

Managing through Market Drawdowns

In Case of Drawdown, Break Glass

Steve Foresti, Chief Investment Officer, Wilshire Consulting

If you are reading this note, we are likely experiencing a market selloff.

Whether it is a technical market correction (i.e., stocks down 10% or more) or an official bear market (down 20% or more), every drawdown is unique, and each is uncomfortable to navigate. Some are triggered by economic slowdowns, some by geopolitical circumstances and others, like today's market stress, by exogenous events like a health/pandemic crisis. In the future, it is possible that a drawdown may be triggered by climate change-linked extreme weather events.

Though we know the catalyst of our current market volatility, COVID-19, our general focus in this memo is aimed at assisting asset owners with long-term investment objectives to manage portfolios through these stressed markets. We therefore spend little time attempting to project the short-term health, economic or market impacts from COVID-19. We recognize and openly acknowledge that we have no unique insight or edge in accurately projecting such things. There is no question that COVID-19 is negatively impacting the U.S and global economies in meaningful ways, but even though we can observe how markets have discounted current conditions, how those conditions might change and how markets will respond to those changes are highly unknown. We would be dubious of and caution against actively trading portfolios based on the opinions of market prognosticators who express their short-term views around these issues with any degree of confidence. While it appears less likely that COVID-19 will be behind us soon, there is a very wide range of potential outcomes and market reactions. As such, rather than guess on how the serious impacts of the Coronavirus might play out, the remainder of this note will 1) provide statistical analysis of past market corrections, 2) articulate Wilshire's beliefs regarding investments in growth assets (i.e. stocks), 3) provide empirical evidence to support the value of adhering to established rebalancing policies during times of market stress, and 4) look ahead to strategic challenges in structuring portfolios to meet our investment objectives. Spoiler alert: in this note we are 'pounding the table' to make the case and provide supporting evidence that investors should stay the course and follow prescribed rebalancing policies (see Section 3 on page 3, in particular, for that pitch).

1) Review of Historical Market Corrections

We begin with an empirical review of all U.S. stock market corrections (i.e. selloffs of -10% or more) from 1926 to today; encompassing nearly 100-years of monthly data. The subsequent table shows each episode (18 in total with half, or nine drawdowns, reaching bear market territory, a decline of -20% or more). We focus attention to the green rectangular bar highlighting summary statistics across all eighteen selloffs. Long-term investors should take some comfort from the historical resiliency of markets to recover unrealized losses. In the table, we contemplate an investor with worst-case -scenario timing: this woeful investor buys stocks at each monthly market peak (i.e. immediately preceding each sell-off). Despite suffering an average initial loss of 27.9% (with a median of -20.2%), over the long-term, the same investor earns an average annualized return of 4.1% and 8.0% over 5- and 10-year holding periods, respectively (with median annualized returns of 5.7% and 7.6%, respectively). As noted above, while these historical statistics are a comforting reminder of the benefit of long-term horizons, they often seem outdated or somehow irrelevant in the midst of the fear of a current market selloff. "This time" always feels

different, because it is. However, unless we expect that stocks will never return to their previous peaks, a bearish sentiment for even the most pessimistic of forecasters, we should look to this historical evidence for intestinal fortitude in weathering today's challenges.

Market Corrections Since 1926

| Date of Market Correction | | | Duration (# months) | | Depth of Drawdown | Annualized Returns If Purchased at Peak | |
|-----------------------------------|----------|-----------|---------------------|----------|-------------------|---|----------|
| Peak | Trough | Recovered | Sell-off | Recovery | | 5 Years | 10 Years |
| Aug-1929 | Jun-1932 | Jan-1945 | 34 | 151 | -83.4% | -17.4% | -4.9% |
| Feb-1937 | Mar-1938 | Mar-1944 | 13 | 72 | -50.0% | -8.6% | 4.0% |
| May-1946 | Oct-1946 | Oct-1949 | 5 | 36 | -21.6% | 9.1% | 15.5% |
| Jul-1956 | Feb-1957 | Jul-1957 | 7 | 5 | -10.2% | 10.0% | 9.0% |
| Jul-1957 | Dec-1957 | Jul-1958 | 5 | 7 | -15.0% | 7.6% | 10.7% |
| Dec-1961 | Jun-1962 | Apr-1963 | 6 | 10 | -22.3% | 5.7% | 7.4% |
| Jan-1966 | Sep-1966 | Mar-1967 | 8 | 6 | -15.6% | 4.3% | 4.0% |
| Nov-1968 | Jun-1970 | Mar-1971 | 19 | 9 | -29.2% | 0.4% | 3.1% |
| Dec-1972 | Sep-1974 | Dec-1976 | 21 | 27 | -46.4% | -0.1% | 7.6% |
| Aug-1978 | Oct-1978 | Mar-1979 | 2 | 5 | -11.2% | 17.1% | 14.8% |
| Nov-1980 | Jul-1982 | Oct-1982 | 20 | 3 | -18.8% | 12.1% | 11.8% |
| Jun-1983 | May-1984 | Dec-1984 | 11 | 7 | -10.8% | 12.8% | 13.3% |
| Aug-1987 | Nov-1987 | Apr-1989 | 3 | 17 | -29.8% | 7.7% | 13.4% |
| May-1990 | Oct-1990 | Feb-1991 | 5 | 4 | -16.8% | 11.5% | 16.7% |
| Jun-1998 | Sep-1998 | Nov-1998 | 3 | 2 | -12.0% | -1.3% | 3.6% |
| Aug-2000 | Sep-2002 | Mar-2006 | 25 | 42 | -44.1% | -1.6% | -1.1% |
| Oct-2007 | Feb-2009 | Mar-2012 | 16 | 37 | -51.0% | 0.6% | 7.6% |
| Sep-2018 | Dec-2018 | Apr-2019 | 3 | 4 | -14.3% | ? | ? |
| Market Correction Statistics (18) | Minimum | | 2 | 2 | -83.4% | -17.4% | -4.9% |
| | Average | | 11 | 25 | -27.9% | 4.1% | 8.0% |
| | Median | | 8 | 8 | -20.2% | 5.7% | 7.6% |
| | Maximum | | 34 | 151 | -10.2% | 17.1% | 16.7% |
| Bear Market Statistics (9) | Minimum | | 3 | 9 | -83.4% | -17.4% | -4.9% |
| | Average | | 16 | 45 | -42.0% | -0.4% | 5.8% |
| | Median | | 16 | 36 | -44.1% | 0.4% | 7.4% |
| | Maximum | | 34 | 151 | -21.6% | 9.1% | 15.5% |

Source: Wilshire Compass (S&P 500 1926-1970, Wilshire 5000 1971-Forward)

2) Why we hold growth assets

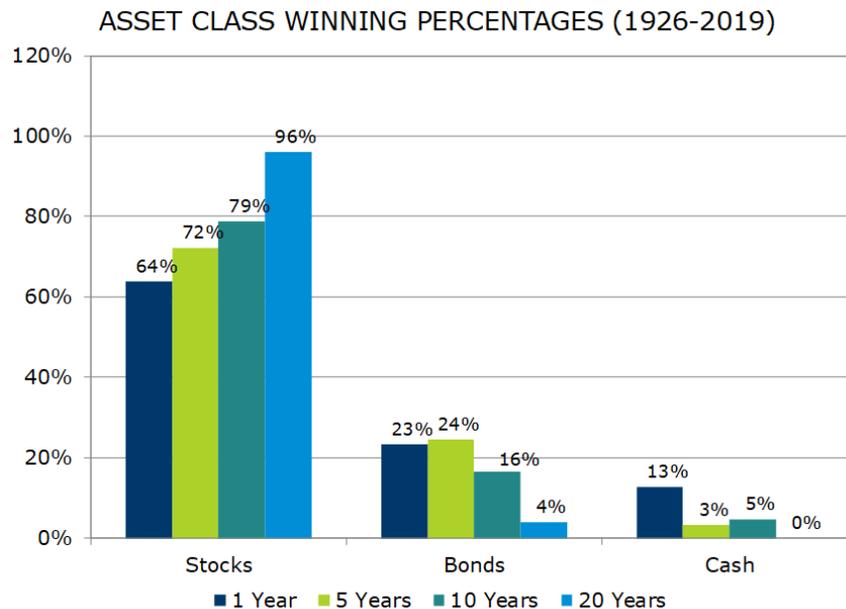
Building from the empirical data provided above, we turn to a more qualitative defense for holding risk assets. Barring any major disagreement with the basic investment beliefs presented below, these tenets should bolster conviction and argue for maintaining portfolio positioning through market turbulence:

1. We/many hold significant allocations to stocks and other growth assets because of their attractive long-term return potential (both in absolute and risk-adjusted terms).
2. While the short-term direction and path of returns for growth assets is unpredictable, we know with virtual certainty that there will be periods of significant drawdown.
3. We can only harness the returns expected in point #1 above by accepting the unpredictable and often uncomfortable return pattern noted in point #2 (i.e., we are highly unlikely to capture the upside without exposing ourselves to the downside).

While we specifically discuss the value of rebalancing in the next section, we suspect that some market participants might quibble with us on the third bullet from above. In response, we note that empirical evidence debunks the effectiveness of market timing. The notion that investors can have perfect foresight by getting out of markets prior to drawdowns and

reentering in time for the recovery is simply not a credible strategy. Though Wilshire does occasionally attempt to exploit market volatility to express marginal market or structural tilts within our discretionary portfolios, these activities tend to be infrequent in number, modest in size, and directionally consistent with typical rebalancing transactions (i.e. selling recent winners to buy recent laggards when valuations support such trades).

Below, we present the historical winning percentages between stocks, bonds and cash from 1926 to 2019 to underscore the strength of the beliefs noted above in supporting the role of growth assets for long-term investors. Notice how the dependability of the equity risk premium increases with the length of holding periods; outpacing bonds and cash just 64% of the time over one-year holding periods versus a more dependable 79% and 96% of the time over ten- and twenty-year rolling periods, respectively. Investors risk lowering those odds by tactically jumping in and out of stocks over time.



3) The Value of Disciplined Rebalancing

Establishing prudent rebalancing guidelines is a critical element of a robust portfolio management strategy. Formalizing those procedures in a written investment policy statement (IPS) provides important governance to ensure that portfolios are managed in a manner that is consistent with those researched and articulated plans. A well-constructed IPS is an institution’s best tool for guarding against behavioral risks that might result in emotionally driven, value destroying decisions during periods of market stress. The IPS pre-experiences and prescribes how an investor is to prudently respond during various market environments.

However, periods of increased uncertainty within an elevated-risk environment can be extremely uncomfortable, even for investors with strong investment policies in place. Stressed markets often pressure investors to second-guess their portfolio risk profiles and even trade assets in ways that conflict with stated long-term allocation policies. While we recognize the natural behavioral tendency to "make the pain stop," Wilshire advises clients to maintain discipline and adhere to prescribed allocation and rebalancing policies, particularly during times of heightened volatility.

An institution’s liquidity needs can create challenges and sometimes materially constrain rebalancing policies, particularly during periods of market stress. When experiencing severe or extended drawdowns, investor liquidity requirements can force selling that might otherwise be contrary to stated rebalancing policy. While a detailed discussion of liquidity management is outside the scope of this note, we do raise the importance of this issue in weathering market selloffs and direct interested readers to Wilshire’s “Liquidity Management: Bridge Over Troubled Water” research paper.

In the exhibit at the top of the next page, we revisit our historical data on market corrections to empirically analyze how rebalancing decisions impacted results during those historical market selloffs. The columns to the right in the exhibit attempt to quantify how a process of monthly rebalancing around a 60% stock / 40% bond portfolio might compare to approaches that react to market stress by delaying rebalancing activities (i.e., not trading). In each case, we assume that the investor

chooses to deviate from their monthly rebalancing process when cumulative returns are off -5% or more from the market peak and only resumes rebalancing after stocks had fully sold off and then recovered. While we believe this to be a reasonable way to quantify what we are interested in measuring, we also examined the results had the investor immediately abandoned their rebalancing plan after the first negative month within each market correction (we provide that output, which is similar to the results below, in the Appendix). Returning to the following analysis, we chose -5% as our selloff trigger since one would expect a move of at least that magnitude would be required to have an investor shaken enough to second-guess their rebalancing policy.

As can be seen from the empirical results in the table, deviating from the prescribed monthly rebalancing policy in the manner described above would have cost the investor approximately -0.30% in annualized returns across 18 market corrections (-0.32% average, -0.25% median). The results across the subset of nine bear markets is even more compelling with the suspension of rebalancing costing the investor an annualized average of -0.46% and median of -0.40%. In just one of the 18 market corrections since 1926 would the investor have been better off by suspending rebalancing activities. That sole exception occurred during the November 1980–October 1982 correction and recovery and benefited the investor by an annualized 0.17%. Interestingly, a key driver of the portfolio’s return edge in the 1980–1982 period resulted from a remarkable 40% return to bonds, which benefited from a rapidly declining rate environment. So, while rebalancing cannot be guaranteed to yield better results across all market selloffs, the odds strongly favor its advantages and the one notable historical exception was driven by outsized returns from bonds rather than from disappointing returns to stocks. We recognize that rebalancing into a drawdown and during elevated market uncertainty can be extremely uncomfortable and can sometimes feel counter to a risk averse process. We therefore present these data to demonstrate the historical advantages of maintaining such discipline. The call to rebalance in no way suggests certainty around the market’s next move (i.e., that it will go up, let alone by how much), but rather underscores the importance of exploiting volatility and unpredictability by systematically shifting from recent winners to recent laggards.

Rebalancing Impact during Market Corrections Since 1926

| | | | | Annualized Returns (Peak to Recovery) | | |
|-----------------------------------|----------|-----------|----------------|---------------------------------------|----------------------|--------|
| Date of Market Correction | | | Total # Months | Rebal (60/40) | React to Stocks <-5% | Net |
| Peak | Trough | Recovered | | | | |
| Aug-1929 | Jun-1932 | Jan-1945 | 185 | 3.5% | 2.8% | -0.68% |
| Feb-1937 | Mar-1938 | Mar-1944 | 85 | 6.1% | 5.0% | -1.15% |
| May-1946 | Oct-1946 | Oct-1949 | 41 | 1.3% | 1.0% | -0.24% |
| Jul-1956 | Feb-1957 | Jul-1957 | 12 | -2.4% | -2.4% | -0.08% |
| Jul-1957 | Dec-1957 | Jul-1958 | 12 | 6.5% | 6.3% | -0.26% |
| Dec-1961 | Jun-1962 | Apr-1963 | 16 | 3.8% | 3.4% | -0.40% |
| Jan-1966 | Sep-1966 | Mar-1967 | 14 | 1.9% | 1.8% | -0.09% |
| Nov-1968 | Jun-1970 | Mar-1971 | 28 | 2.6% | 2.4% | -0.20% |
| Dec-1972 | Sep-1974 | Dec-1976 | 48 | 3.6% | 3.4% | -0.21% |
| Aug-1978 | Oct-1978 | Mar-1979 | 7 | 1.9% | 1.7% | -0.19% |
| Nov-1980 | Jul-1982 | Oct-1982 | 23 | 8.7% | 8.9% | 0.17% |
| Jun-1983 | May-1984 | Dec-1984 | 18 | 5.3% | 5.2% | -0.10% |
| Aug-1987 | Nov-1987 | Apr-1989 | 20 | 4.3% | 3.7% | -0.64% |
| May-1990 | Oct-1990 | Feb-1991 | 9 | 6.4% | 6.2% | -0.25% |
| Jun-1998 | Sep-1998 | Nov-1998 | 5 | 2.5% | 2.0% | -0.55% |
| Aug-2000 | Sep-2002 | Mar-2006 | 67 | 2.7% | 2.5% | -0.19% |
| Oct-2007 | Feb-2009 | Mar-2012 | 53 | 3.3% | 2.9% | -0.42% |
| Sep-2018 | Dec-2018 | Apr-2019 | 7 | 3.2% | 2.9% | -0.31% |
| Market Correction Statistics (18) | | | Minimum | | Minimum | -1.15% |
| | | | Average | 36 | Average | -0.32% |
| | | | Median | 19 | Median | -0.25% |
| | | | Maximum | 185 | Maximum | 0.17% |
| Bear Market Statistics (9) | | | Minimum | | Minimum | -1.15% |
| | | | Average | 60 | Average | -0.46% |
| | | | Median | 48 | Median | -0.40% |
| | | | Maximum | 185 | Maximum | -0.19% |

Source: Wilshire Compass (S&P 500 1926-1970, Wilshire 5000 1971-Forward)

Investors who either find the results presented above to be unconvincing or who routinely feel the pressure to cut-losses whenever markets sell-off 10% or more (or when exogenous risks emerge) might be well-served by reassessing their portfolios’ general risk profiles, as these sentiments may signal an inconsistency between portfolio risk allocations and investor risk appetites.

4) How Do Recent Market Moves Impact Longer-Term Strategic Goals

While we have devoted most of this note to supporting adherence to rebalancing ranges, we must all acknowledge the very real and increased pressure recent market moves have added to the challenge of meeting long-term investment objectives. Though the Coronavirus may have served as the recent catalyst of economic and market volatility, there seem to be broader and unique challenges embedded in market pricing. U.S. stocks are down nearly -15% YTD through Monday March 9, the CBOE Volatility Index (VIX) spiked above 50%, oil prices appear to be in freefall and, perhaps most remarkably, 10-year Treasury yields have collapsed below 1.0% for the first time ever (currently ~0.60%). The dramatic drop in rates exacerbates some of the challenges we recently discussed in our 2019 yearend memo.

On one hand, the strong recent performance of high-quality bonds (as yields fell), reinforces the “Don’t Fear Duration” message of the yearend memo; specifically, that bonds, even at modest yield levels, serve a critical role within portfolios. Unfortunately, as those yields continue to fall and pull returns forward, their new all-time-low, further dampen their ability to contribute meaningfully to meeting most institutional return targets. We would refer interested readers to the asset class assumptions building block exhibit contained in our yearend memo and suggest that this picture as it relates to cash and bonds has likely changed for the worse due to YTD changes. Rebalancing can assist in navigating short-term choppy markets, but the aftermath of this volatility may require a review of longer-term portfolio expectations. Further, as yields approach 0% in the U.S., their ability to continue providing a risk offset begins to come under pressure as yields approach their practical floor. However, today’s yields do not yet fully realize that concern as developed markets in Europe have demonstrated that yields can approach levels near -1% before encountering such limits (e.g., current 10-year government yields are approximately -0.85% in Germany, -0.40% in France, -0.65% in the Netherlands and -1.00% in Switzerland).

Wilshire will continue to monitor market conditions, will update those conditions in our upcoming March 2020 assumptions suite and stands ready to work through the challenges of upcoming asset-liability studies with our clients to explore the possible trade-offs embedded in the gap between investor return needs and market expectations.

Appendix

Rebalancing Impact during Market Corrections Since 1926

| Date of Market Correction | | | Total # Months | Annualized Returns (Peak to Recovery) | | |
|--------------------------------------|----------|-----------|-------------------|---------------------------------------|------------------------|--------|
| Peak | Trough | Recovered | | Rebal (60/40) | React to Stocks <0% | Net |
| Aug-1929 | Jun-1932 | Jan-1945 | 185 | 3.5% | 2.9% | -0.61% |
| Feb-1937 | Mar-1938 | Mar-1944 | 85 | 6.1% | 5.2% | -0.98% |
| May-1946 | Oct-1946 | Oct-1949 | 41 | 1.3% | 1.0% | -0.24% |
| Jul-1956 | Feb-1957 | Jul-1957 | 12 | -2.4% | -2.5% | -0.11% |
| Jul-1957 | Dec-1957 | Jul-1958 | 12 | 6.5% | 6.3% | -0.26% |
| Dec-1961 | Jun-1962 | Apr-1963 | 16 | 3.8% | 3.4% | -0.39% |
| Jan-1966 | Sep-1966 | Mar-1967 | 14 | 1.9% | 1.8% | -0.09% |
| Nov-1968 | Jun-1970 | Mar-1971 | 28 | 2.6% | 2.4% | -0.18% |
| Dec-1972 | Sep-1974 | Dec-1976 | 48 | 3.6% | 3.5% | -0.18% |
| Aug-1978 | Oct-1978 | Mar-1979 | 7 | 1.9% | 1.7% | -0.19% |
| Nov-1980 | Jul-1982 | Oct-1982 | 23 | 8.7% | 9.1% | 0.40% |
| Jun-1983 | May-1984 | Dec-1984 | 18 | 5.3% | 5.4% | 0.05% |
| Aug-1987 | Nov-1987 | Apr-1989 | 20 | 4.3% | 3.7% | -0.64% |
| May-1990 | Oct-1990 | Feb-1991 | 9 | 6.4% | 6.2% | -0.23% |
| Jun-1998 | Sep-1998 | Nov-1998 | 5 | 2.5% | 2.0% | -0.55% |
| Aug-2000 | Sep-2002 | Mar-2006 | 67 | 2.7% | 2.6% | -0.13% |
| Oct-2007 | Feb-2009 | Mar-2012 | 53 | 3.3% | 2.9% | -0.35% |
| Sep-2018 | Dec-2018 | Apr-2019 | 7 | 3.2% | 2.9% | -0.31% |
| Market Correction Statistics (18) | | Minimum | 5 | | Minimum | -0.98% |
| | | Average | 36 | | Average | -0.28% |
| | | Median | 19 | | Median | -0.23% |
| | | Maximum | 185 | | Maximum | 0.40% |
| Bear Market Statistics (9) | | Minimum | 16 | | Minimum | -0.98% |
| | | Average | 60 | | Average | -0.41% |
| | | Median | 48 | | Median | -0.35% |
| | | Maximum | 185 | | Maximum | -0.13% |

Source: Wilshire Compass (S&P 500 1926-1970, Wilshire 5000 1971-Forward)

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More information

For more information, please contact us directly:

T +1 310 451 3051

Wilshire

1299 Ocean Avenue, Suite 700, Santa Monica, CA 90401

wilshire.com