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Defining Risk

White paper

Re-defining Risk

Changing the perception of risk can help improve investor preparation for the future.

Key highlights

- **Many individual investors have become more risk averse** relative to their ability to manage risk over long-term time horizons
- **Risk-averse investors tend to view risk through a narrow definition of market volatility** and therefore miss many of the other risks they face in their investment plans
- **A broader definition of risk may help investors plan** for more of the risks they face and make changes over the course of their investment plan

Summary

Individual investors have become more fearful of risk since the global financial crisis and stock market crash of 2007-09. Episodes of market volatility (e.g., "flash crash" of 2010, Chinese currency devaluation of 2015, "Brexit" in 2016) have reinforced this pervasive aversion to risk as many investors continue to avoid or underweight riskier investments in their portfolios.

For long-term investors, **risk aversion** may actually be a **risky strategy** in itself.

In our view, many investors are overly risk averse because they define risk solely in terms of market volatility. In taking a narrow view when defining risk and assessing their risk tolerance, many investors don't see the other risks they face and fail to account for them in their investment plans.

Investors should redefine risk to be broader and more encompassing of the different forms of risk they face at different stages of their lives. Investors need to assess their risk tolerance on a regular basis to identify possible changes and make appropriate adjustments to their investment portfolios.

Has risk aversion increased?

2008 was a definitive turning point for anyone invested in stocks through the worst of the global financial crisis and market downturn. Portfolio losses were extremely painful at the time, but the pain has also endured. Even one of the longest U.S. bull markets for stocks in recorded history (2009 to present) has done little to relieve investor wariness about risky assets.

In the years following the market crash, investors have also had to contend with many short-term episodes of intense market volatility (see table above right). That is why nearly eight years after the market crash, many investors remain fearful of a repeat of the 2008 market downturn and subsequent losses in the value of their investments.

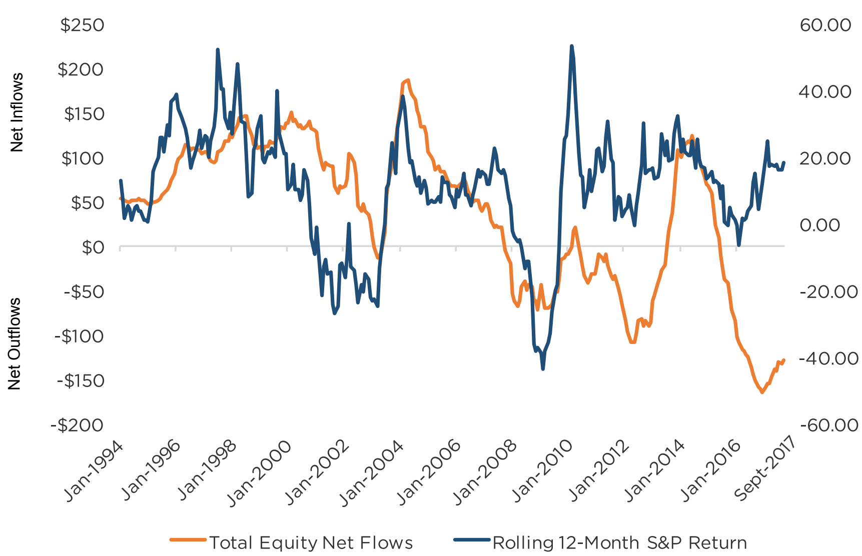
A decade of stock market volatility (2006-2016)	
Financial crisis of 2007-2009	U.S. stock indexes lost over 50% of their value in 17 months
"Flash Crash" of 2010 (May 6th)	The Dow Jones Industrial Average drops nearly 9% in a matter of minutes, only to recover most of the loss by market close
Chinese currency devaluation (August 2015)	Global stock indexes drop between 6-9% during the month after Chinese authorities reset the value of the yuan
"Brexit" (June 2016)	The Dow and S&P 500 indexes lose over 3% in two days following the UK vote to leave the European Union

To see how risk aversion has changed, contrast the investment patterns of individual investors in the years before and after the crisis (see chart below). Prior to 2008, money tended to flow into equity mutual funds relative to stock market performance. Investors poured money into stocks when market trends were positive. Likewise, they pulled money out of stocks when trends were negative. Even in the bear market of 2001-2003, equity fund flows slowed but did not reverse.

However, the correction and bear market of 2007-2009 was a different animal. Many investors scaled back their stock investments as the financial crisis ravaged the markets. But notice how investment patterns have changed since 2008—while stocks recovered from the bear market and enjoyed a prolonged bull market run in this decade, investors have largely changed their behavior and retreated from stocks.

Clearly, the 2008 market downturn altered investor behavior. While investors are often prone to psychological biases that can influence decision making, these biases don't show up as frequently among institutional investors. For evidence, compare the investment patterns between

Equity mutual fund flows vs S&P Index return



Source for chart data: FactSet

institutional and individual investors on either side of that critical year (see chart below).

Institutional investors continued to follow a balanced approach to allocating money to stocks or bonds both before and after the 2008 downturn. While the amounts differed, institutional investors on average did not vary their general asset allocation approach to stocks and bonds. Institutional investors tend to make investment decisions according to disciplined processes and under advice from investment committees comprised of skilled and experienced financial professionals.

The story is much different for individual investors. While on average, individuals put more money into stocks than bonds in the years before 2008, that pattern shifted after the market crash—more individual investor money flowed out of stocks in the years from 2008 to 2016, while money going into bonds surged.

The psychological impact of the 2008 downturn seems to have fundamentally changed investor perception of risk and their behavior toward riskier assets. As a result, many investors are more risk averse than they should be, relative to their ability to assume risk.

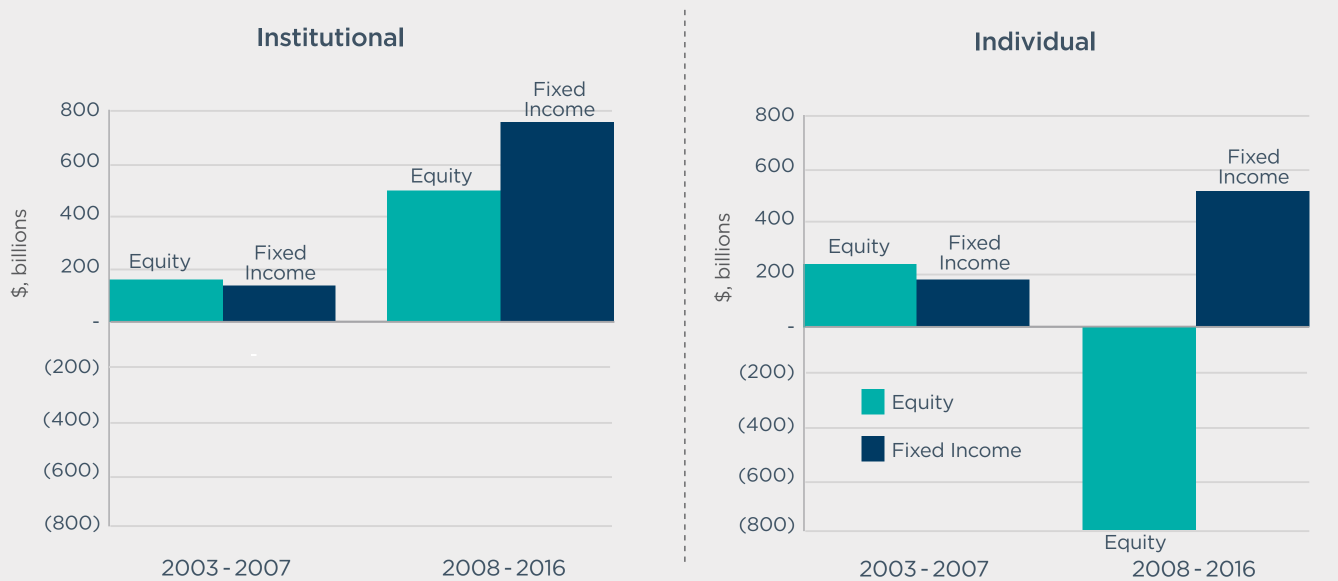
Risk is not just volatility

“Risk” is one of those words that’s used frequently in discussions about investing and the financial markets, but is often misunderstood by the majority of investors. Part of the reason is that many people define investment risk narrowly in terms of market volatility—the ups and downs in market prices and index values that investors see every day. Although, 2017 has presented a period of relative calm in the markets thus far.

This perception contributes to the risk aversion tendencies many investors face today. Lowering risk exposure may be wise for certain investors and under specific circumstances. But some exposure to risk is necessary to achieve adequate returns, especially in portfolios with long-term investment objectives.

By focusing too much on market volatility and underweighting riskier assets out of fear of market losses, risk-averse investors are less likely to achieve the returns required to realize their long-term investment goals. Plus, this narrow definition of risk means investors may not see other risks they face and will fail to account for them in their investment plans.

Institutional vs. Individual Behavior



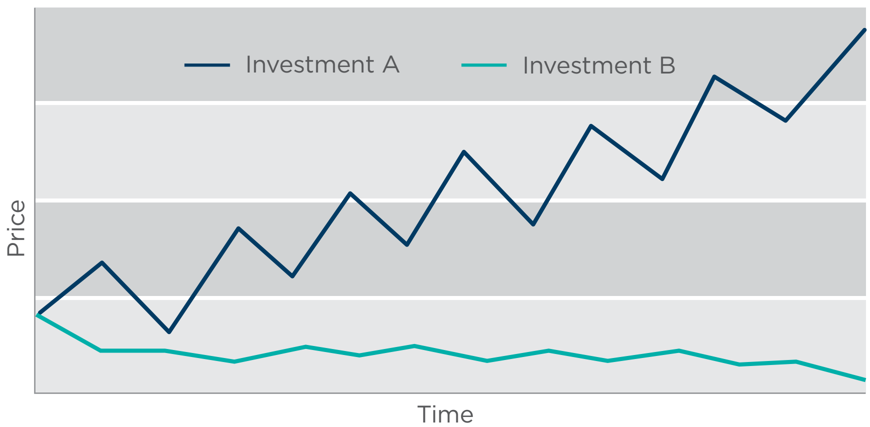
Annual Mutual Fund Flows — January 2003 through December 2016

Annual Mutual Fund Flows — January 2003 through December 2016

Source: Morningstar

Risk vs. Volatility:

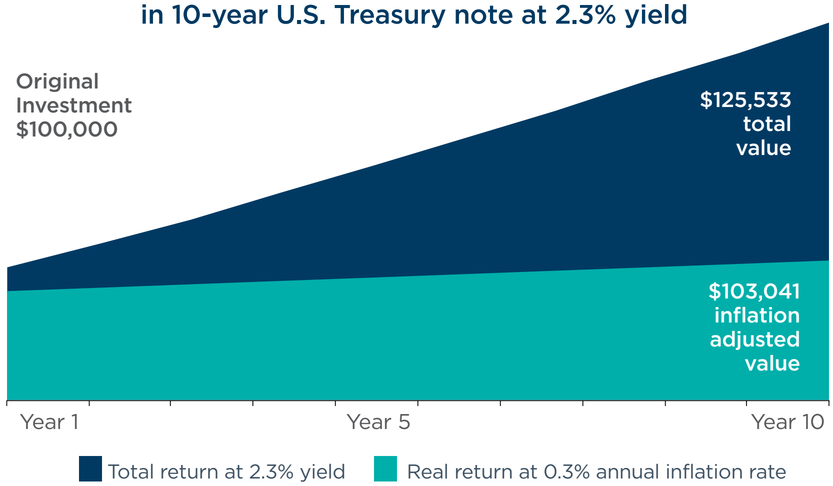
Investment A is more volatile than Investment B — the frequency and magnitude of price changes are greater. But over time, Investment B is riskier because its value has declined. ***Which investment would you prefer for long-term goals?***



When investors define risk only in terms of volatility, they can lose sight of the fact that *all investments come with risk*. Even with traditionally low-risk investments that don't change in value as much or as frequently as riskier investments, there remains a potential for losses due to other factors.

For example, U.S. government bonds are generally considered to be among the lowest risk asset classes relative to stock and other fixed-income investments. But even ultra-safe U.S. Treasury bonds, backed by the full faith and credit of the U.S. government, are not risk-free — they are subject to inflation risk. If an investor purchases a 10-year U.S. Treasury note at a 2.3% yield (the approximate rate as of this writing) and inflation rises 0.3% annually until the bond matures, that investor will have barely made any progress on this investment. (See chart below).

Example of growth of $100,000 investment in 10-year U.S. Treasury note at 2.3% yield



Are you looking at volatility or risk?

Many statistics that gauge the volatility of an investment, such as standard deviation and Sharpe ratio, are often used as proxies for risk. The problem is that volatility is much different than risk.

A volatile investment will change in value frequently, both to the upside and the downside. Obviously, an upside change is good news for investors—few people would worry about making too much money on an investment. A statistic like standard deviation would capture these upside changes and make the investment seem risky, even though there may not be any loss of investment value.

Volatility matters more in the short term than the long term. If investors need to tap the value of an investment next month or next year (for a major purchase or to cover living expenses, for example) then they care very much if the value is likely to go down in that time frame.

But if they don't need that money for several years—when the likelihood of a drop in investment value declines—then short-term changes in price should not bother them. In fact, these investors would be better off ignoring daily price fluctuations or the ups and downs of market indexes. Instead, they should pay closer attention to other risks that come with investing.

Risk changes over time; volatility doesn't

One of the most common pieces of investment advice people hear is to "stay invested for the long term". This advice is prudent because it helps investors avoid the temptation to trade in and out of the market—an impulsive reaction usually based on fear of investment losses, but more likely to lead to missed opportunities for investment returns.

The long-term track record of stocks, often the riskiest asset class found in common investment portfolios, underscores the value of this advice. Stocks are volatile in the short term but the occurrence of losses diminishes greatly over longer-term periods (see chart below).

What many investors don't see in this data is that *stocks do not become less volatile the longer they are held.* Over a 20-year period, an S&P 500 index fund is just as likely to experience a loss in Year 1 as in Year 20. The probability of losses for both one-year periods is the same — 32%.

While volatility does not change, an investor's capacity for tolerating risk does change over time. Specifically, when an investor is able to hold on to an investment over a longer period, the likelihood of a loss in value becomes smaller. That's why riskier investments are suitable even for risk-averse investors with long-term investment objectives.

A new definition of risk

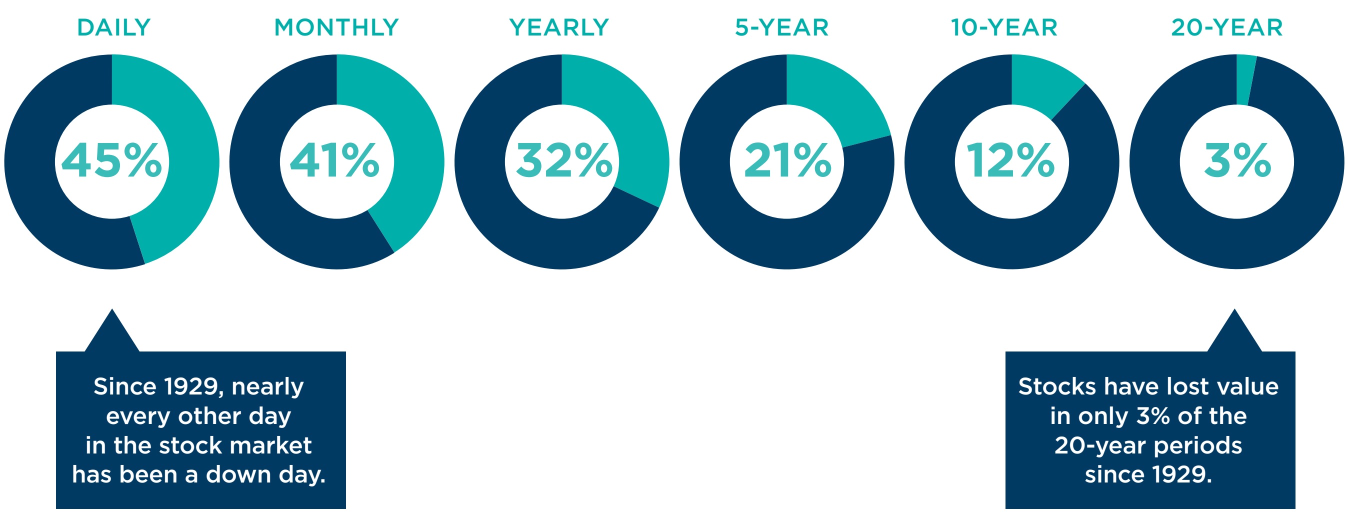
A basic definition of risk is the potential for loss or injury. When it comes to investing, certain investments have a greater potential for loss than others. This potential for loss is more obvious to investors who watch the market every day and see how investment values and market indexes change on a frequent basis.

In taking such a narrow, ground-level view of risk, investors see only market volatility in the foreground. To help investors change how they perceive their exposure to risk, a new definition of risk is required, one that encompasses all of the different types of risk investors face throughout their lives.

By elevating the perspective and broadening the view of risk, investors can see beyond market volatility to recognize and plan for all of the risks they face.

Viewing risk through this broader perspective helps investors identify and understand the negative

Probability of negative S&P returns (1929 - 2016)

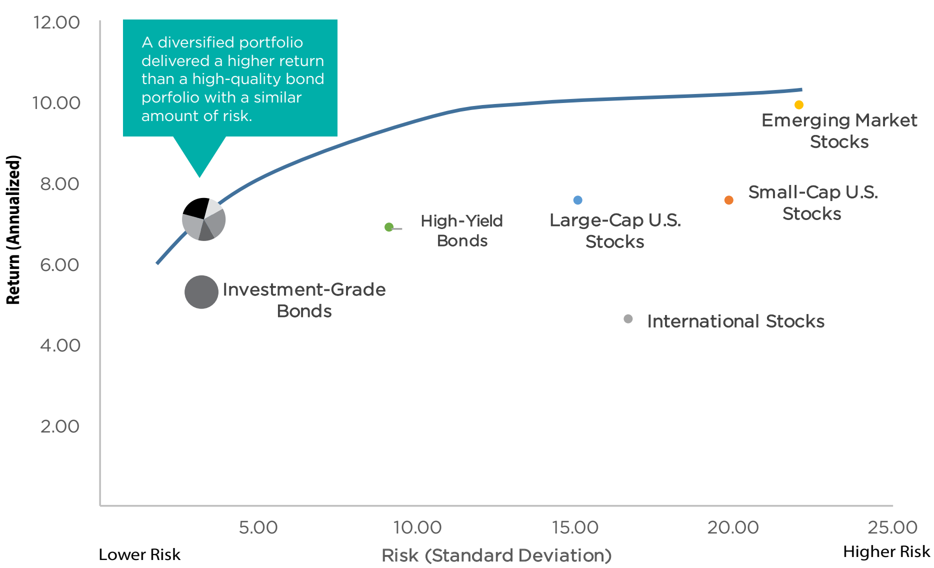


Source: Bloomberg

Capturing a broader view of risk	
Interest rate risk	The risk that changes in interest rates will affect the value and yield of certain investments, in particular fixed-income investments.
Inflation risk	The risk that price changes will erode the future purchasing power of an investment.
Credit risk	The risk that a bond issuer will not meet their obligations to borrowers due to business or economic conditions.
Market risk	The risk that changes in the market value of an investment will result in a loss in value when the asset is needed to fund a purchase or income needs.
Economic risk	The risk that changes in economic growth trends will influence business operations and the value of an investment.
Liquidity risk	The risk that an investor will not be able to find a buyer for an investment at a particular time.
Political risk	The risk of changes in regulations and political leadership (particularly in international and emerging markets) having a price impact on an investment.

outcomes that each different type of risk poses to an investment plan. By focusing on the individual components of risk, one at a time, investors can more easily develop a plan that can give them the confidence to manage through periods of market volatility.

Risk/return analysis of major asset classes (September 1997-September 2017)



Source: Morningstar

Let's say during this period a risk-averse investor chose to invest in a portfolio of investment-grade bonds (represented by the Bloomberg Barclays US Aggregate Bond Index) and avoid riskier investments in stocks and high-yield bonds. This investor achieved a respectable return of 5.0% annually during this period. **But by adding some riskier asset classes to the all-bond portfolio, the investor could have achieved a higher annual return with a similar amount of risk.**

By themselves, each individual solution for a specific risk would not be sufficient to help investors achieve their goals. Either risk would be too great or returns too low. But through strategies of diversification and asset allocation, investors can combine different investment solutions in a portfolio with the goal of seeking an adequate overall return while reducing the exposure to risk (see chart at left).

Risk tolerance is also dynamic. As investors get older and accumulate more assets, they will see some risks increase while others decrease. Viewing risk tolerance as static can lead to a sense of complacency and leave investors exposed to different risks than they may realize.

Periodic reviews of investors' risk tolerances can help identify potential changes that may require adjustments to portfolios' asset allocation or a different strategy for managing the new risks investors face.

Key takeaways for investors:

Risk is more than volatility; investors should assess their risk tolerance with a broader definition that incorporates other risks they face beyond market risk.

Investors with long-term objectives would be better served by ignoring volatility and turning their focus toward managing the other risks they face in their financial plan.

Investors should work with their financial advisors to assess changes in risk tolerance on a regular basis and adjust their portfolios accordingly to keep their investments in line with their financial goals.

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S&P 500® Index: An unmanaged, market capitalization-weighted index of 500 stocks of leading large cap U.S. companies in leading industries; gives a broad look at the U.S. equities market and those companies' stock price performance.

Bloomberg Barclays US Aggregate Bond Index: An unmanaged, market value-weighted index of U.S. dollar-denominated, investment-grade, fixed-rate, taxable debt issues, which includes Treasuries, government-related and corporate securities, mortgage-backed securities (agency fixed-rate and hybrid adjustable-rate mortgage pass-throughs), asset-backed securities and commercial mortgage-backed securities (agency and non-agency).

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