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J.P. Morgan Asset Management

Alternatives in Defined Contribution Plans

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Anne Lester, Managing Director, Global Multi Asset Group
212-648-0635, anne.lester@jpmorgan.com

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Contents

Incorporating “alternatives” into a defined contribution plan

What do we mean when we say "alternatives?"

- Alternative Assets — a term referring to any non-traditional asset with potential economic value that would not be found in a standard investment portfolio. Due to the unconventional nature of some of these investment assets, valuation may be a problem. (www.investopedia.com)

- Commonly cited "alternative assets" include:
  - Direct Real Estate
  - Commodities
  - Hedge Funds
  - Private Equity / Venture Capital
  - Infrastructure

The role of alternatives in a portfolio

- Alternative asset classes should be used as a tool to enhance return and reduce risk of an overall portfolio due to their low correlations with traditional asset classes

	Expected Return (%)	Standard Deviation	Correlation of Total Return US Large Cap Equity	International Equity	US Fixed Income	Inflation
US Inflation	2.8%	1.5%	0.0	0.8	-0.3	1.0
US Large Cap Equity	9.0	17.5	1.0	0.9	-0.6	0.0
US Small Cap Equity	9.3	23.0	0.8	0.8	-0.6	0.0
International Equity (unhedged)	9.3	18.8	0.9	1.0	-0.2	0.8
Emerging Markets Equity	10.3	27.5	0.8	0.9	-0.3	0.4
US Fixed Income	5.5	4.3	-0.6	0.1	1.0	-0.3
High Yield	7.5	11.3	0.6	0.7	0.2	0.1
TIPS	5.0	6.7	0.1	0.1	0.8	0.1
Real Estate — Private	8.0	8.8	0.4	0.2	0.4	0.1
Real Estate — REITs	7.8	24.5	0.6	0.6	0.2	0.1
Hedge Funds (FoF)	6.5	7.5	0.5	0.7	0.0	0.2
Private Equity	8.5	25.3	0.7	0.7	0.0	0.1

Source: JPMorgan Asset Management 2010 Capital Market Assumptions
Index returns: SP500 Index, Russell 2000 Index, MS REIT, MSCI EAFE Index, MSCI EM Free Index, Lehman Aggregate Bond Index, JPM EMBI Bond Index, Lehman High Yield Index, US T-bills, NCREIF Index, Lehman US TIPS Index, S&P Goldman Sachs Commodity Index, Headline CPI

The target return shown is not meant to represent actual returns of the Fund. The target return is provided for illustrative purposes only and is subject to significant limitations. An investor should not expect to achieve actual returns similar to the target return shown herein. The target return is the manager's goal based on the manager's calculations using available data, assumptions based on past and current market conditions, and available investment opportunities, each of which are subject to change. Because of the inherent limitations of the target return, potential investors should not rely on it when making a decision on whether or not to invest in this Fund.

The target return cannot account for the impact that economic, market, and other factors may have on the implementation of an actual investment program. Unlike actual performance, the target return does not reflect actual trading, liquidity constraints, fees, expenses, taxes and other factors that could impact the future returns of the Fund. The manager's ability to achieve the target return is subject to risk factors over which the manager may have no or limited control. Prospective investors should understand the risks factors associated with the Funds. No representation is being made that the Fund will achieve the target return or its investment objective. Actual returns could be higher or lower than the target return.

Alternatives in the DC context

- Expand the definition of alternatives to include asset classes that are not common to DC plans:
  - REITS
  - High Yield Bonds
  - Emerging Markets Equity
  - Emerging Markets Debt
  - Sector funds
  - International Fixed Income

- DC Plans tend to offer limited diversification for several reasons:
  - Participant knowledge
  - Liquidity
  - Fees
  - Volatility

Expanding the framework for the core menu

- Participant understanding
- Utilization
- Recordkeeping compatibility

How does my participant demographic base help determine the appropriateness of the investment options offered?

What is the comfort level with a 100% allocation to certain portfolios?
Can limits be imposed?

For many alternatives, it may be most appropriate to incorporate these strategies as part of an asset allocation portfolio

How does the manager decide which asset classes to include?

Deciding which asset classes to include in a portfolio can present an interesting challenge, since specific traits may be more short- or long-term in nature. They can also change over time, which must be accounted for in any investment decisions.

	Points to consider:
Liquidity	• Can the asset class be bought and sold easily? • How long does it take to buy and sell it? • Are there factors that could change its liquidity? • Could it potentially affect liquidity of the entire TDF portfolio?
Transparency	• How transparent is the asset class? • How transparent are its underlying securities? • Is its investment philosophy and process clearly outlined? • Is it easy to track how it executes its strategy? • How transparent is the value it adds to the TDF portfolio?

	Points to consider:
Economic Value	• Is there an intrinsic return to the asset class? • Is it possible to model and predict return streams? • Is there an economic reason to expect a return on the investment?
Volatility	• What are the risk/return and correlation characteristics? • Is it truly a distinct asset class based on these factors? • Are these factors additive in nature?
Fees	• What is the fee level of the asset class? • How are fees assessed?

Source: J.P. Morgan Asset Management

Asset class scorecard: Traditional asset classes

● Strong characteristics ◕ ◑ Somewhat limited characteristics ◔ ○ Limited or no characteristics

	Liquidity Can the asset class be bought and sold easily?	**Transparency** How transparent is it, and how transparent is its additive value to the portfolio?	**Economic Value** Is it possible to model and predict return streams based on intrinsic return characteristics?	**Volatility** Does it provide risk/return and correlation characteristics that can be additive in value?	**Fees** Are fee levels reasonable and easily tracked?	**Potential Considerations**
Large Cap Equities	●	●	●	◕	●	▪ Strong long-term returns ▪ Very liquid and transparent ▪ Over-concentration can increase portfolio volatility
Mid Cap/ Small Cap Equities	●	●	●	◕	●	▪ Strong long-term returns ▪ Potential capacity constraints ▪ High correlation to large cap equities
Core Fixed Income	●	◕	●	●	●	▪ Steady income stream ▪ Less volatile than equities, with low correlation to price movements ▪ Liquidity and transparency issues
International Equities	●	●	●	◕	●	▪ Strong long-term equities ▪ Lower correlation to US equities ▪ Less liquid and transparent than US markets, with more volatility ▪ Currency risk

Asset class scorecard: Extended asset classes

● ········ ◕ ········ ◑ ········ ◔ ········ ○

Strong characteristics — Somewhat limited characteristics — Limited or no characteristics

	Liquidity Can the asset class be bought and sold easily?	**Transparency** How transparent is it, and how transparent is its additive value to the portfolio?	**Economic Value** Is it possible to model and predict return streams based on intrinsic return characteristics?	**Volatility** Does it provide risk/return and correlation characteristics that can be additive in value?	**Fees** Are fee levels reasonable and easily tracked?	**Potential Considerations**
Emerging Markets Equities	◕	◕	●	◑	●	▪ Capacity to generate substantially higher returns ▪ Low correlations to US and international equities ▪ Less liquid, with higher volatility ▪ Underlying balance sheet transparency can be an issue ▪ Currency risk
High Yield Bonds	◑	●	●	◕	●	▪ Return profile similar to equities, with lower volatility ▪ Lower correlations to equities and core fixed income ▪ Higher risk profile than core fixed income ▪ Liquidity issues
Real Estate	● / ◔	◕	●	◕	●	▪ Strong long-term returns and inflation protection ▪ Low correlation to other asset classes ▪ REITs: volatility similar to equities ▪ Direct: lower volatility, but less liquid

Asset class scorecard: Extended asset classes

● ········ ◕ ········ ◑ ········ ◔ ········ ○

Strong characteristics · Somewhat limited characteristics · Limited or no characteristics

	Liquidity Can the asset class be bought and sold easily?	**Transparency** How transparent is it, and how transparent is its additive value to the portfolio?	**Economic Value** Is it possible to model and predict return streams based on intrinsic return characteristics?	**Volatility** Does it provide risk/return and correlation characteristics that can be additive in value?	**Fees** Are fee levels reasonable and easily tracked?	**Potential Considerations**
TIPS	◕	●	●	●	●	▪ Inflation protection, with relatively low volatility ▪ Small, less liquid market ▪ Price driven by complex interaction of liquidity, yield and inflation
Commodities	●	●	○	◔	●	▪ Inflation protection ▪ Low correlation to other asset classes ▪ Long-term return potential may be limited ▪ Extreme short-term volatility
Emerging Markets Debt	◔	◕	●	◕	●	▪ Capacity to generate substantially higher returns ▪ Low correlation to other asset classes ▪ Access can be difficult ▪ Liquidity and transparency issues ▪ Currency risk
Hedge Funds	◔ / ◕	○	○	◕	◑	▪ Broad range of “Hedge Funds” available ▪ Some strategies liquid and transparent ▪ Correlation/volatility benefits ▪ Performance fees ▪ Transparency can be an issue
Private Equity	○	◕	●	◕	◑	▪ J curve problematic for pricing ▪ Limited to no liquidity ▪ Performance benefits for top performing funds

Why are plan sponsors revisiting their asset allocation vehicles?

- Participants are asking for help
- Asset allocation is one of the most important factors influencing investment performance — and often one of the most difficult decisions for a participant to make
- Market volatility in 2001-2003 and 2008-2009 is prompting many plan sponsors to revisit traditional tools for asset allocation
- Traditional mean-variance optimization and reliance on broad markets (“beta”) for return is being questioned by many plan sponsors for their DB plans

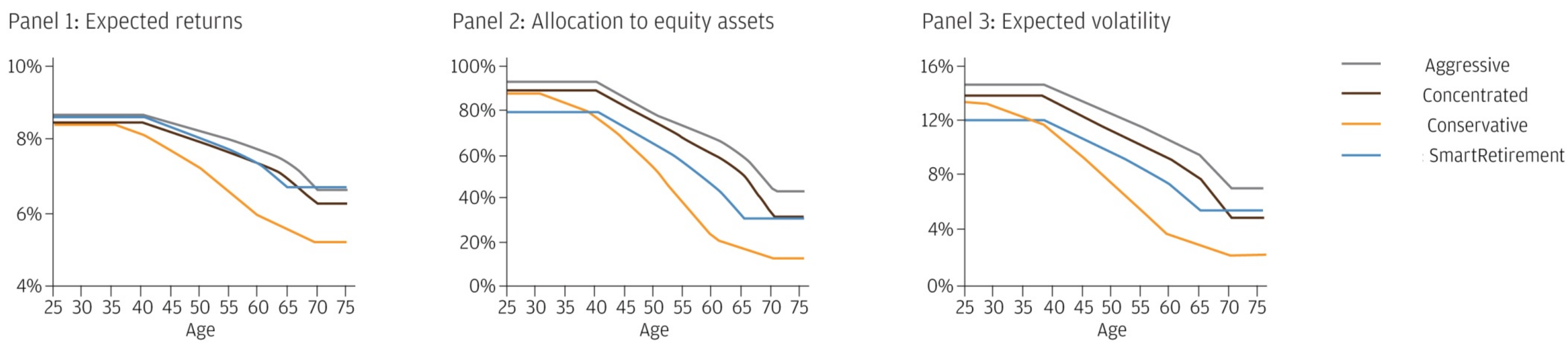
Alternatives and volatility management

A glide path with higher levels of diversification can help reduce volatility without sacrificing returns

Analyzing glide path risk/reward characteristics of three general TDF glide paths based on actual funds in the marketplace.

When decision makers think about higher risk/reward investments, they generally think about equities. As a glide path lowers its higher risk/reward allocations, it usually lowers its equity exposure, but there are other higher risk/reward investments that can compete with equities on expected long-term returns, with little or no correlation to equity markets.

Does the glide path manage equity risk by sacrificing return?



Results based on analysis derived from J.P. Morgan Asset Management long-term capital market assumptions – 2008, J.P. Morgan Asset Management and industry prospectuses.

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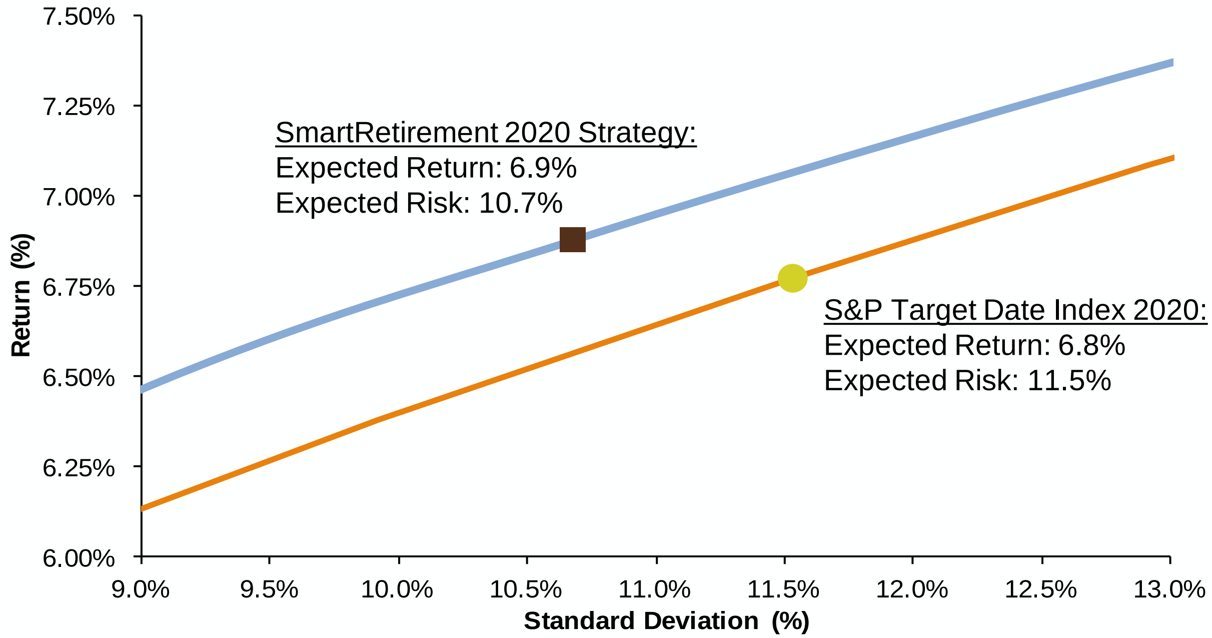
Diversification beyond stocks and bonds can lead to greater retirement income security

Efficient Frontier Analysis*

SIAG 2011 assumptions



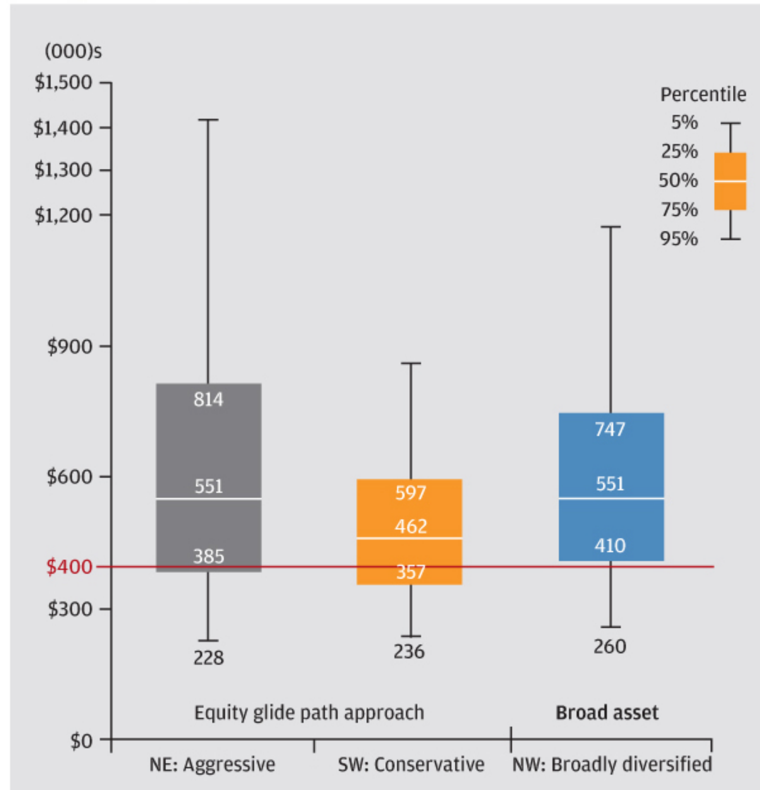
- Concentrated Frontier includes:
  - Domestic large, mid and small cap equities
  - International & emerging markets equity
  - U.S REITs
  - US Fixed Income
  - TIPS
- Diversified Frontier also includes:
  - International REITs
  - High Yield Fixed Income
  - Emerging Markets Debt
  - Direct Real Estate

Source: J.P. Morgan Capital Market Assumptions. The assumptions, with a 10-15 year outlook, are presented for illustrative purposes only. They must not be used, or relied upon, to make investment decisions. The assumptions are not meant to be a representation of, nor should they be interpreted as J.P. Morgan investment recommendations. Allocations, assumptions, and expected returns are not meant to represent actual performance achieved by any J.P. Morgan portfolio. Please note all information shown is based on assumptions, therefore, exclusive reliance on these assumptions is incomplete and not advised. The assumptions should not be relied upon as a recommendation to invest in any particular asset class. *The individual asset class assumptions are not a promise of future performance. Note that these asset class assumptions are passive-only; they do not consider the impact of active management.*

Range of expected account balances at retirement based on J.P. Morgan participant research findings*

TDF types	Asset mix at ages	25	45	65
NE: Aggressive				
• Highest equity allocation	Cash and bonds	3%	9%	35%
• Highest upside potential	Equities	94%	86%	59%
• Highest risk exposure	Extended (high-yield bonds)	3%	6%	7%
SW: Conservative				
• Lowest equity allocation	Cash and bonds	10%	18%	50%
• Lowest upside potential	Equities	90%	82%	50%
• Low risk exposure				
NW: Broadly diversified				
• Relatively large allocations to extended and alternative asset classes	Cash and bonds	6%	13%	53%
• Focused on managing volatility without sacrificing return potential	Equities	72%	65%	27%
	Extended and alternatives *(high-yield bonds, emerging market debt and equity, REITs and direct real estate)*	22%	22%	20%

Range of projected account balances at retirement



*Results are based on analysis derived from J.P. Morgan Asset Management long-term capital market assumptions – 2006, J.P. Morgan Asset Management, and industry prospectuses. See *Ready! Fire! Aim? 2009* for participant assumptions. All dollar values are inflation-adjusted.

Conclusions

- The increasing importance of the DC plan as a retirement income vehicle will lead to greater plan sponsor scrutiny and industry innovation
- Alternative asset classes will increase in usage within DC plans
- Alternative asset classes are most effective in diversified portfolios — target date and other asset allocation portfolios will be the primary users
- Alternative asset classes as single options in core investment menus will develop more slowly due to the characteristics of the DC market and may not be appropriate for all plans and participants

Definitions of terms and indices

Definition of related terms:

- Normal backwardation is when the futures price is below the expected future spot price. This is desirable for speculators who are "net long" in their positions: they want the futures price to increase. So, normal backwardation is when the futures prices are increasing.
- Contango is when the futures price is above the expected future spot price. Because the futures price must converge on the expected future spot price, contango implies that futures prices are falling over time as new information brings them into line with the expected future spot price.
- Spot price is the current price at which a particular commodity can be bought or sold at a specified time and place.
- The annualized returns are calculated as the compound geometric average monthly returns–the geometric average is the monthly average return that assumes the same rate of return every period to arrive at the equivalent compound growth rate reflected in the actual return data. The results are then annualized by raising the sum of one plus the compound geometric average monthly return to the twelfth power and then subtracting one.
- The standard deviation measures the dispersal or uncertainty in a random variable (in this case, investment returns). It measures the degree of variation (in this case) of monthly net returns around the average monthly net return. The higher the volatility of the investment returns, the higher will be the standard deviation. For this reason, standard deviation is often used as a measure of investment risk. Values are calculated by applying the traditional sample standard deviation formula to monthly return data, and then annualized by multiplying the result by the square root of twelve.
- The maximum drawdown is largest percentage drawdown that has occurred in any investment data record from peak to valley.
- Beta is a measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole. Beta is calculated using regression. A beta of 1 indicates that the security's price will move in-line with the market. A beta less than 1 means that the security will be less volatile than the market. A beta greater than 1 indicates that the security's price will be more volatile than the market.
- Alpha is the portion of an investment return arising from specific (nonmarket) risk. It is an estimate of the amount of return expected from an investment’s inherent values and is distinct from the amount of return caused by volatility, which is measured by beta.

Definition of indices:

- The Dow Jones–UBS Commodity Index is designed to be a highly liquid and diversified benchmark for the commodity futures market. The Index is long only and composed of futures contracts on 19 physical commodities. The Index is weighted primarily by the trading volume of the future’s contracts and secondarily on production. The index also requires that no group comprise more than 33% of the index and that each commodity must represent at least 2% of the index. Although the index weights are rebalanced each January, the commodity weights in the index vary based on each commodity’s value. Thus, the index is momentum-based because of its reliance on the liquidity, as indicated by trading volume. It is not possible to invest directly in an index.
- The S&P Goldman Sachs Commodity Index is a long only, tradable index for physical commodity futures contracts. The index is comprised of the shortest maturity contracts for each of the 24 physical commodities contracts included in the index. The GSCI is production-value weighted, using exogenous economic data to reflect the importance of each component to the global economy. The asset weights of the index are set at the beginning of each year and change throughout the year based on commodity price fluctuations. Commodities with price gains will become a larger part of the index as the year progresses. It is not possible to invest directly in an index.
- The S&P 500 Index (“S&P 500”) consists of 500 stocks chosen for market size, liquidity and industry group representation. It is a market-value weighted index (stock price times number of shares outstanding), with each stock's weight in the Index proportionate to its market value. All returns include reinvested dividends except where indicated otherwise. The S&P Total Return Index also includes dividends reinvested. It is not possible to invest directly in an index.
- The Barclays Aggregate Bond Index represents securities that are U.S. domestic, 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. This index was formerly the Lehman Aggregate Bond Index. It is not possible to invest directly in an index.
- The Credit Suisse/Tremont Hedge Fund Index is compiled by Credit Suisse Tremont Index LLC. It is an asset-weighted hedge fund index and includes only funds, as opposed to separate accounts. The Index uses the Credit Suisse/Tremont database, which tracks over 5000 funds, and consists only of funds with a minimum of US$50mm 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.

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The deduction of an advisory fee reduces an investor's return. Actual account performance will vary depending on individual portfolio security selection and the applicable fee schedule. Fees are available upon request.

Cash alternatives are not federally guaranteed and may lose value. Cash alternative portfolios have interest rate, inflation, and credit risks that are associated with the underlying assets owned by the portfolio.

Bonds have the same interest rate, inflation, and credit risks that are associated with the underlying bonds owned by the portfolio. Interest rate risk means that as interest rates rise, the prices of bonds will generally fall, and vice versa. Inflation risk is the risk that the rate of return on an investment may not outpace the rate of inflation. Credit risk is the risk that issuers and counterparties will not make payments on securities and investments held by the Fund.

Credit Risk is the risk that issuers and counterparties will not make payments on securities and investment held by the portfolio. Such default could result in losses to an investment in the portfolio. In addition, the credit quality of securities held by a portfolio may be lowered if an issuer's financial condition changes. Lower credit quality may lead to greater volatility in the price of a security. Lower credit quality also may affect liquidity and make it difficult for the portfolio to sell the security. The portfolio may invest in securities that are rated in the lowest investment grade category. Such securities are considered to have speculative characteristics similar to high yield securities, and issuers of such securities are more vulnerable to changes in economic conditions than issuers of higher grade securities.

Real Estate Investment Trust (REIT) portfolios may be subject to a higher degree of market risk because of concentration in a specific industry, sector or geographic sector. REIT funds may be subject to risks including, but not limited to, declines in the value of real estate, risks related to general and economic conditions, changes in the value of the underlying property owned by the trust and defaults by borrowers.

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