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### In a nutshell

- Volatility is a measure of risk. It reflects all of the uncertainties in valuing assets.
- Beta is a measure of undiversifiable risk, essentially macroeconomic or cyclical risk.
- Diversified funds can focus on beta, but concentrated portfolios must heed volatility.
- Volatility is highly mean-reverting. Forecasting the future has a usual uncertainty.
- We expect elevated equity-market volatility to pass.

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## Americas CIO View

### Volatility: Be contrarian short-term, but respect it longer-term

#### Volatility is a measure of risk. It reflects all of the uncertainties in valuing assets

Variation in a financial asset's periodic total returns is an indication of the risks that affect the income stream produced by the asset as well as the uncertainties in the factors that influence the valuation of that income stream. Variation in periodic returns of publicly traded securities, driven mostly by price changes, is a powerful market-based signal of an investment's total risk.

Higher volatility indicates a greater chance of not getting the return expected in a certain period. A long time horizon improves an investor's ability to take such risk, but it doesn't reduce risk. Thus, investors must decide how much volatility they can tolerate and then seek to maximize the return earned at their volatility or risk budget. This clarifies the opportunity cost of volatility.

While volatility metrics must be thoughtfully considered and usually longer-term measures are better than short-term, we strongly advise against dismissing volatility as a measure of risk. Volatility is not just the best quantitative measure of risk, we think it is a very accurate measure of risk.

#### Beta is a measure of undiversifiable risk, essentially macroeconomic or cyclical risk

The volatility of a stock represents all of the uncertainties in forecasting its future, particularly all of its future cash flow. While methods vary, forecasting is what all active investors explicitly or implicitly do and it's what drives markets. The forecasts embedded in a stock's price are made on an expected or probability-weighted basis as objectively as possible with all of the knowledge and analytical ability of the entire market. Forecasts are obviously uncertain, but the downside or upside from company-specific risks can be minimized with portfolio diversification. Thus, the residual risk in a highly diversified portfolio is mostly systematic risk or macro factor risks. Beta is a measure of undiversifiable cyclical risk or a stock's sensitivity to the overall market. Investors are only compensated for bearing undiversifiable market risk. Risk factors beyond beta exist.

#### Diversified funds can focus on beta, but concentrated portfolios must heed volatility

Highly diversified portfolios ignore the part of a stock's volatility from company-specific risks, but if a portfolio becomes more concentrated in the pursuit of alpha it must heed company-specific risk. Selecting and sizing alpha opportunities requires considering exposure to company-specific risks. If two companies with the same beta (or correlation to the portfolio) offer the same alpha,

then company-specific risks could break the tie or its best to split a position in both. Quality is an attribute assessed in many ways, but in a portfolio-construction-risk sense, higher-quality companies have lower company-specific volatility. Beta regressions help to reveal the portion of a stock's total volatility that is company specific, because the regression's R-squared indicates how much observed variation is explained by market sensitivity; so 1 minus R-squared is variation from company-specific risks or other undiversifiable risk factors beyond beta, like size.

### **Volatility is highly mean-reverting. Forecasting the future has a usual uncertainty**

The more things change, the more they stay the same. Volatility comes not from differences in today's circumstances from the past, but in not accurately assessing those differences and how they will affect the future. Forecasting the future is never easy and it's hard to say it's any easier or harder today than in the past. When using volatility and beta metrics to gauge risk, we prefer to calculate such metrics over longer time periods to obtain more structural indications. We think a stock's volatility and beta, as used to determine its cost of capital and portfolio risks, should be measured over 5-10 years, i.e. over a full economic cycle, albeit with a greater weighting on the observations of more recent years. Usually, such metrics measured over shorter time periods show mean reversion over time. This is especially true for such metrics for industries, sectors and the whole stock market. This is why we tend to advocate using sticky risk premiums that are consistent with long-term norms when valuing financial assets and deciding on the appropriate asset allocation. We are mindful of how cyclical conditions affect the predictability of returns, but for long-term investing through cycles we advocate long-term risk metrics and risk premiums.

### **We expect elevated equity-market volatility to pass**

We see recent equity volatility as being related to valuation uncertainty, not earnings uncertainty. The macro data is good and first-quarter (1Q) earnings are strong with 20%+ year over year (y/y) growth. To the extent that earnings uncertainty was greater than normal owing to the U.S. corporate-tax-rate cut, 1Q18 results give investors clarity on effective S&P 500 tax rates. Cross-asset-class signals for S&P 500 earnings and valuation drivers, such as commodities and currencies for earnings and interest rates and credit spreads for valuation, do not warrant elevated equity volatility. The yield curve is not inverted and at 50bps steepness (10-2yr yield) it aligns with what's likely this cycle's norm when the 2yr yield is near a neutral federal funds rate. The climb in 10yr yields is a source of valuation uncertainty, but the ascent remains gradual and we think it's now near a fair yield provided inflation stays near 2% and the deficit doesn't sizably exceed nominal gross-domestic-product (GDP) growth.

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## Glossary

### Alpha

Alpha refers to returns in excess of a benchmark's return.

### Beta

**Beta** is a measure of volatility that captures a security's systematic risk according to the capital asset pricing model

### Correlation

**Correlation** is a measure of how closely two variables move together over time.

### Diversification

Diversification refers to the dispersal of investments across asset types, geographies and so on with the aim of reducing risk or boosting risk-adjusted returns.

### Federal funds rate

The **federal funds rate** is the interest rate, set by the Fed, at which banks lend money to each other, usually on an overnight basis.

### Gross domestic product (GDP)

The **gross domestic product (GDP)** is the monetary value of all the finished goods and services produced within a country's borders in a specific time period.

### Inflation

Inflation is the rate at which the general level of prices for goods and services is rising and, subsequently, purchasing power is falling.

### Mean reversion

Mean reversion is a theory that prices and returns eventually move back toward the mean, or average.

### R-squared

**R-squared**, in the context of portfolio management, is a statistic that indicates how closely a fund's performance correlates to the performance of a benchmark.

### Regression

A regression is the statistical procedure to identify the comovement between different variables.

### S&P 500

The **S&P 500** is an index that includes 500 leading U.S. companies capturing approximately 80% coverage of available U.S. market capitalization.

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**Spread**

The **spread** is the difference between the quoted rates of return on two different investments, usually of different credit quality.

**Volatility**

**Volatility** is the degree of variation of a trading-price series over time. It can be used as a measure of an asset's risk.

**Yield curve**

A **yield curve** shows the annualized yields of fixed-income securities across different contract periods as a curve. When it is inverted, bonds with longer maturities have lower yields than those with shorter maturities.

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