment alternatives (QDIA), the majority of participants are now investing their retirement savings in larger, professionally managed target date funds which, according to Callan, captured roughly 70% of all plan flows as of the end of the third quarter of 2013.[2]

This ongoing "institutionalization" of DC plans comes in the midst of the most recent financial crisis; a period of time characterized by several years of significant market volatility. These factors may have DC plan sponsors asking important questions about whether plan participants should be able to access the same breadth of diversification historically available to defined benefit plan investors.

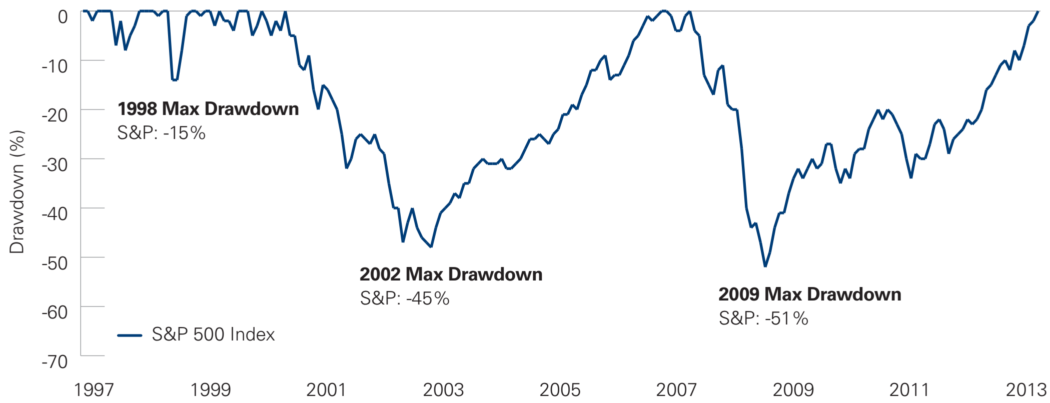
[1] Defined Contribution Institutional Investments Association ("DCIIA"): *Institutionalizing DC Plans: Reasons Why & Methods How*, October 2011.

[2] Callan DC Index, September 30, 2013

Volatile markets point to a new way forward

Amidst the market turbulence of the recent past, some DC plan sponsors may have seen firsthand the negative impacts that market volatility and drawdowns had on participants approaching or already in retirement. At the same time, they may also have taken notice of research indicating that DB plans have historically outperformed DC plans on average of 1% annually.[3]

Exhibit 1: S&P 500 Drawdowns 1997 – 2013



Source: Bloomberg, GSAM. The S&P 500 Index is the Standard & Poor's 500 Composite Index of 500 stocks. **Past performance does not guarantee future results, which may vary.**

Non-traditional investing in today's market

The majority of DC plan assets have been invested in a relatively small number of asset classes to date including target date funds, large-cap US equity, core fixed income and capital preservation options (predominantly stable value funds). According to the Callan DC Index, among these categories, over 65% of DC assets in the plans that comprise the Index are allocated to equity.[4]

This concentration in equity, as just one example, could present potential concerns if one considers the volatility of the equity markets over the past 15 years. Market drawdowns in certain years were substantial and potentially damaging to some participants' ability to retire on schedule or meet their retirement income needs. Those who solely looked to traditional fixed income options to act as their plan's risk-mitigating investments may wish to review this approach as well due to the possibility of rising rates in bond markets. Whether because of equity market volatility or heightened risk in the traditional fixed income space, sponsors may be looking closely at whether there could be benefits to further diversifying these more traditional allocations.

Notwithstanding these considerations, non-traditional and alternative asset classes remain a small part of participant portfolios on average. This is the case despite the long-term challenges that some plan participants may face, including the threat of market volatility and the deteriorating effects of inflation. Participants may find potential benefits in using a broader range of asset classes that may provide new opportunities for growth and income, mitigating the impacts of inflation and managing risk in their retirement portfolios.

[3] P&I, GSAM analysis; Towers Watson. As of February 2011. Represents asset allocations as of September 2010

[4] Callan DC Index, September 30, 2013

Diversification can mean different things to different people

Mindful of the challenges facing employees who are trying to save and invest for the future, some sponsors are starting to explore a more diverse range of investment exposures to offer in their plans. Those who sponsor both DB and DC plans may already understand that adding certain asset classes to a traditionally invested portfolio of equities and fixed income could help mitigate risk, provide access to potential return generation, and offer opportunities to help participants counter the effects of inflation.

It's a big world out there…

Given the composition of many DC plan investment menus, it's important to acknowledge that the universe of what might be considered "non-traditional" or "alternative" assets by plan sponsors is broad and diverse. For some, it may include fairly common assets such as REITS or TIPS that might be found in the portfolio of many individual investors. Some larger plans that already offer access to exposures like these or commodities, for instance, may now be exploring whether the potential benefits of hedge fund strategies or private equity can be made available.

Regardless of where they stand today, sponsors face important questions when it comes to expanding the range of asset classes on their plan's menu:

- Which asset classes are suitable for my plan?
- How do I provide exposure to these asset classes to help employees invest in ways that are best suited to their individual needs?
- Are there ways to provide access to broader diversification without overwhelming participants with too many new investment options?
- How do I address the need for daily valuation and liquidity?
- How do I balance diversification benefits and potential cost increases?
- How can I incorporate alternatives as part of a custom target date or target risk fund or managed account?
- How will I educate participants about new menu options or new strategies?
- What legal and regulatory considerations may limit the types of funds that I can add to the plan menu?

These are all important questions. The good news is that developments in the investment marketplace may help. For instance, the emergence of bundled or multi-asset class funds as well as liquid alternatives funds may suit the seemingly competing objectives of providing access to non-traditional asset classes without overcrowding a plan's menu. Similarly, an increase in the use of custom target date and target risk funds and so-called "white label" funds can provide plan sponsors with greater control over how asset class exposures are made available to their employees. Given these developments, the time may be right for plan sponsors and their consultants to reconsider how they define and deliver diversification in DC plans.

Investing in alternatives amidst many options

Any exploration of diversifying asset classes for DC plans should start with a close look at the needs of participants. Offering access to alternatives could be a challenge when certain asset classes or the ways in which they are offered might be considered too risky or volatile, too complicated, or maybe just too expensive. For instance:

Sponsors and participants want menus that offer:	But certain options:
▪ attractive risk-adjusted performance ▪ inflation mitigation ▪ low correlation to US equities and bonds ▪ daily liquidity ▪ simplicity ▪ characteristics not found elsewhere in their current investment menu	▪ may be too volatile ▪ only satisfy a single investment objective ▪ could contribute to overcrowding on a menu ▪ might result in imprudent "over-weighting" in participant portfolios ▪ may not be cost efficient ▪ may be too complicated as stand-alone options

Keeping these needs and considerations in mind can provide a foundation to evaluate available asset classes and consider ways in which they could be made available on a DC plan investment menu.

What's the difference?

Creating a more diversified DC portfolio requires a disciplined process that should consider both accessing the expanding global economy as well as so-called "niche" asset classes which, supported by increased liquidity and standardization, have gained market depth in recent years. Investment selection should involve consideration of a number of factors, including whether or not an asset class has low-to-moderate correlation with developed market equities and US bonds, attractive risk premiums, inflation mitigation potential, sufficient liquidity, efficient accessibility, and eligibility to be held in a tax-advantaged account.

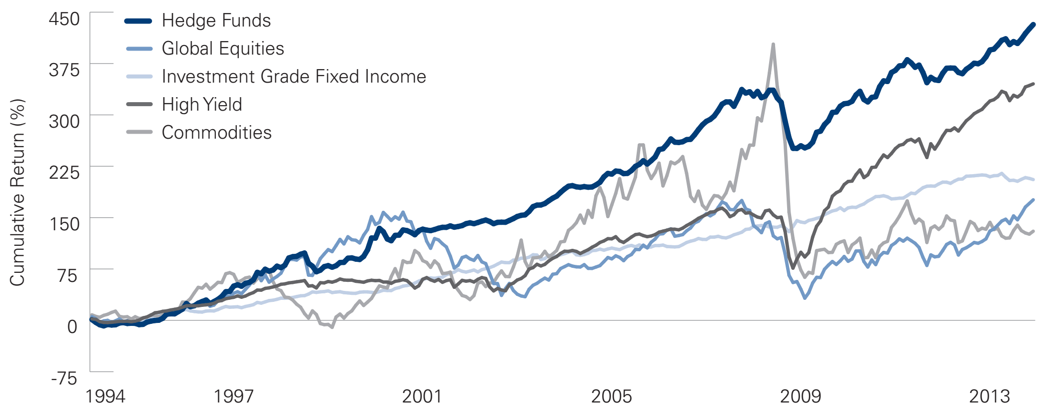
Returns

We can begin by looking at comparative historical returns for different asset classes. Diversified returns can potentially provide growth and alleviate reliance on long-term equity performance. Many traditional portfolios have been associated with a certain amount of equity risk as their primary source of returns. The value of these returns has varied over time and future average returns are impossible to predict. However, volatility in the equity markets in the past two decades alone may be driving DC plan sponsors to look for additional sources of potential return as complements to more traditional equity and fixed income options in their investment menus or default options.

One way to access sources of return that are meaningfully different from developed equity is through non-traditional or alternative asset classes. Some of these asset classes may have even better risk-adjusted expected returns than developed equity, potentially rendering portfolios even more efficient in the long run. Comparing a handful of these asset classes may help provide some initial perspective.

Comparing cumulative returns for a range of asset classes

Exhibit 2: Comparative Cumulative Returns 1994 – 2013



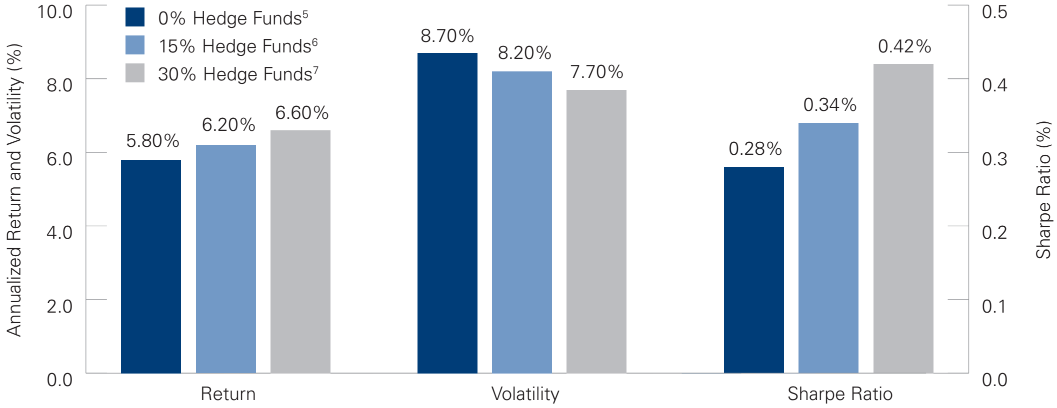
Source: GSAM, Bloomberg, and Credit Suisse. As of May 2013. Hedge Funds is Dow Jones Credit Suisse Hedge Fund Index. Global Equities is MSCI World Index Hedged USD. Investment Grade Fixed Income is Barclays Aggregate Bond Index. High Yield is Merrill Lynch US High Yield Master II Index. Commodities is S&P GSCI Total Return. For illustrative purposes only. It is not possible to invest directly in an unmanaged index. The information shown herein should not be relied upon as representative of actual or future returns for any Goldman Sachs products. **Past performance does not guarantee future results, which may vary**.

Offering exposure to more sources of potential return may lead to a higher total return. If we look back to the mid-90s (when the most relevant index data became available), alternative investments, including hedge funds and private equity, have outperformed major traditional asset classes over time. The relative steadiness of the cumulative return line in *Exhibit 2* indicates that, historically, performance has also been somewhat less volatile than other asset classes. On a risk-adjusted basis, therefore, alternative investment returns appear potentially more attractive.

Differentiated drivers of return

Why do some alternatives behave differently than more traditional investments? Certain alternative investments have fewer investment constraints and can therefore provide access to investment opportunities which are outside the scope of traditional investment strategies. For example, a hedge fund is able to go long or short, or use derivatives to implement a particular view. These investments therefore tend to have a low correlation to other components of a traditionally allocated portfolio. Given the differentiated performance highlighted in *Exhibit 3*, even a moderate allocation to hedge funds may result in better portfolio diversification, potentially improved risk-adjusted returns and a higher Sharpe ratio.

Exhibit 3: Annualized Return, Volatility & Sharpe Ratio January 1994 – November 2013



Source: GSAM, Bloomberg, and Credit Suisse. Performance period is January 1994 – November 2013. These performance results are backtested based on an analysis of past market data with the benefit of hindsight, do not reflect the performance of any GSAM product, and are being shown for informational purposes only. Simulated performance results do not reflect actual trading and have inherent limitations. No representation is made that a client will achieve results similar to those shown. These examples are for illustrative purposes only and are not actual results. If any assumptions used do not prove to be true, results may vary substantially. For illustrative purposes only. Past performance does not guarantee future results, which may vary. This information discusses general market activity, industry or sector trends, or other broad-based economic, market or political conditions and should not be construed as research or investment advice. Please see additional disclosures.

Volatility and risk mitigation

It could be useful to start by looking at correlation generally and volatility specifically. Assets with lower correlation to traditional categories may move in directions that could soften the impact of movements in those traditional markets. One important way in which alternative investments have managed to outperform other asset classes has been they way they have performed in negative markets relative to the S&P 500. Hedge fund drawdowns have often been shorter and shallower than comparable drawdowns experienced by equity markets. For example, while some equity markets were still trading below their late-2007 highs, the hedge fund industry recovered from the financial crisis drawdown in October 2010. Relative performance was even better through the technology crash and bear market of the early part of the last decade, a period during which the MSCI World lost 48% of its value and the hedge fund industry gained 10%.

[5] Performance represents a blend of the MSCI World Index Hedged USD (60%) and the Barclays Aggregate Bond index (40%).

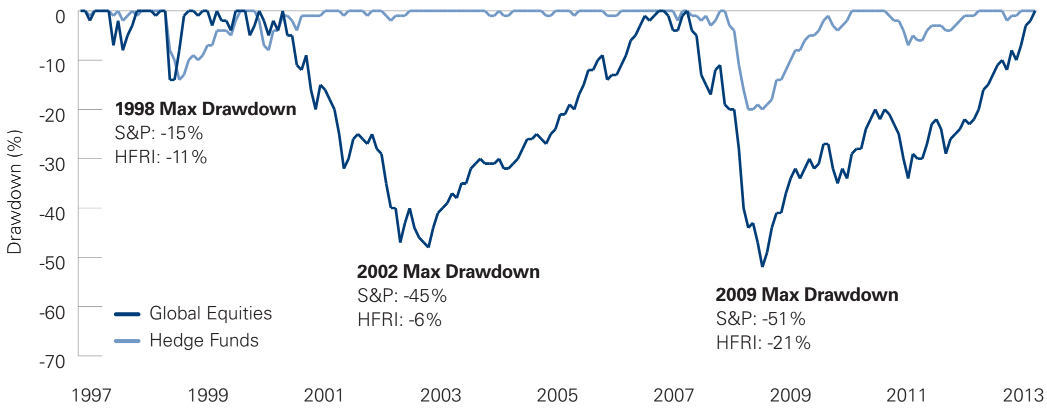
[6] Performance represents a blend of the MSCI World Index Hedged USD (51%), the Barclays Aggregate Bond index (34%), and Dow Jones Credit Suisse Hedge Fund Index (15%).

[7] Performance represents a blend of the MSCI World Index Hedged USD (42%), the Barclays Aggregate Bond Index (28%), and Dow Jones Credit Suisse Hedge Fund Index (30%).

This information discusses general market activity, industry or sector trends, or other broad-based economic, market or political conditions and should not be construed as research or investment advice. Please see additional disclosures. **Past performance does not guarantee future results, which may vary.**

FOR PLAN SPONSOR / FINANCIAL INTERMEDIARIES USE ONLY—NOT FOR USE AND / OR DISTRIBUTION TO RETAIL CLIENTS OR THE GENERAL PUBLIC

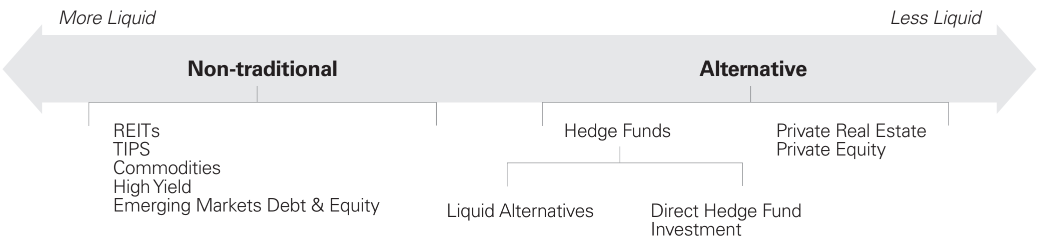
Exhibit 4: Comparative S&P 500 and Hedge Fund Drawdowns 1997 – 2013



Source: Bloomberg, GSAM. The S&P 500 Index is the Standard & Poor's 500 Composite Index of 500 stocks. Hedge Fund Drawdowns is Dow Jones Credit Suisse Hedge Fund Index. Past performance does not guarantee future results, which may vary.

Liquidity

Given its importance for plan participants, liquidity is an essential element in considering the range of available, diversifying investment options in the marketplace. One way to categorize the range of options in the market place is as follows:



Source: GSAM

Depending on a plan's needs and how certain asset classes are implemented on a menu, the relative importance of liquidity may differ from case to case. However, taking it into account towards understanding how to arrive at a range of options for closer consideration should be useful for plan sponsors.

Narrowing the playing field

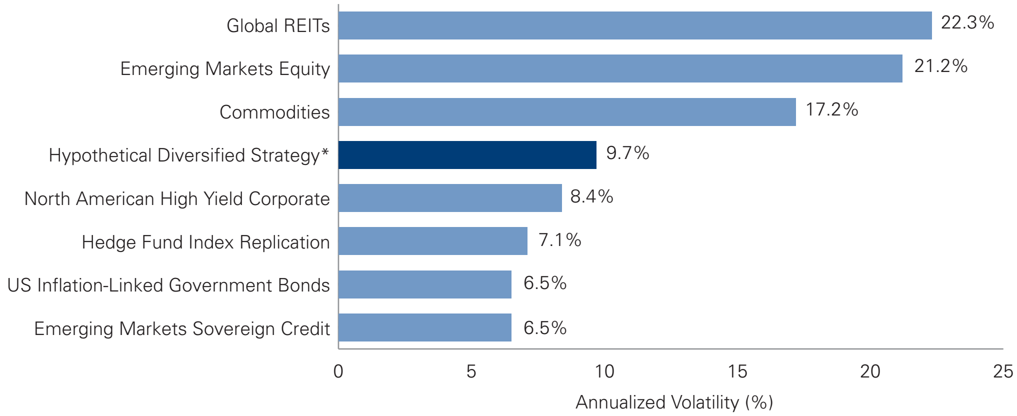
After thoughtfully evaluating a broad range of factors, sponsors should consider identifying which asset classes can be most complementary to their current plan menu. Then they might consider the most efficient way to offer exposure to the asset classes they choose.

Broadly diversified strategies

For certain plans and their participants, the most efficient approach to diversifying available exposures in a DC plan menu might be through the use of a single, broadly diversified strategy. This approach could address a range of needs for plans seeking to offer diversification to their participants without necessarily adding multiple, additional options to a lineup. Theoretically, such a strategy could combine a broad range of asset classes, each one potentially delivering certain characteristics intended to complement those of a traditional portfolio, including real return, non-traditional growth and income, inflation mitigation, and/or lower volatility.

Employed separately, one alternative asset class or another might be too volatile or expensive or may not provide enough potential benefit on its own to add to a plan's investment menu. Additionally, there may be legal or regulatory challenges (e.g. securities law, ERISA, etc.) to offering a particular asset class or fund as a standalone investment menu option. However, bundled with other types of investments, it may be able to play a role. In the following example, we compare the annualized volatility of some individual asset classes not traditionally found on DC plan menus with that of a hypothetical diversified strategy that invests in all of these same asset classes, equally weighted across the portfolio.

Exhibit 5: Annualized volatility of a hypothetical diversified strategy vs. individual asset classes (Dec 31, 2003 – Dec 31, 2013)



*The hypothetical diversified strategy is an equally weighted portfolio of Global REITs, North American High Yield Credit, Hedge Fund Index Replication, Commodities, US Inflation-Linked Government Bonds, Emerging Markets Sovereign Credit and Emerging Markets Equities, rebalanced on a monthly basis. The Global REITS index is the Dow Jones Global Select Real Estate Securities Index. The EM Equity index is the MSCI Emerging Markets Index. The Commodities index is the Dow Jones-UBS 3 Month Forward Commodity Index. The North American High Yield Credit index is the Markit CDX North American 5-Year Index. The US Inflation-Linked Government Bonds index is the Barclays Capital US Government Inflation-Linked Bond Index. The EM Credit index is the Markit CDX Emerging Market 5-Year Total Return Index.

Source: GSAM, Bloomberg. For illustrative purposes only. The volatilities of the simulated non-traditional portfolio were created with the benefit of hindsight using the allocations determined from our portfolio construction methodology. Any changes will have an impact on the simulated performance results, which could be material. Simulated performance results do not reflect actual trading and have inherent limitations. No representation is made that a client will achieve results similar to those shown. These performance results are backtested based on an analysis of past market data with the benefit of hindsight, do not reflect the performance of any GSAM product and are being shown for informational purposes only. Please see additional disclosures.

The hypothetical diversified strategy in *Exhibit 4* had notably lower relative volatility than some of the individual asset classes that comprise it. At the same time, it includes asset classes that seek to provide more than simply volatility dampening. TIPS and Commodities, for example, may help mitigate the impacts of inflation, an important investment objective for many DC plan participants trying to outpace inflation over long time horizons. Such a hypothetical diversified strategy could potentially provide simulated returns well in excess of CPI, with higher expected return vs. risk compared to TIPS, commodities, or REITs used on a standalone basis and with mitigated downside risk due to the breadth of the asset classes included.

Liquid alternatives strategies

Increasingly common in today's investment marketplace, if not DC plans themselves yet, are strategies that seek to provide access to certain alternative asset classes while at the same time offering daily liquidity and valuation. The mutual fund industry generally has experienced rapid growth of funds classified as "liquid alternatives"—i.e., funds seeking to offer the differentiated return characteristics of hedge funds, but with the daily liquidity of mutual funds. Today, there is more than $196 billion invested in liquid alternatives, compared to $92bn in 2009, with more such funds being launched with some regularity.[8] Liquid alternatives provide investors access to the potential portfolio benefits afforded by hedge funds but with the accessibility, governance, regulatory oversight, and daily liquidity of a mutual fund. The traditional barriers to entry for hedge funds, including high investment minimums, high fees, lack of transparency, and illiquidity, may be abated by this fast emerging category of alternatives.

Recent examples include strategies that take the form of a multi-manager approach in which an asset manager allocates capital among several managers of similar alternatives strategies in order to diversify manager risk and returns. In other instances, a fund may allocate investors' capital amongst several managers using different strategies to more broadly diversify risk and tap into more diversified return potential.

Industry trends have pointed towards an understanding that traditionally "institutional" capabilities may have a role to play in DC plans. One dimension of this may be providing participants exposure to the volatility dampening and return potential that some defined benefit plan managers have turned to in the past, namely hedge funds. The growth in liquid alternatives funds may signal a growing recognition by some plan sponsors that investment options exist that can provide their employees access to diversified exposure without necessarily sacrificing liquidity or valuation.

Illiquid alternatives

Probably least common in the DC arena today is direct investment in private alternative investments, including hedge funds, private equity, and private real estate funds. These types of investments can be found in institutional defined benefit portfolios and have been historically strong providers of absolute return. While still rare, there are a growing number of plan sponsors exploring ways to take advantage of the potential benefits these kinds of investments can provide. In certain cases, these investments might be used by large, institutional plans within custom target date, target risk, or "white label" asset category funds.

In the case of custom target date and target risk funds for example, the size of the fund for some larger plans may present managers with the opportunity to allocate a percentage of the total portfolio to a direct investment in an alternative strategy. Theoretically, this might be able to be done while still being able to meet the liquidity and valuation needs of the fund by relying on other, more liquid components that comprise a larger percentage of the fund's holdings.

Custom or "white label" funds may be able to function similarly. One example might be a large, custom equity or real estate fund that invests some portion of the fund's assets in a private equity or real estate strategy to help enhance the total return of the fund, while the remainder of the fund might invest in publicly traded securities. Tailored to the needs of large plans, funds such as these may also be constructed using some kind of liquidity buffer in order to support a plan's distribution needs.

---

[8] Source: Morningstar as of December 31, 2013. Includes funds categorized by Morningstar as Trading-Inverse Commodities, Trading-Inverse Debt, Trading-Inverse Equity, Trading-Leveraged Commodities, Trading-Leveraged Debt, Trading- Leveraged Equity, Trading-Miscellaneous, Volatility, Managed Futures, Multialternative, Market Neutral, Long/Short Equity, Multicurrency, Single Currency, and Bear Market. Includes funds of funds and ETFs. Past performance is not guarantee of future results.

Direct investments alone may present certain challenges for plan sponsors. The most common issues are daily liquidity and valuation which are less prevalent among private investments and of great importance to DC plans. Additionally, certain funds may require capital commitments over time or place limits on withdrawals of capital. In some cases, there may be risks associated with these funds that may result in their use being limited to targeted allocations in much larger, custom investments. When evaluating the use of these more illiquid strategies, sponsors would be well served by careful review and a thorough analysis of the potential benefits, risks and other considerations associated with each one.

Additional food for thought

The addition of alternatives to a plan's investment menu involves more than just a thorough examination of the potential benefits and risks of any one investment. Costs, participant education, and legal and regulatory considerations should be accounted for as part of a plan fiduciary's review.

- **Costs** for alternative investments can vary widely depending on a range of factors. The types of investments and how they are implemented as well as the size of a plan can impact the costs associated with new menu options. In light of fee disclosure rules for DC plans, it's also important to think about the value that different investments can deliver and ensuring that sponsors understand and communicate the cost of an investment option to plan participants.
- **Legal and regulatory considerations** can impact the types of offerings that may be made available as a plan investment option. Plan sponsors should consult with their counsel on what types of alternative products may impose rules on participation, such as restrictions or limitations on offering to benefit plan investors or investors that are not "accredited investors" or "qualified purchasers". In some cases, it may be the case that structuring may need to be done to ensure that an alternative investment fund can be offered inside a defined contribution plan, such as offering the fund as part of a bundled option with multiple underlying funds. Securities law issues, qualification requirements under the Internal Revenue Code and ERISA considerations can impact whether and how an investment option can be offered in a defined contribution plan.
- **Participant education** will need to be considered when adding new investments to a plan menu, particularly asset classes with which participants may be less familiar. Capabilities for communicating with plan participants may vary depending on the record-keeper that plan sponsors engage. Understanding what those capabilities are and working with administrators and consultants to find the most effective approach based on plan demographics and the types of investments involved is critical.

Challenges and opportunities for defined contribution plans

Market volatility of the past and uncertainty about the future may fuel plan sponsors' interest in assuring that they are providing a broad set of tools to their plans' participants to achieve retirement success. Many are looking at new ways to enhance the effectiveness of their retirement savings programs, and automatic plan enrollment and default investments are becoming more common. Now, contemplating how alternative investments can play a role in helping participants invest for the future is receiving greater attention.

For many DC plan sponsors, there may be some comfort in knowing that they are not alone. Thought leaders from across the industry are exploring these issues with greater attention each year and industry consultants are regularly partnering with their clients to help them make informed choices about adding alternative asset classes to plan menus.

Those who are considering adding alternative investments will want to review available, useful information and ensure their understanding of the latest developments in the marketplace. With many in the retirement plan industry focused on how to deliver a more diversified set of asset class exposures, plan sponsors have an opportunity now to learn more and ensure they make informed decisions.

To learn more about how we can work with you, talk to your Goldman Sachs Asset Management representative.

At **Goldman Sachs Asset Management**, we partner with institutions and their advisors every day to deliver thoughtful, dependable solutions to help participants achieve financially secure retirements.

Risk Considerations

Equity securities are more volatile than bonds and subject to greater risks. Small and mid-sized company stocks involve greater risks than those customarily associated with larger companies.

Bonds are subject to interest rate, price and credit risks. Prices tend to be inversely affected by changes in interest rates.

High yield fixed income securities are considered speculative, involve greater risk of default, and tend to be more volatile than investment grade fixed income securities.

Investments in foreign securities entail special risks such as currency, political, economic, and market risks. These risks are heightened in emerging markets.

An investment in real estate securities is subject to greater price volatility and the special risks associated with direct ownership of real estate.

Investments in commodities may be affected by changes in overall market movements, commodity index volatility, changes in interest rates or factors affecting a particular industry or commodity.

Alternative Investments such as hedge funds are subject to less regulation than other types of pooled investment vehicles such as mutual funds, may make speculative investments, may be illiquid and can involve a significant use of leverage, making them substantially riskier than the other investments. An Alternative Investment Fund may incur high fees and expenses which would offset trading profits. Alternative Investment Funds are not required to provide periodic pricing or valuation information to investors. The Manager of an Alternative Investment Fund has total investment discretion over the investments of the Fund and the use of a single advisor applying generally similar trading programs could mean a lack of diversification, and consequentially, higher risk. Investors may have limited rights with respect to their investments, including limited voting rights and participation in the management of the Fund.

Alternative Investments by their nature, involve a substantial degree of risk, including the risk of total loss of an investor's capital. Fund performance can be volatile. There may be conflicts of interest between the Alternative Investment Fund and other service providers, including the investment manager and sponsor of the Alternative Investment. Similarly, interests in an Alternative Investment are highly illiquid and generally are not transferable without the consent of the sponsor, and applicable securities and tax laws will limit transfers.

Alternative investments may employ more complex strategies, investments, and portfolio structures. In doing so, some of these strategies may expose investors to additional risks, including but not limited to short selling, leverage risk, counterparty risk, liquidity risk, commodity price volatility risk, and/or managed futures roll yield risk.

Index Descriptions

Barclays Aggregate Bond Index: The Barclays Aggregate Bond Index represents securities that are SEC-registered, taxable, and dollar denominated. The index covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities. These major sectors are subdivided into more specific indices that are calculated and reported on a regular basis.

Barclays Capital US Government Inflation-Linked Bond Index: The Barclays US Government Inflation-linked Bond Index includes publicly issued, U.S. Treasury inflation protected securities that have at least 1 year remaining to maturity on index rebalancing date, with an issue size equal to or in excess of $500 million.

Dow Jones Credit Suisse Hedge Fund Index: The Dow Jones Credit Suisse Hedge Fund Index is compiled by Dow Jones Credit Suisse Index LLC. It is an asset-weighted hedge fund index and includes only funds, as opposed to separate accounts. The Index uses the Dow Jones Credit Suisse database, which tracks over 5000 funds, and consists only of funds with a minimum of US$50 million under management, a 12-month track record, and audited financial statements. It is calculated and rebalanced on a monthly basis, and shown net of all performance fees and expenses. It is the exclusive property of Dow Jones Credit Suisse Index LLC.

Dow Jones Global Select Real Estate Securities Index: The Dow Jones Global Select Real Estate Securities Index seeks to measure the performance of publicly traded real estate securities. The index is designed to serve as a proxy for direct real estate investment, in part by excluding companies whose performance may be driven by factors other than the value of real estate. The Index represents equity real estate investment trusts (REITs) and real estate operating companies (REOCs) traded globally.

Dow Jones-UBS 3 Month Forward Commodity Index: The DJ-UBS Commodity Index family includes 1-, 2-, 4-, 3- and 6-month forward versions of the DJ-UBS Commodity Index and select subindices. Composed of longer-dated commodity futures contracts, the forward versions allow investors to measure exposure to different parts of the commodity price curve.

The HFRX Global Hedge Fund Index is designed to be representative of the overall composition of the hedge fund universe. It is comprised of all eligible hedge fund strategies; including but not limited to convertible arbitrage, distressed securities, equity hedge, equity market neutral, event driven, macro, merger arbitrage, and relative value arbitrage. The strategies are asset weighted based on the distribution of assets in the hedge fund industry. Source: Hedgefundresearch.com

The HFRI Fund Weighted Composite Index is an equally weighted composite of constituent funds, as reported by the hedge fund managers listed within HFR database. The index encompasses over 2000 hedge funds. Source: Hedgefundresearch.com

Markit CDX Emerging Market 5-Year Total Return Index: The Markit CDX Emerging Market 5-Year Total Return Index is comprised of 14 sovereign issuers from the following regions: Latin America, Middle East, Eastern Europe, Africa and Asia. This index allows market participants to take a view on the overall credit quality and direction of the underlying basket by trading one instrument.

Markit CDX North American 5-Year Total Return Index: The Markit CDX North American 5-Year Total Return Index is comprised of 100 liquid North American entities with high yield credit ratings that trade in the CDS market. This index allows market participants to take a view on the overall credit quality and direction of the underlying basket by trading one instrument.

Merrill Lynch US High Yield Master II Index: The Merrill Lynch High Yield Master II Index (H0A0) is a commonly used benchmark index for high yield corporate bonds. It is administered by Merrill Lynch. The Master II is a measure of the broad high yield market, unlike the Merrill Lynch BB/B Index, which excludes lower-rated securities.

MSCI Emerging Markets Index: The MSCI Emerging Markets Index is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets. The MSCI Emerging Markets Index consists of the following 21 emerging market country indices: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey.

MSCI World Index Hedged USD: The MSCI World Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets. The MSCI World Index consists of the following 24 developed market country indices: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

S&P 500 Index: The S&P 500 Index is the Standard & Poor's 500 Composite Index of 500 stocks, an unmanaged index of common stock prices. The Index is unmanaged and the figures for the Index do not include any deduction for fee, expenses or taxes. It is not possible to invest directly in an unmanaged index.

S&P Commodities Index: Standard & Poor's ® and S&P ® are registered trademarks of The McGraw-Hill Companies, Inc. and GSCI™ is a trademark of The McGraw-Hill Companies, Inc. and have been licensed for use by Goldman, Sachs & Co.

Disclosures

Past performance does not guarantee future results, which may vary. The value of investments and the income derived from investments will fluctuate and can go down as well as up. A loss of principal may occur.

Backtested performance results do not represent the results of actual trading using client assets. They do not reflect the reinvestment of dividends, the deduction of any fees, commissions or any other expenses a client would have to pay. If GSAM had managed your account during the period, it is highly improbable that your account would have been managed in a similar fashion due to differences in economic and market conditions.

The following table provides a simplified example of the effect of management fees on portfolio returns. Assume a portfolio has a steady investment return, gross of fees, of 0.5% per month and total management fees of 0.05% per month of the market value of the portfolio on the last day of the month. Management fees are deducted from the market value of the portfolio on that day. There are no cash flows during the period. The table shows that, assuming all other factors remain constant, the difference increases due to the compounding effect over time. Of course, the magnitude of the difference between gross-of-fee and net-of-fee returns will depend on a variety of factors, and this example is purposely simplified.

Period	Gross Return	Net Return	Differential
1 year	6.17%	5.54%	0.63%
2 years	12.72%	11.38%	1.34%
10 years	81.94%	71.39%	10.55 %

This material is for informational purposes only and is provided solely on the basis that it will not constitute investment advice and will not form a primary basis for any person's or plan's investment decisions, and Goldman Sachs is not and will not become a fiduciary with respect to any person or plan by reason of providing the material or content herein. Plan fiduciaries should consider their own circumstances in assessing any potential investment course of action.

Simulated performance is hypothetical and may not take into account material economic and market factors, such as liquidity constraints, that would impact the adviser's actual decision-making. Simulated results are achieved by retroactively applying a model with the benefit of hindsight. The results reflect the reinvestment of dividends and other earnings, but do not reflect fees, transaction costs, and other expenses a client would have to pay, which would reduce returns. Actual results will vary

Confidentiality

No part of this material may, without GSAM's prior written consent, be (i) copied, photocopied or duplicated in any form, by any means, or (ii) distributed to any person that is not an employee, officer, director, or authorized agent of the recipient.

Although certain information has been obtained from sources believed to be reliable, we do not guarantee its accuracy, completeness or fairness. We have relied upon and assumed without independent verification, the accuracy and completeness of all information available from public sources.

Views and opinions expressed are for informational purposes only and do not constitute a recommendation by GSAM to buy, sell, or hold any security. Views and opinions are current as of the date of this presentation and may be subject to change, they should not be construed as investment advice.

This information discusses general market activity, industry or sector trends, or other broad-based economic, market or political conditions and should not be construed as research or investment advice.

This material has been prepared by GSAM and is not a product of the Goldman Sachs Global Investment Research. The views and opinions expressed may differ from those of the Global Investment Research or other departments or divisions of Goldman Sachs and its affiliates. Investors are urged to consult with their financial advisors before buying or selling any securities. This information may not be current and GSAM has no obligation to provide any updates or changes.

This material is provided for educational purposes only and should not be construed as investment advice or an offer or solicitation to buy or sell securities.