MOON CAPITAL MANAGEMENT

A Detailed Analysis of U.S. Bear Markets

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Abstract

In the first two months of 2016, the market valuation of the 500 companies in the S&P 500 declined by $1.04 trillion. The recent economic slowdown in China, the world's second-largest economy, coupled with plunging crude oil prices has created a rising fear of an impending recession in the minds of many investors. An old Wall Street adage is that the stock market has accurately predicted 12 of the past 7 recessions, suggesting that it is dangerous to draw conclusions about economic growth based on stock price moves. The converse assertion is no more predictive; bear markets are almost as likely to begin during periods of economic growth as during contractions. While there are no consistently accurate predictors of the beginnings of bear markets, the severity of a bear market is correlated to stock valuations (prospectively) and aggregate economic activity (retrospectively.) Bear markets of greater-than-average severity are correlated with higher-than-average P/E ratios and steeper-than-average drops in Gross Domestic Product.

Definition and characteristics of bear markets

Broadly defined, a bear market is a *market condition in which the prices of securities are falling, and widespread pessimism causes the negative sentiment to be self-sustaining*. However, two specific definitions are frequently used:

i) *A downturn of 20% or more in multiple broad market indexes, such as the Dow Jones Industrial Average (DJIA) or Standard & Poor's 500 index (S&P 500), over at least a two-month period.*

ii) A peak-to-trough decline of at least 20% in the S&P 500 index.

On average, a U.S. bear market has occurred once every 5 years.

Inevitably, any attempt at evaluating bear markets involves choosing beginning and ending dates that are, to some degree, arbitrary. This paper will use the 'peak-to-trough' definition to evaluate bear markets and focus on bear market episodes occurring since World War II.

Length of Bear Markets

Post-World War II, the U.S. stock market has experienced 11 bear markets.

The average post-WWII bear market lasted 16.2 months.

Bear market drops have ranged from 57% to 22%.

Post World II bear markets

Start (Peak)	Duration (Months)	S&P 500 return
May 29, 1946	36	-30%
August 2, 1956	15	-22%
December 12, 1961	6	-28%
February 9, 1966	8	-22%
November 29, 1968	18	-36%
January 11, 1973	21	-48%
November 28, 1980	20	-27%
August 25, 1987	3	-34%
July 16, 1990	3	-20%
March 27, 2000	31	-49%
October 9, 2007	17	-57%

Bear markets vary in their length and character:

The May 1946 to June 1949 bear market was the longest, lasting 36 months.

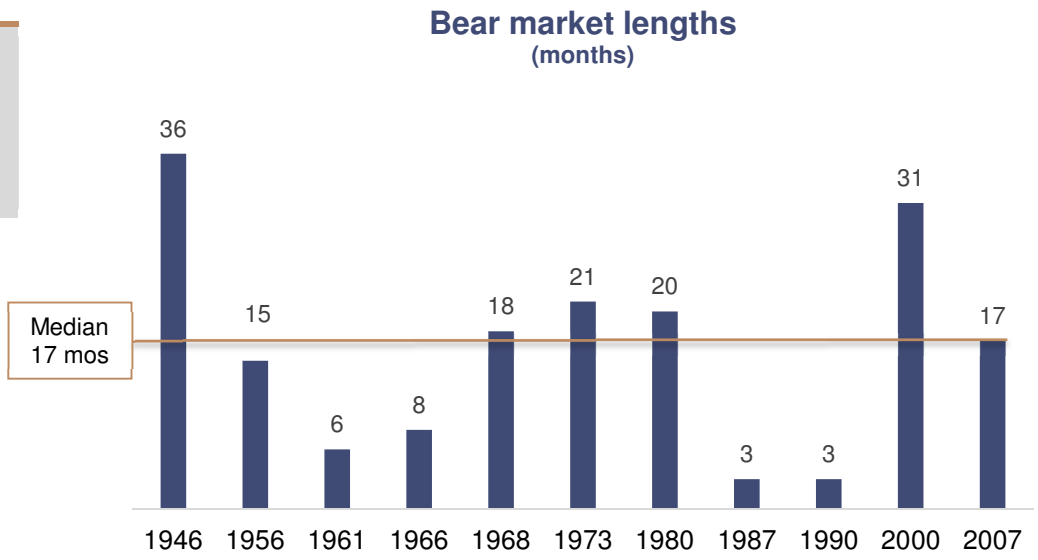
The average S&P 500 bear market decline was 34%.

The bursting of the dot.com bubble resulted in the second longest bear market, (31 months, from 2000 to 2002,) during which the NASDAQ Composite index plunged 50% in only 9 months.

The most recent bear market (beginning in 2007) was triggered by a bursting of the housing bubble. The decline lasted 17 months, equal to the median bear market length. The peak-to-trough S&P 500 drop was 57%.

The shortest bear markets (1987 and 1990) lasted only 3 months.

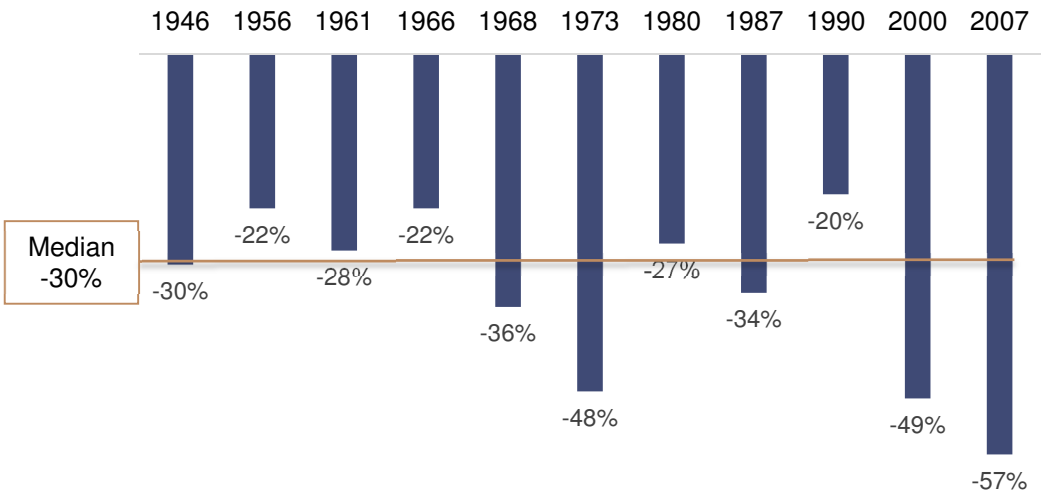
The two worst peak-to-trough losses occurred in the 2007-2009 (down 57%) and 2000-2002 (down 49 %).



Bear market severity

Similar to their varying lengths, bear markets have also varied in the severity of their losses. The average loss during the 11 observed bear markets was 34%, while the median loss was 30%. The range was -57% to -22%.

S&P 500 bear market severity



The return of the first bear market after the World War II (1946-1949) was equal to the median bear market loss of 30%.

The most recent bear market (2007-2009) produced the worst return of the 11 post-war bear markets (-57 %.)

The second worst return occurred during the bear market of 2000-2002, commonly referred to as the "bursting of the dot.com bubble." The moniker is misleading, however, as the price drops extended well beyond new technology companies. The S&P 500 dropped 57% from peak-to-trough, including 53% and 69% drops in widely-held large-cap blue-chips Coca-Cola and Home Depot.

The smallest bear market decline (-20%) also corresponds to the shortest bear market (3 months, in 1990.)

The "dot.com" bubble of 2000 included large-cap stocks like Coca-Cola (down 53%) and Home Depot (down 69%).

Recovery periods

Determining the precise length of time to return to pre-bear market peak index levels depends on the definition one uses for bear market. Based on *a peak-to-trough decline of at least 20% in the S&P 500 index definition,* the recovery period is the length of time required for the S&P 500 to recover to its previous peak from the bear market trough. The recovery period of the 11 bear markets has varied in length; the median recovery period was 15 months. Since World War II, there were seven recovery periods that were longer than the bear market itself, while four were shorter.

Bear market recovery period

Year bear market began	Recovery period (months)
1946	15
1956	11
1961	14
1966	7
1968	21
1973	69
1980	3
1987	19
1990	5
2000	55
2007	65

The longest recovery period was following the bear market of 1973; it took 69 months for the S&P 500 to return to its 1973 peak. The shortest recovery period occurred after the bear market of 1980, and lasted only 3 months.

The recovery from the most recent bear market (2007-2009) was the second longest, lasting a little more than 5 years.

Bear markets and the economy

GDP experienced its worst bear-market drop from 2007 to 2009.

Gross Domestic Product (GDP) is one of the primary indicators used to gauge the health of a country's economy. It represents the total dollar value of all goods and services produced over a specific time period. The Bureau of Economic Analysis (BEA) measures GDP in two ways: nominal and real. Nominal GDP represents a raw aggregate; real GDP is adjusted for inflation/deflation.

In the most recent bear market of 2007-2009, annual growth in GDP plunged from positive 1.8% to a dismal -2.8%, the largest drop during any of the post-WWII bear markets.

Although nominal GDP (in absolute terms) has risen slightly during most bear markets, the GDP growth rate has almost always declined drastically.

While stock prices are correlated with corporate earnings, and corporate earnings are correlated with GDP, changes in GDP are not accurate predictors of short-term changes in the stock market.

Nine of 11 bear markets began when GDP growth was positive.

Just as changes in GDP do not predict the commencement of bear markets, recessions are not consistently accurate predictors of the beginning of a stock market correction. The National Bureau of Economic Research (NBER) defines a recession as *a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real gross domestic product (GDP), real income, employment, industrial production, and wholesale-retail sales*. Although not an official definition, two consecutive quarters of GDP contraction is generally considered the beginning of a recession.

While a recession is not predictive of a bear market, stock returns have been lower than average during recessions. Stock market returns during recessions are, at the median, approximately 10 percentage points lower than the median return for all years since 1926.

The long-term average annual return (all years) for the S&P 500 has been 10.5%. There have been 12 recessions since 1945, lasting an average of 11 months, with an average nominal GDP decline of 3.08%. While the S&P 500 returns ranged from -59.40% to 16.41%, the median return was 0.15%.

During the recession of 1945, the S&P 500 rose 16.41%, while nominal GDP plunged 12.70%

Recessions, with GDP and S&P 500 change

Recession	Recession duration (months)	GDP decline	S&P 500 return
Feb to October 1945	8	-12.70%	16.41%
Nov 1948 to Oct 1949	11	-1.70%	8.74%
July 1953 to May 1954	10	-2.60%	16.90%
Aug 1957 to April 1958	8	-3.70%	-9.70%
April 1960 to Feb 1961	10	-1.60%	12.60%
Dec 1969 to Nov 1970	11	-0.60%	-6.50%
Nov 1973 to March 1975	16	-3.20%	-30.30%
Jan to July 1980	6	-2.20%	12.73%
July 1981 to Nov 1982	16	-2.70%	6.40%
July 1990 to Mar 1991	8	-1.40%	-6.10%
Mar 2001 to Nov 2001	8	-0.30%	-9.80%
Dec 2007 to June 2009	18	-4.30%	-59.40%
Mean	**11**	**-3.08%**	**-4.00%**
Median	**10**	**-2.40%**	**0.15%**

The Great Recession of 2007-2009 lasted 18 months, longer than any other post-WWII recession. Nominal GDP declined 4.3% during those 18 months.

In terms of GDP decline, the recession immediately following World War II was the most severe; GDP dropped a total of 12.7% in only 8 months.

The 0.3% drop in GDP during the early 2000s recession was the smallest decline among the 12 recessions.

Stock prices increased during 6 of the 12 recessions since 1945.

The relationship between recessions and bear markets is not a tight one. The S&P 500 has actually shown a positive change in 6 of the 12 post-war recessions. However, the recession of 2007 was a significant exception, as the S&P 500 declined almost 60% over 18 months.

Bear markets and stock valuations

Although it has its limitations, the price/earnings (P/E) ratio is a common method used to measure value in the stock market. For this paper we calculate the P/E of S&P 500 by dividing the price index level of S&P 500 by the combined trailing twelve month earnings of those S&P 500 companies.

P/E ratios vary in reaction to many factors, including, among others: expected growth of earnings, expected stability of earnings, expected inflation and the yields available on competing investments. For example, ceteris paribus, P/E ratios are generally negatively correlated with U.S. Treasury bond yields and positively correlated with earnings growth.

Post-1950 bear markets with S&P 500 P/E ratio

Start (Peak)	End (Trough)	Starting P/E ratio	Ending P/E ratio
May 29, 1946	June 13, 1949	19.2	6.6
August 2, 1956	October 22, 1957	13.5	10.6
December 12, 1961	June 26, 1962	20.9	14.8
February 9, 1966	October 7, 1966	19.0	13.2
November 29, 1968	May 26, 1970	19.6	11.6
January 11, 1973	October 3, 1974	20.1	7.0
November 28, 1980	August 12, 1982	9.3	6.7
August 25, 1987	December 4, 1987	20.3	13.3
July 16, 1990	October 11, 1990	14.7	11.7
March 27, 2000	October 9, 2002	35.3	14.3
October 9, 2007	March 9, 2009	18.5	7.8

72% of bear markets began with a P/E ratio exceeding 15.

Bear markets have begun with P/Es as low as 9.

Six of the 11 post-WWII bear markets began when the S&P 500 P/E ratio was between 18 and 21. A P/E ratio greater than 18 does not guarantee the immediate commencement of a bear market. However, while valuation alone is not an effective predictor of the timing of a bear market, extreme valuations are useful in anticipating a bear market's severity. That is, higher P/E ratios are generally associated with more severe eventual bear markets.

Eight of the past 11 bear markets began with an S&P 500 P/E ratio in excess of 18.

The highest S&P 500 P/E ratio at the commencement of a post-WWII bear market was in 2000, when the S&P 500 sold at 35 times earnings. This is important, as conventional wisdom at the time held that the excesses of prior years had been confined to high-tech dot.com companies. At the market peak, the largest companies among S&P 500 were also grossly overpriced and thus experienced larger drops and longer recovery times than did the index as a whole.

The most severe bear markets (those with losses exceeding the mean loss of 30%) all began when the P/E ratio of the S&P 500 exceeded 18.

Eight of the 11 bear markets began when the S&P 500 P/E exceeded its long-term average of 15 times earnings.

Less severe bear markets began from valuation levels as low as 9.3 times earnings (1980) and 13.5 times (1956.)

The 1980-1982 bear market began at a surprisingly low P/E of 9.3. Similarly, the 1956-1957 bear market started when the P/E was a benign 13.5.

Severe bear markets are correlated with P/E ratios above 18.

While there has been a wide range of P/E ratios at the beginning of bear markets, more severe bear markets are associated with higher-than-average P/E ratios. Bear markets that began when the S&P 500 P/E ratio exceeded 15 (the long-term average P/E) suffered an average decline of 31.5%. When the P/E ratio was less than 15 at the beginning of a bear market, the average S&P 500 decline was 23%.

The obvious anomaly was the 1980 bear market in which the S&P dropped 27% in a period that began with a P/E of only 9.

Conclusions

Investors could significantly benefit by knowing three things about the next bear market: its beginning, its duration and its severity.

"Far more money has been lost by investors preparing for corrections, or trying to anticipate corrections, than has been lost in the corrections themselves."

Peter Lynch

There are no dependable predictors of when bear markets will begin. Neither GDP growth, length of time since the previous bear market nor valuations are useful in knowing when the next bear market will begin.

Longer duration bear markets are associated with bear markets that begin from higher-than-average valuation levels and/or bear markets that occur during recessions of greater-than-average GDP decline. The GDP decline factor is limited as a predictor, however, as it is a coincident, not a leading, indicator.

While valuations are of limited-to-no value in predicting the beginning of a bear market, they are quite useful in anticipating their severity. When bear markets begin at P/E ratios in excess of 15, losses have been 37 percent greater than when bear markets begin at P/Es less than 15.

Investors who adjust their asset allocation in anticipation of a bear market must rely on either objective data or a subjective tool, such as an emotional sense about the general direction of stock prices. There is little evidence that investors have skill in timing the market or that techniques exist allowing one to do so. In fact, such efforts are more likely to inspire investors to unnecessary trading activity and increase the odds that the investor is underweighted in stocks during periods of increasing prices.

The futility of trying to predict bear markets explains why legendary investor Peter Lynch noted that "far more money has been lost by investors preparing for corrections, or trying to anticipate corrections, than has been lost in the corrections themselves."

Sources

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