Anatomy of a Bull Market

February 13th, 2017

SUMMARY

- Long-term average stock returns smooth over the bull and bear markets that investors experience, and no two market cycles ever unfold the exact same way. Bull and bear markets can vary significantly in both duration and magnitude.

- But there are other characteristics of bull markets that can also differ in meaningful ways, such as velocity, sources of return, and investor experience.

- When it comes to analyzing bull markets, inflation, interest rates, equity valuations, earnings, and dividends all play a part.

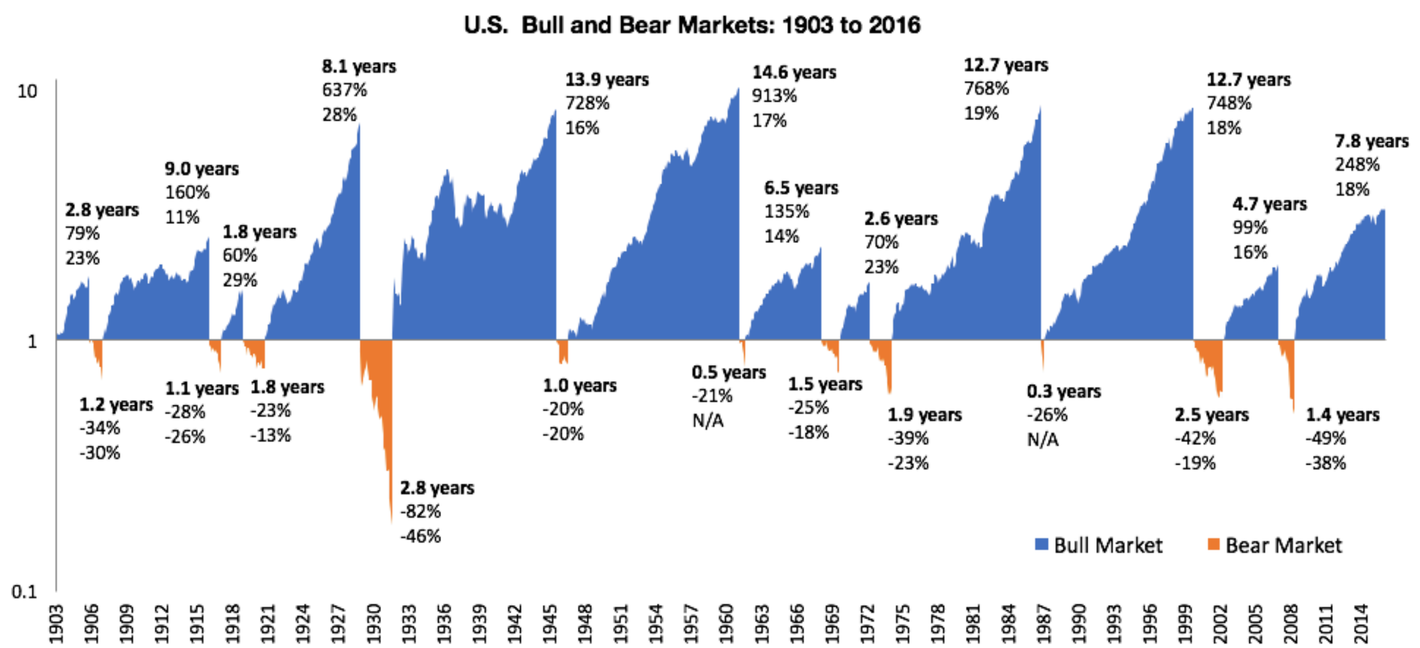
- Assessing the current economic environment in the context of historical U.S. and international bull markets can help set better expectations and reduce the risk of surprises that can lead to emotional decisions.

A few days back, we found this "History of U.S. Bear & Bull Markets Since 1926" one-pager from First Trust. In our opinion, the graph is a nice visualization of market expansions and contractions over the last 90 years.

We've recreated the graph below. There are some slight differences in what we show vs. the First Trust data since we use a different data source[1] and stick to monthly data. We also go back to the beginning of the first bull market of the 20th century.

Over the period from 1903 to 2016, there were 12 bull markets in the S&P 500. The average bull market lasted 8.1 years with a total return of 387%. The average bear market lasted 1.5 years with a total loss of 35%.

The current bull market, which began in March 2009, is the 7th longest and the 6th strongest. For it to be the longest ever, it would have to continue through the fourth quarter of 2023. For it to be the largest ever, the S&P would have to return another 665%.



Data Source: Robert Shiller's data library. Calculations by Newfound Research. Bull markets are defined from the lowest close reached after the market has fallen 20% or more to the next market high. Bear markets are defined from the last market high prior to the market closing down at least 20% to the lowest close after it's down 20% or more. Monthly data is used to make these calculations. Past performance does not guarantee future results.

While this analysis is informative, it's still an incomplete picture of the anatomy of bull (and bear) markets. Below, we will examine this same data from four other perspectives:

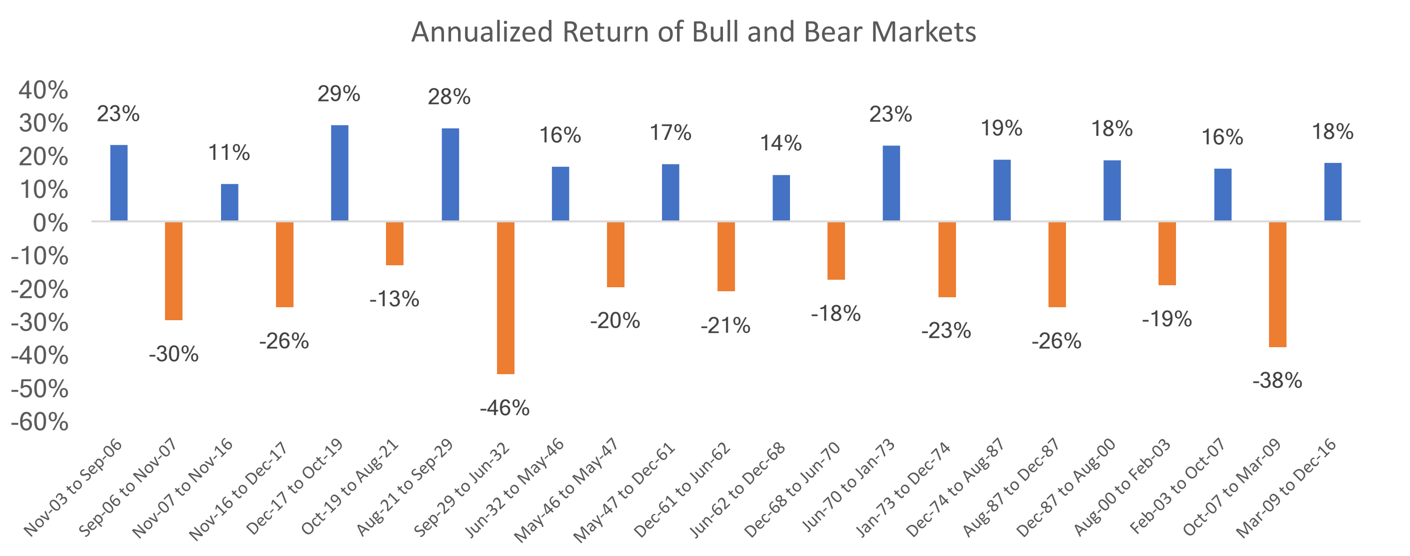
1. *Velocity*: How fast do bull and bear markets unfold?

[1] We use data from Robert Shiller's website. This data was used in Shiller's book, *Irrational Exuberance*. Shiller presents monthly data. Prior to January 2000, price data is the average of the S&P 500's (or a predecessor's) daily closes for that monthly.

2. *Sources of return*: How much of bull market returns are composed of inflation? Dividend yield? Earnings growth? Valuation changes?
3. *Experience*: What was the experience of an investor using a balanced 50/50 asset allocation during these bull and bear markets?
4. *Context*: How does the experience of bull and bear markets in the U.S. compare to other markets around the world?

Velocity: How fast do bull and bear markets unfold?

More often than not, market cycle analysis focuses on duration and magnitude. We can change the focus to velocity by graphing the annualized return experienced in each bull and bear market.



Data Source: Robert Shiller's data library. Calculations by Newfound Research. Bull markets are defined from the lowest close reached after the market has fallen 20% or more to the next market high. Bear markets are defined from the last market high prior to the market closing down at least 20% to the lowest close after it's down 20% or more. Monthly data is used to make these calculations. Returns are not annualized for market cycles that lasted less than one year. Past performance does not guarantee future results.

This snapshot highlights three important characteristics of the historical behavior of U.S. equity markets.

First, *we don't experience the average*. Over the 113+ year period we considered, the U.S. equity market returned an annualized 9.8%. Yet, the path of returns has been defined by thrilling bull markets and crushing bear markets.

Consider this: since 1903, *there has not been a market cycle with a single digit annualized return.*

Ten of the twelve bull markets had annualized gains greater than 15%. Similarly, annualized losses exceeded 15% in ten of the eleven bear markets.

Second, *bear markets typically unfold more rapidly than bull markets*. The average annualized returns for bull and bear markets are 19% and -25%, respectively.

Third, *the current bull market is slow by historical standards*. It ranks 17th in velocity out of the 23 market cycles that we studied. This same phenomenon occurred in the bull market that followed the Great Depression, the only bear market that was more severe than the Financial Crisis.

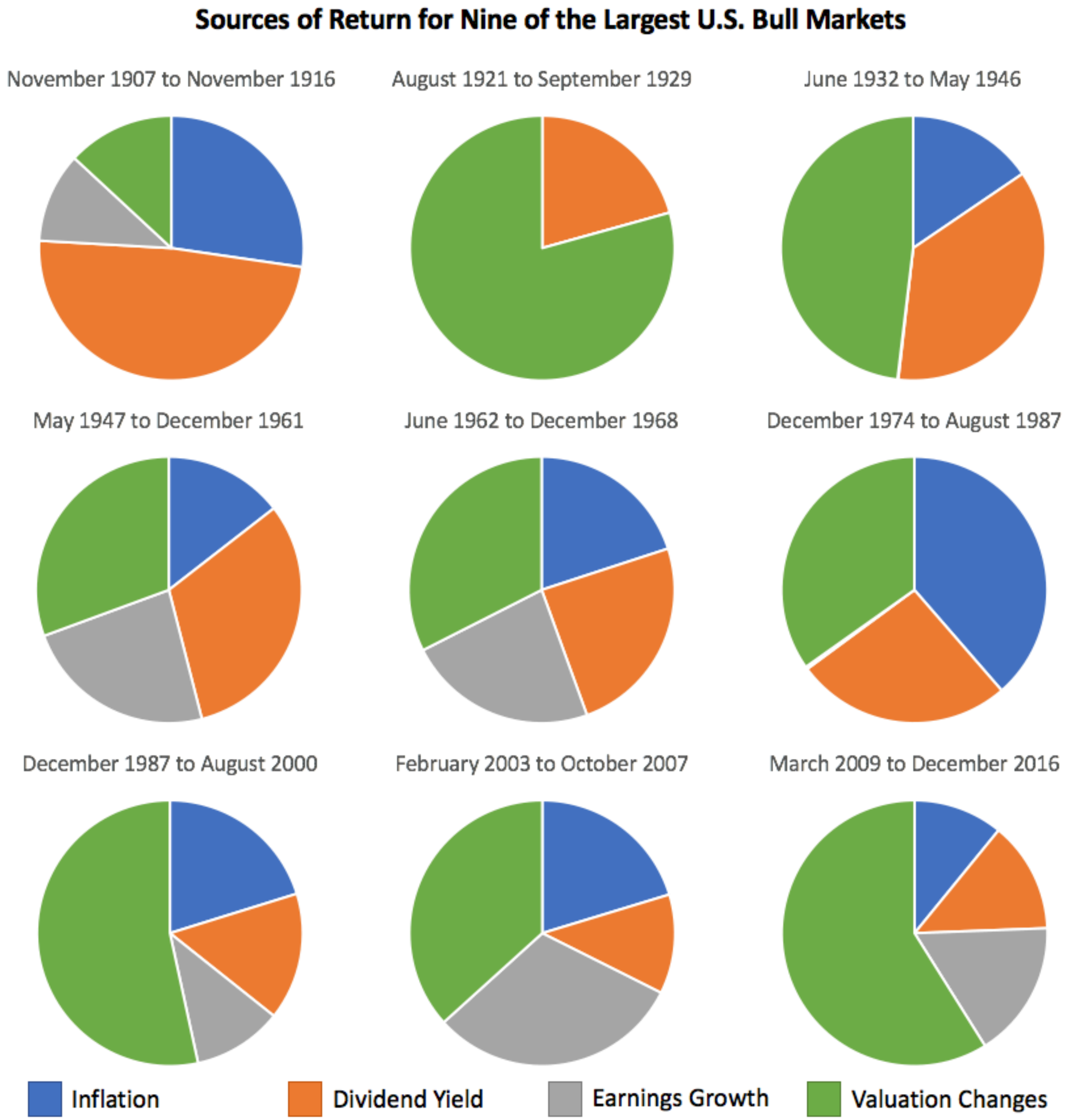
Sources of Return: How much of a given bull market can be attributed to inflation? Dividend yield? Earnings growth? Valuation changes?

Equity returns can be decomposed into four components:

- Inflation
- Dividend Yield
- Earnings Growth
- Valuation Changes

Using this framework, it quickly becomes clear that not all bull markets are created equal.

February 13th, 2017



Data Source: Robert Shiller's data library. Calculations by Newfound Research. Bull markets are defined from the lowest close reached after the market has fallen 20% or more to the next market high. Bear markets are defined from the last market high prior to the market closing down at least 20% to the lowest close after it's down 20% or more. Monthly data is used to make these calculations. Past performance does not guarantee future results.

For example, the bull market of the 70s and 80s was driven largely by inflation. On a nominal or pre-inflation basis, this was the second largest bull market of all time. On a real basis or post-inflation basis, however, it drops to just the fifth largest.

Both of the two most recent bull markets are unique in their own right.

The pre-global financial crisis bull market – lasting from February 2003 to October 2007 – had the largest share of return driven by earnings growth at just north of 30%. The current bull market is only the third instance of a large (greater than 100%) bull market where more than half the gains have come from expanding valuation multiples.

The contribution from valuation expansion *is larger than even the buildup of the tech bubble*.

Going beyond headline shock and awe, however, we recognize that classifying all valuation changes into a single bucket is probably painting with too broad of a brush. Valuations returning to normal after a market crash is not the same as valuations expanding from historical averages to all-time highs. We can address this by modifying the previous graphic. Specifically, we break the "Valuation Changes" category into two parts[2]:

- "Valuation Normalization": Valuations increasing from historically low levels to the long-term median.
- "Valuation Expansion": Valuations increasing from the long-term median to higher levels.

When all valuation changes are lumped together, the five most valuation-centric bull markets of the nine in the graphic are:

1. August 1921 to September 1929 (79%)
2. March 2009 to December 2016 (59%)
3. December 1987 to August 2000 (53%)
4. June 1932 to May 1946 (48%)
5. February 2003 to October 2007 (37%)

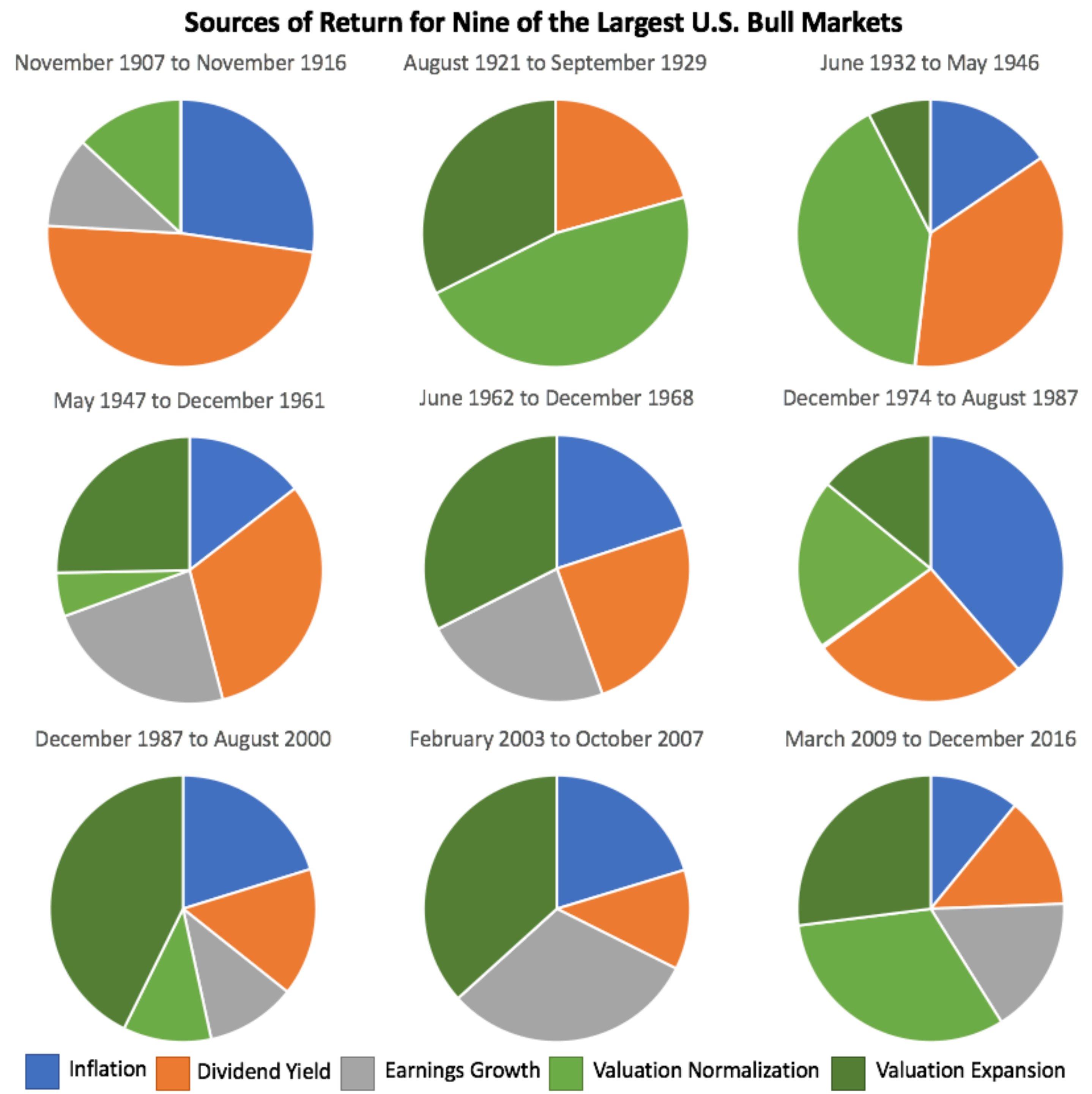
When we focus, however, on only "Valuation Expansion," the top five changes to:

1. December 1987 to August 2000 (43%)
2. February 2003 to October 2007 (37%)
3. June 1962 to December 1968 (32%)
4. August 1921 to September 1929 (32%)
5. March 2009 to December 2016 (27%)

When we ignore "Valuation Normalization," the current bull market drops from the 2nd most valuation-centric to the 5th most valuation-centric. The majority of the valuation gains in this cycle were the result of the recovery from the bottom of the financial crisis.

=

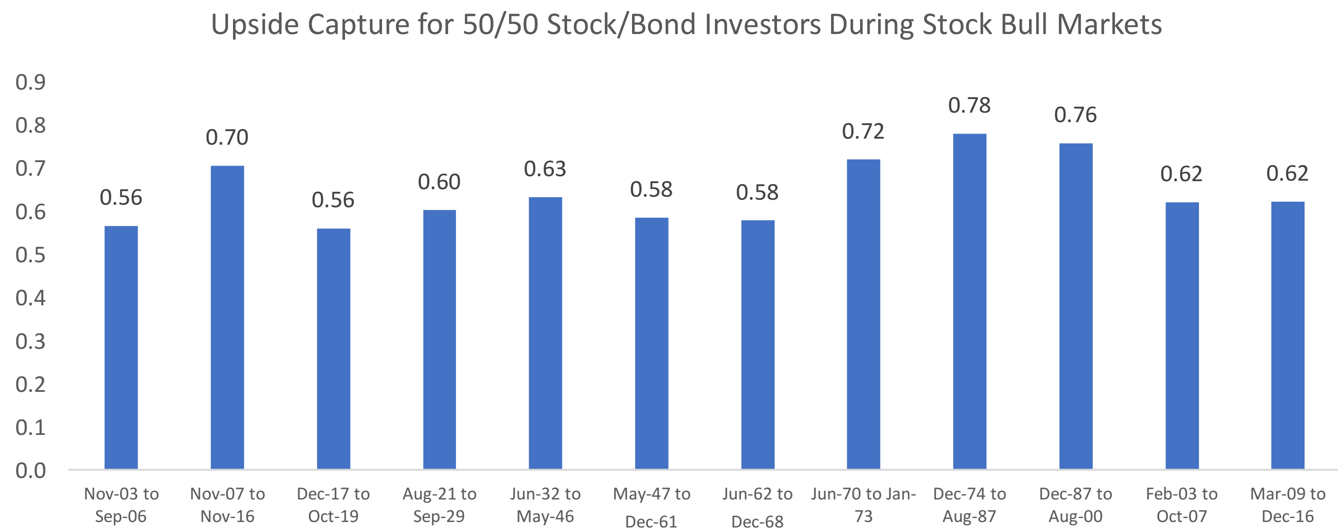
[2] To avoid hindsight bias when calculating the historical median, we used rolling 50 year periods.



Data Source: Robert Shiller's data library. Calculations by Newfound Research. Bull markets are defined from the lowest close reached after the market has fallen 20% or more to the next market high. Bear markets are defined from the last market high prior to the market closing down at least 20% to the lowest close after it's down 20% or more. Monthly data is used to make these calculations. Past performance does not guarantee future results.

Experience: How did balanced investors fare during historical equity bull markets?

Many investors do not hold 100% stock allocations. As a result, their experience during equity bull markets will also depend on bond returns. The chart below shows the upside capture for a 50/50 stock/bond investor during the twelve equity bull markets since 1903.

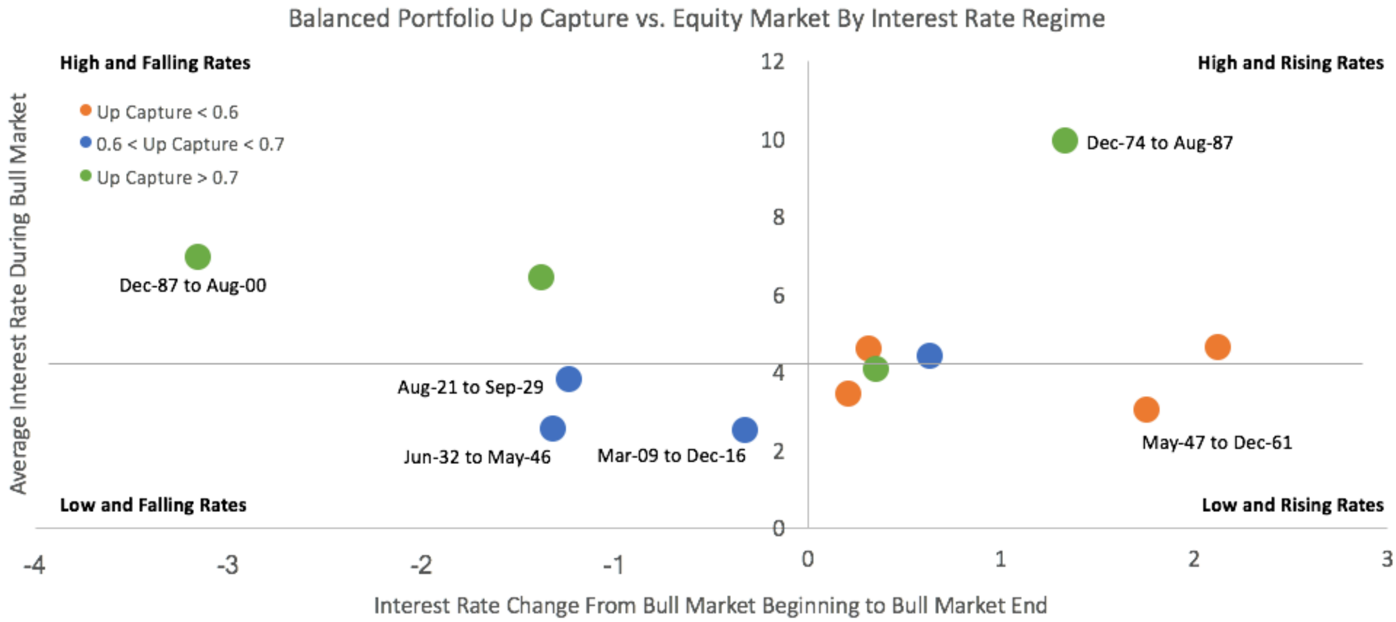


Data Source: Robert Shiller's data library. Calculations by Newfound Research. Bull markets are defined from the lowest close reached after the market has fallen 20% or more to the next market high. Bear markets are defined from the last market high prior to the market closing down at least 20% to the lowest close after it's down 20% or more. Monthly data is used to make these calculations. Returns are not annualized for market cycles that lasted less than one year. The 50% bond allocation is a hypothetical index created using the interest rate data from Shiller's data library. Past performance does not guarantee future results. Past performance does not guarantee future results. The balanced portfolio is rebalanced annually.

Despite the continued secular decline in interest rates, the last two bull markets (February 2003 to October 2007 and March 2009 to December 2016) have actually been below average for balanced investors.

Why? Because the relative performance of a balanced investors vs. a stock investor will not only depend on the path of interest rates (i.e. do rates increase or decrease), but also on the average interest rate over the period.

For ideal bull market up capture, balanced investors should hope for *high and declining interest rates*. Recently, we've had the latter, but not the former.



Data Source: Robert Shiller's data library. Calculations by Newfound Research. Bull markets are defined from the lowest close reached after the market has fallen 20% or more to the next market high. Bear markets are defined from the last market high prior to the market closing down at least 20% to the lowest close after it's down 20% or more. Monthly data is used to make these calculations. Returns are not annualized for market cycles that lasted less than one year. The 50% bond allocation is a hypothetical index created using the interest rate data from Shiller's data library. Past performance does not guarantee future results. Past performance does not guarantee future results. The balanced portfolio is rebalanced annually.

Going forward, we may move toward the bottom right-hand corner, which has historically had the lowest up-capture.

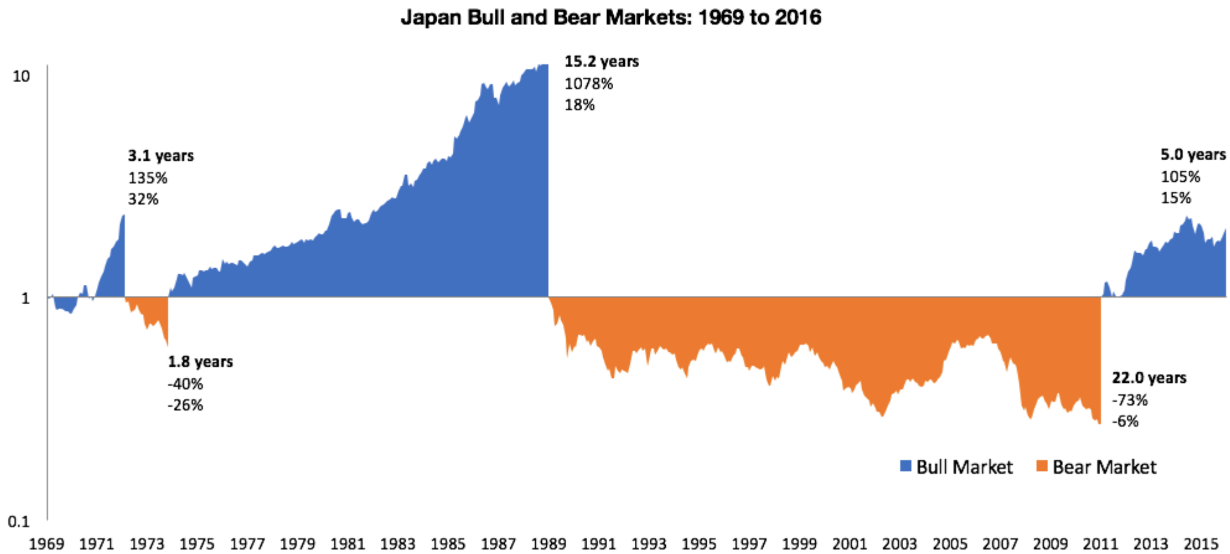
Context: How does the experience of bull and bear markets in the U.S. compare to other markets around the world?

In the following pages, we recreate the First Trust graph for Japan, the United Kingdom, Europe ex-UK, and Asia ex-Japan.

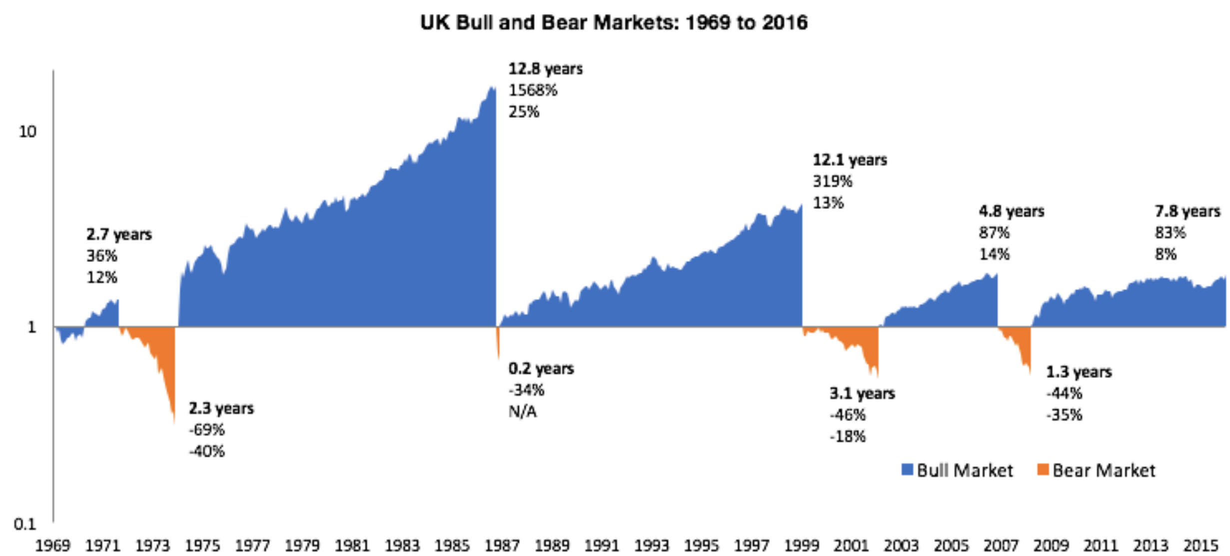
Looking beyond the United States can be a useful reminder that the future behavior of the S&P 500 is not constrained by past experiences.

It's possible to have larger bull markets than what we have seen in the U.S., as evidenced by the 1970s and 1980s in Japan and the UK.

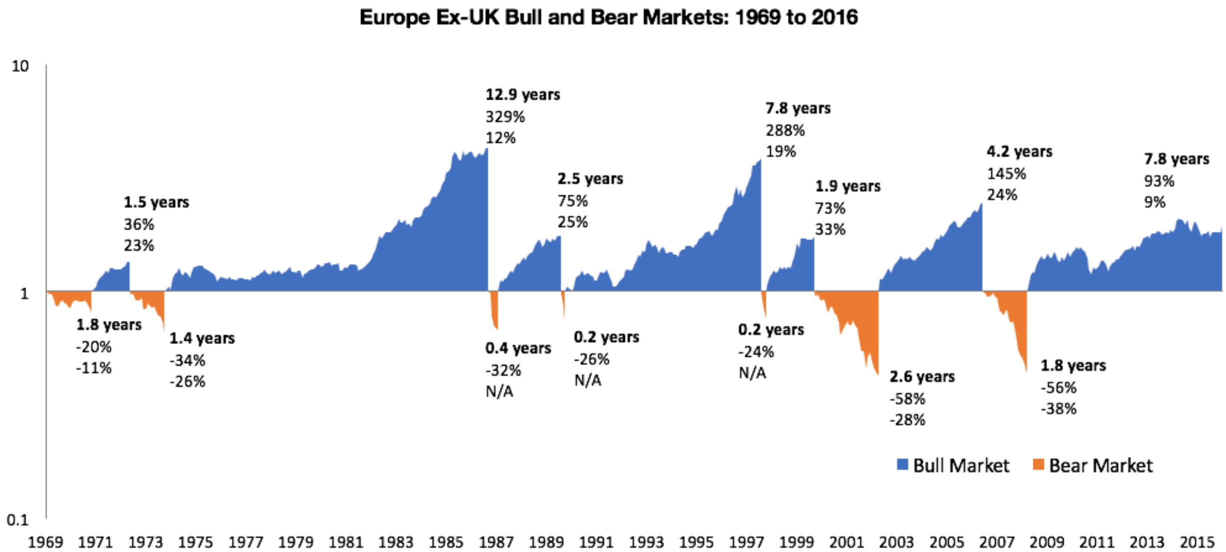
It's also possible for bear markets to drag on for years. The longest bear market in the U.S. since 1903 lasted slightly less than three years. Japan, on the other hand, saw a 20+ year bear market that lasted the entirety of the 1990s and 2000s.



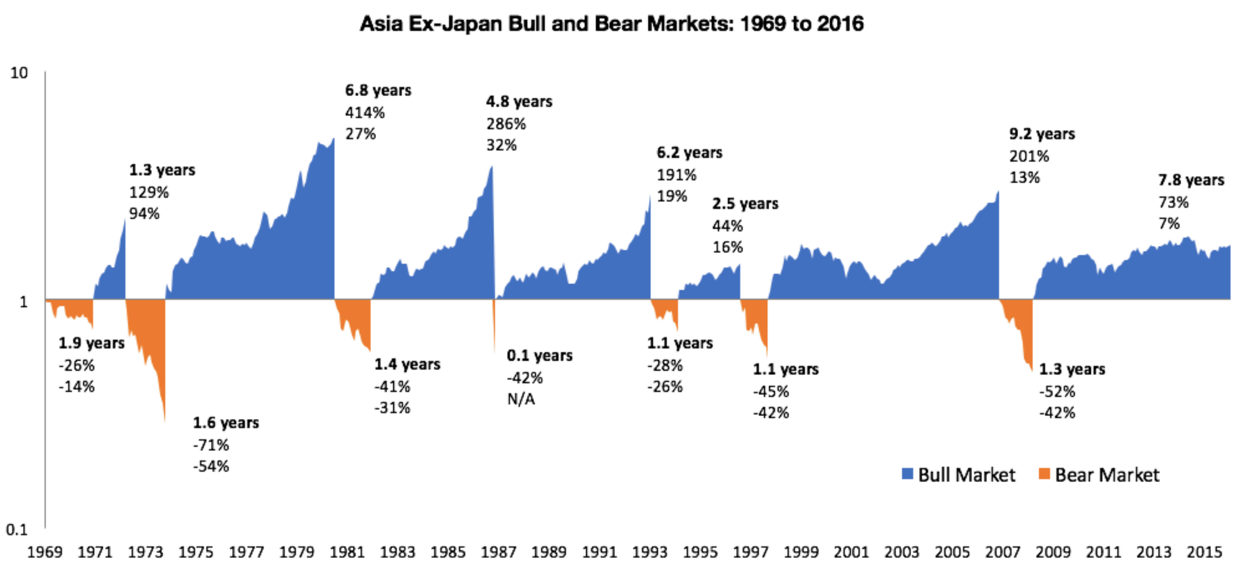
Data Source: MSCI. Calculations by Newfound Research. Bull markets are defined from the lowest close reached after the market has fallen 20% or more to the next market high. Bear markets are defined from the last market high prior to the market closing down at least 20% to the lowest close after it's down 20% or more. Monthly data is used to make these calculations. Past performance does not guarantee future results.



Data Source: MSCI. Calculations by Newfound Research. Bull markets are defined from the lowest close reached after the market has fallen 20% or more to the next market high. Bear markets are defined from the last market high prior to the market closing down at least 20% to the lowest close after it's down 20% or more. Monthly data is used to make these calculations. Past performance does not guarantee future results.



Data Source: MSCI. Calculations by Newfound Research. Bull markets are defined from the lowest close reached after the market has fallen 20% or more to the next market high. Bear markets are defined from the last market high prior to the market closing down at least 20% to the lowest close after it's down 20% or more. Monthly data is used to make these calculations. Past performance does not guarantee future results.



Data Source: MSCI. Calculations by Newfound Research. Bull markets are defined from the lowest close reached after the market has fallen 20% or more to the next market high. Bear markets are defined from the last market high prior to the market closing down at least 20% to the lowest close after it's down 20% or more. Monthly data is used to make these calculations. Past performance does not guarantee future results.

Conclusion

While long-term average stock returns have been high, they smooth over the bull and bear markets that investors experience along the way.

These large directional swings have many characteristics that make them unique, including their durations and magnitudes. Velocity, sources of return, and investor experience have also shown significant variation across market cycles.

This current bull market has been slow by historical standards and has largely been driven by normalization of equity valuations following the financial crisis. Balanced investors have benefitted from declining interest rates, but saw muted up-capture since interest rates started declining from a relatively low level.

Putting the current market environment into context by considering other geographies can lead to a more thorough understanding of how to position our portfolios and develop a plan that can be adhered to regardless of how a given market cycle unfolds.

Corey Hoffstein & Justin Sibears

About Newfound Research

Investing at the intersection of quantitative and behavioral finance, Newfound Research is dedicated to helping clients achieve their long-term goals with research-driven, quantitatively-managed portfolios, while simultaneously acknowledging that the quality of the journey is just as important as the destination.

To read other commentaries or to subscribe to future posts, please visit blog.thinknewfound.com.

Certain information contained in this presentation constitutes "forward-looking statements," which can be identified by the use of forward-looking terminology such as "may," "will," "should," "expect," "anticipate," "project," "estimate," "intend," "continue," or "believe," or the negatives thereof or other variations or comparable terminology. Due to various risks and uncertainties, actual events or results or the actual performance of an investment managed using any of the investment strategies or styles described in this document may differ materially from those reflected in such forward-looking statements. The information in this presentation is made available on an "as is," without representation or warranty basis.

There can be no assurance that any investment strategy or style will achieve any level of performance, and investment results may vary substantially from year to year or even from month to month. An investor could lose all or substantially all of his or her investment. Both the use of a single adviser and the focus on a single investment strategy could result in the lack of diversification and consequently, higher risk. The information herein is not intended to provide, and should not be relied upon for, accounting, legal or tax advice or investment recommendations. You should consult your investment adviser, tax, legal, accounting or other advisors about the matters discussed herein. These materials represent an assessment of the market environment at specific points in time and are intended neither to be a guarantee of future events nor as a primary basis for investment decisions. Past performance is not indicative of future performance and investments in equity securities do present risk of loss.

Investors should understand that while performance results may show a general rising trend at times, there is no assurance that any such trends will continue. If such trends are broken, then investors may experience real losses. The information included in this presentation reflects the different assumptions, views and analytical methods of Newfound as of the date of this presentation. This document contains the opinions of the managers and such opinions are subject to change without notice. This document has been distributed for informational purposes only and should not be considered as investment advice or a recommendation of any particular security, strategy or investment product. This document does not reflect the actual performance results of any Newfound investment strategy or index.