NORTHERN TRUST

PROTECT YOUR SPENDING WITH THE PORTFOLIO RESERVE

Maintaining your lifestyle is, for many people, one of the most important goals. The Portfolio Reserve is a strategy that can help you meet your ongoing spending needs, regardless of economic or market performance. It does this by helping you quantify how much you need in your portfolio today to fund your annual spending, and building a diversified "reserve" of safe assets (cash and high-quality bonds) to help meet those needs.

The Portfolio Reserve is designed to fund your core lifestyle for a set number of years.

USING THE PORTFOLIO RESERVE TO PROTECT YOUR LIFESTYLE

The Portfolio Reserve is composed of cash and high-quality bonds — "safe assets." It is designed to fund your core lifestyle for a set number of years – through both normal times and the most uncertain economic and market environments.

By focusing specifically on one goal – maintaining your lifestyle – the Portfolio Reserve works to counteract your natural tendency to let emotions and recent events drive your investment decision making (see "**What Behavioral Finance Teaches Us**," on page 2). Especially during times of market instability, these behavioral biases often result in investors selling equities after a downturn and then buying again when the market is rallying. Repeating these mistakes over time can undermine your ability to meet long-term financial goals.

To improve your odds of long-term financial success, you need to overcome these behavioral biases and invest rationally, rather than emotionally. And that's what Northern Trust's investment approach is designed to do. Identifying specific objectives – like maintaining your lifestyle – allows us to help you quantify your goals. From here, we can employ strategies like the Portfolio Reserve to help you achieve your goals and avoid making short-term decisions that might jeopardize your long-term success.

Being able to draw down your Portfolio Reserve in periods of economic distress can help give you the patience to take a long-term view for your equity assets. It provides time for equities to recover their value. And focusing on the longer time horizon should help you capture the higher returns that equities historically have offered.

A MORE INTUITIVE APPROACH TO DETERMINING RISK TOLERANCE

Behavioral finance research also has found that traditional definitions of risk are not intuitive for most investors, which can cause them to inaccurately specify their risk preference. Taking a goals-based approach to building your portfolio is more intuitive than traditional methods of determining risk tolerance. Defining risk by the number of years of spending you want to protect is much easier to understand than measures like standard deviation or volatility are.

This is important because identifying your risk preference – that is, the degree of confidence you want in your ability to reach your goals – is critical to building your Portfolio Reserve. The size of the reserve you build will depend on how many years of spending you want to protect. If you are risk averse and have sufficient assets, your optimal solution may be to extend the number of years your Portfolio Reserve protects within your expected lifetime.

Larger Portfolio Reserves give the equities in your portfolio more time to recover from downturns. But they also increase your overall portfolio exposure to fixed income securities, which means they are generally more suitable for investors with lower risk tolerance or those owning significant assets in excess of their needs who can tolerate the lower overall returns this may bring.

HOW MUCH PROTECTION IS ENOUGH?

A number of factors will influence the decision about how many years you want your Portfolio Reserve to protect. To gauge the size of a safety net you would need to see you through the most uncertain economic environments, we consider how the markets behaved during and after historic periods of distress.

For instance, during the Great Depression, it took 20 years for equities to fully recover, adjusting for inflation and deflation, to their 1929 peak. And after the bear market and inflation spike of the 1970s, it took equities 12 years, after adjusting for inflation, to fully recover.

WHAT BEHAVIORAL FINANCE TEACHES US

The field of behavioral finance has shown that investors often behave in ways that are far from rational. These irrational tendencies are called behavioral biases, and they can have a meaningful effect on investment outcomes:

- **Recency bias:** putting more emphasis on recent events than on long-term trends
- **Loss aversion:** putting more emphasis on avoiding losses than on acquiring gains
- **Herd mentality:** if everyone else is doing it, it must be right

This last tendency – to follow the herd – often leads investors to sell low and buy high during times of market turmoil.

EQUITIES THROUGH THE GREAT DEPRESSION (20 YEARS)

SOURCE: Ibbotson S&P 500 total returns adjusted for inflation and indexed to 100 in 1926.

Asset sufficiency, or the amount of assets you have in excess of what is needed to meet your goals in aggregate, also can help determine the appropriate number of years for your Portfolio Reserve to cover. The more years you wish your Reserve to protect, the more money you will need to fund it. A family with significant excess assets above and beyond what is needed to meet their goals may choose to establish a Portfolio Reserve capable of funding lifestyle through a period such as the Great Depression or longer.

The number of years you wish to protect will determine how much money you need to fund your Reserve.

Another family may want to allocate all assets towards their goals (i.e. no asset sufficiency). This family would determine their core lifestyle spending amount and then select a Portfolio Reserve which minimizes risk and funds all of their goals.

BALANCING OUT THE RISKS TO FIXED INCOME

No asset class is risk-free, and fixed income is no exception. The Portfolio Reserve is designed to withstand the six key risks to fixed income:

1. Inflation
2. Deflation
3. Default
4. Liquidity
5. Taxation
6. Interest rate changes

Perhaps the most underappreciated risk to fixed income investments is the threat of inflation. Because lifestyle spending is highly sensitive to inflation, the Portfolio Reserve is constructed to address this key risk. The table below illustrates the effect of inflation on bond returns through the 1970s' era of high inflation.[1] Inflation compounded at nearly 9% annually over that 10-year period. Long-term government bonds (20-year Treasuries) lost 26% of their purchasing power, despite having no credit risk.

To provide a hedge against inflation and this loss of purchasing power, we use Treasury inflation-protected securities (TIPS) in the Portfolio Reserve construction. They have provided investors with an effective tool to combat this risk since their inception in 1997.

REAL BOND RETURNS (1973-1982)

	Annualized Return	Annualized Real Return	Real Growth of $1	Standard Deviation	Maximum Real Drawdown
Inflation	8.67%				
Long-Term Government Bonds	5.76%	-2.91%	$0.74	12.79%	-50.80%
Intermediate Term Government Bonds	8.00%	-0.67%	$0.93	8.13%	-32.16%
Low-Duration Bonds	8.30%	-0.37%	$0.96	4.18%	-21.58%
Treasury Bills	8.46%	-0.21%	$0.98	0.97%	-13.33%

NOTES: Ibbotson long-term government bonds, intermediate-term government bonds, 30-day Treasury bills adjusted for inflation (1973-1982). Low duration portfolio is comprised of 50% intermediate-term government and 50% Treasury bills.

Deflation- and default-risk are intimately related. Deflationary environments tend to accompany deep recessions, when credit risk increases. Like all fixed income, municipal bonds have various levels of credit risk. But a nationally diversified portfolio of high-quality general obligation and revenue municipal bonds has performed very well through historic periods of distress. From 1929 to 1937 (the Great Depression), the annual loss rate (default plus recovery) for municipal bonds was just 0.1%.[1] Similarly, from 1970 to 2014 Baa-rated municipal bonds offered a cumulative default rate of just 0.4% versus 4.4% for Baa-rated corporate bonds.[2]

Municipal bonds are subject to liquidity risk, as we most recently saw during the 2008 financial crisis. Although Treasury bills are the most liquid and offer the best credit profit, municipal bonds are more attractive when taxes are considered. Tax-exempt bonds offer a positive return after taxes and inflation, where Treasuries often do not.

Given our current low-rate environment, you may be searching for higher yields by purchasing longer-term fixed income. However, looking at total returns for bonds through various interest rate cycles from 1926 to 2016, we find that 20-year government bonds returned only 5.7% versus 5.2% for five-year government bonds, but with almost double the volatility.[3]

Because it is intended to fund your highest priority goals (in most cases, lifestyle spending), your portfolio manager will take an active role in reducing your exposure to the various risks by strategically constructing your Portfolio Reserve.

THE PORTFOLIO RESERVE CONSTRUCTION

The Portfolio Reserve addresses the six key risks mentioned above through a combination of cash (typically in the form of Treasury bills), high-quality municipal bonds and TIPS. We assign a customized investment strategy to dynamically align your current and future assets with each goal, based on when you will need the funds and the risk associated with fulfilling that goal. The end result is a customized portfolio to fund your lifestyle spending during normal times and through times of economic and market distress.

The flexibility of the Portfolio Reserve allows you to preserve the overall strategy in normal periods and draw the Portfolio Reserve investment down in periods of economic distress, giving equities time to recover.

During times of extreme volatility, we would use cash first, in the form of Treasury bills, to address lifestyle spending needs. These assets are the most liquid and offer the best credit profile. Depending on the lifespan of your Portfolio Reserve, we target high-quality municipal bonds to fund lifestyle needs after the first years. They offer excellent credit quality and a positive expected return after taxes and inflation. In the later years, which are increasingly exposed to inflation risk, your lifestyle spending is funded by TIPS.

HOW THE PORTFOLIO RESERVE HELPS YOU ACHIEVE YOUR FINANCIAL GOALS

As principal, capital gains, interest and dividends are available to fund each of your goals, we will use a total-return approach to help meet your goals and manage your Portfolio Reserve, using both qualitative and quantitative information. The flexibility of the Portfolio Reserve allows you to preserve the overall strategy in normal periods and draw the Portfolio Reserve investment down in periods of economic distress, giving equities time to recover.

At Northern Trust, we define investment success as the achievement of your financial goals. The Portfolio Reserve gives you the confidence to take a long-term view of your investment portfolio to help you achieve those goals.

NOTES:

1 Source: Hempel, Hillhouse, PIMCO.

2 Source: Moody's.

3 Source: Ibbotson long-term government bonds and intermediate-term government bonds (1926 – 2016).