Judging bear market lows

Chris Watling | Longview Economics | 01 February 2016

Equity Bear Markets are driven by one or more of three key factors: shocks; US recessions; and/or, a tightening cost of capital. Some Bear Markets are simply driven by one of those three factors. Others can incorporate two or indeed all three factors. Today, the risk of all three factors being present is relatively high. Those factors, coupled with our Bull–Bear models of investor behaviour suggest that there's a high likelihood that global equities are already in a Bear Market.

If correct, then assessing the likely end of the Bear Market becomes critical. Multiple factors need to be considered in order to gain some insights into that conundrum. Most importantly is the need to forecast the end of the recession.

OVERVIEW

At January's closing low (i.e. 20 Jan), global equities had fallen 18% from their May highs (Figure 1) and the S&P500 was down 12.6%. While not technically defined as a Bear Market, equities are effectively in one. That's the clear message of investor behaviour. Breadth, risk appetite and our primary trend model are all generating Bear Market signals (refer section 4). That's also the message of our analysis of the fundamental drivers of Bear Markets (see 18 Dec 2015 "Rising Bear Market Risks").

Indeed, more important than the definition is whether or not we should expect more weakness in the equity market. In particular – is this Bear Market now over, somewhere in its mid stage or closer to its beginning? And, more specifically, how should we judge the timing of the Bear Market lows?

Figure 1: S&P1200 Global equity index – shown with key moving averages
Global equities have rolled over into a bear market, having peaked on 21 May. Of interest, volatility, since the end of US QE, has picked up sharply. (Note, US QE ended with tapering from Jan to Oct 2014)

Sources: Longview Economics, Macrobond

SECTION 1A: JUDGING THE LOWS

One effective way to determine Bear Market lows is to examine all previous corrections in the S&P500 since data began and consider the dynamics behind those corrections. Since 1928, there have been 30 pullbacks of 10% or more (i.e. using local highs and local lows) – see Figure 2 and 3 below for a full list (i.e. including this current one).

As we highlighted in 2006 (see Feb 2006 "Why do stock markets go down"), there are three main drivers of bear markets: US recessions, tight/tightening cost of capital, and shocks (in the broadest sense of the term).

Using that framework, we can show that 13 of those 30 corrections were associated with the pricing of recessions (whether small or large recessions). Indeed, every recession since 1928 (except for the one in 1945) was anticipated by, and/or coincident with, an equity Bear Market. Hence, if the US is rolling over into a recession then it's highly likely that we're in a cyclical Bear Market. Those 'recession-related' Bear Markets have ranged in size from 14% to

86% (see Figure 2). The average size is 35.8% (local high to local low). The median size is 27.1%. The average duration is 16 months (median duration is 14 months).

As such, if the US (& indeed global) economy is heading towards a recession, it's unlikely that this current bear market is complete – that is, further selling and a new local low later this year should be expected. Of note 'recession–related' Bear Markets tend to trough a few months ahead of the official end of the recession (e.g. most recently, Mar 2009 equity market lows, and June 2009 official end of recession). Hence, it's key to watch indicators that anticipate the end of the recession (see further discussion below).

Figure 2: Recession related bear markets* since 1928

no.	Recession date	Size of S&P500 correction	Length of equity market correction/downtrend
1	Aug '29 to Mar '33	86.2%	2 month (initial sell–off)/33 month (in full)
2	May '37 to June '38	54.5%	12 month downtrend
3	Nov '48 to Oct '49	20.6%	12 month downtrend
4	July '53 to May '54	14.8%	9 month downtrend
5	Aug '57 to Apr '58	21.5%	14 month downtrend
6	Apr '60 to Feb '61	14.0%	14 month downtrend
7	Dec '69 to Nov '70	36.1%	18 month downtrend
8	Nov '73 to Mar '75	48.4%	27 month downtrend
9	Jan '80 to July '80	17.1%	6 weeks downtrend
10	July '81 to Nov '82	27.1%	21 months downtrend
11	July '90 to March '91	19.9%	3 month downtrend
12	March '01 to Nov '01	49.1%	31 month downtrend
13	Oct '07 to Mar '09	56.7%	17 month downtrend

Sources: Longview Economics, S&P500, NBER, Feb 2006, structural asset allocation report: "Why Stock Markets go down" * For the purpose of this exercise, we have categorised a bear market as any correction >10% in the S&P500. Another common definition of a bear market is a 20% or greater fall.

A good indicator of the end of a recession is the corporate financing gap (albeit data revisions can be dramatic thereby undermining its efficacy). A key part of the recession dynamic is the corporate financing gap moving from deficit to surplus (i.e. as the corporate sector cuts cost, especially capex and labour, and in this cycle, share buybacks as well – see Nov 2015: "Rising US Recession Risks").

By moving back into surplus, the risks associated with the corporate sector falls and as such, bond spreads and volatility also fall (i.e. given that both are measures of corporate sector risk – see February 2004 "What Drives Equity & Bond Volatility?"). Typically, that dynamic is aided by monetary and, at times, fiscal support for the economy. Coming into this current slowdown, there's an added twist - US business inventories are high. As such, resizing that inventory level is also likely to be a key input into determining the end of the recession/contraction in industrial production (in this forthcoming recession – if, or indeed, when it emerges).

Of the 17 other corrections (i.e. non recession–related), at least seven and probably nine of those 10%+ corrections were brought about by major global shocks.

Figure 3: Non–Recession related bear markets* since 1928

no.	Bear Market Dates (& length)	Size of S&P500 correction	Likely reason for Bear Market/Key observations
1	Jul '33 – Mar '35 (20 months)	40.0%	Overbought market/long deep contraction in industrial production (no recession though)
2	Nov '38 – Apr '42 (41 months)	45.8%	Start of, & initial years of WWII (leading up to Americas entry into the war in 1942)
3	Jul '43 – Nov '43 (4 months)	12.8%	Correction from a notably overbought position
4	May '46 – Mar '48 (22 months)	28.1%	End of WWII – end of price controls – price level rises by 30% from mid '46 thro to mid '48 (i.e. real income shock)
5	Jun '50 – Jul '50 (1 month)	14.0%	Korean War
6	Dec '61 – Jun '62 (6 months)	28.0%	Build up to Cuban Missile crisis

7	Feb '66 – Oct '66 (7 months)	22.2%	Start of Vietnam War; modest widening of corporate bond spreads; modest rise in cost of government debt; US industrial production in weakening trend from Oct '66 thro' to Jul '67 (no recession though)
8	Sept '67– Mar '68 (6 months)	10.1%	Pause in rally to late 1968 highs…plus: rising cost of capital (beginning of longer rise)
9	Apr '71 – Nov '71 (7 months)	13.9%	End of Bretton Woods/Widening corporate bond spreads/Notably overbought market
10	Dec '76 – Mar '78 (15 months)	19.1%	Rising cost of capital/Rising cost of government debt (7% to 9%)
11	Oct '83 – Jul '84 (9 months)	14.4%	Phase II of a stylized cyclical bull market; + Rising cost of capital (10.5% to 13.4%)
12	Aug '87 – Oct '87 (2 months)	33.2%	Valuation extreme (i.e. negative ERP)/rising cost of capital (7.4% to 9.6%) /technically very overbought – stock market crash
13	Jul '98 – Aug '98 (1 month)	19.3%	Russian–LTCM crisis (met by 3 Fed interest rate cuts)/Widening corporate bond spreads
14	Jul '99 – Oct '99 (3 months)	12.0%	Overbought correction in bull market/stock market bubble
15	Apr '10 – Jul '10 (3 months)	15.9%	Phase I of Euro crisis
16	Apr '11 – Oct '11 (6 months)	19.4%	Phase II of Euro crisis
17	Jul '15 – present (ongoing)	12.6% (so far)	Widening corporate bond spreads – rising recession risk – china

Source: Longview Economics. * For the purpose of this exercise we have categorised a bear market as any correction >10% in the S&P500. The common definition of a bear market is a 20% or greater fall. Colour coding: BLUE = Shock; RED = Rising cost of capital; Orange = overbought correction; Green = prolonged contraction in IP.

The seven clear examples include the two initial phases of the Euro crisis (2010 and 2011), the Korean War (1950), the build-up to the Cuban Missile crisis (1961 – 1962) and the Russian crisis (1998), amongst others. The two further examples that are probably linked to shocks are April 1971 through to November 1971 when the Vietnam War was fully underway

and, more importantly, America came off the Breton Woods international monetary standard (i.e. the end of the post WWII monetary system) and May 1946 to March 1948, after the end of WWII, when price controls were removed and prices jumped a cumulative 30%, thereby squeezing real incomes.

Determining the end of those Bear Markets is then typically about gauging when the shock effects have been priced in or indeed when it becomes clear that the shock is beginning to dissipate. At that point, the market should reach its bear market lows. For instance, during the Russian crisis, once the Fed had started cutting interest rates, the equity market began to rally once again. During the Cuban missile crisis, when the peak in geopolitical risks appeared to have passed, markets again resumed their rally. Similar comments can be made about the Euro crisis – i.e. once monetary and government authorities demonstrated some grasp of the size of the issue and responded accordingly, equity markets resumed their bull phase.

Shocks therefore probably accounted for nine of the 17 non recession-related corrections. A further four are close to the lower end of that minimum 10% correction threshold and are reasonably clear examples of overbought corrections in bull trends (note – marked in Orange in Figure 3). Of the remaining four examples, one is the current period (i.e. since May 2015), and a further one probably relates to an environment of a rising cost of capital (Dec 1976 thro to Mar 1978). The the final two examples relate to periods when industrial production contracts for a sustained period of time, but without a US recession. This contraction appears to be the key driver of the equity Bear Market. Given that S&P500 earnings are disproportionately skewed towards industrial production (despite its small share of US GDP), this is perhaps not so surprising (see Section 2 below). In that sense, judging the end of the US contraction phase in industrial production is also likely to be critical in judging the end of this downtrend in equity markets.

Figure 4: US ISM manufacturing and non–manufacturing (shown with US recessions)

Usually when ISM manufacturing is this weak (i.e. sub 50), the Fed is stimulating not tightening The year 2000 was an exception to that as the Fed didn't starting cutting rates until Jan 2001, by which stage ISM services had started to roll over…
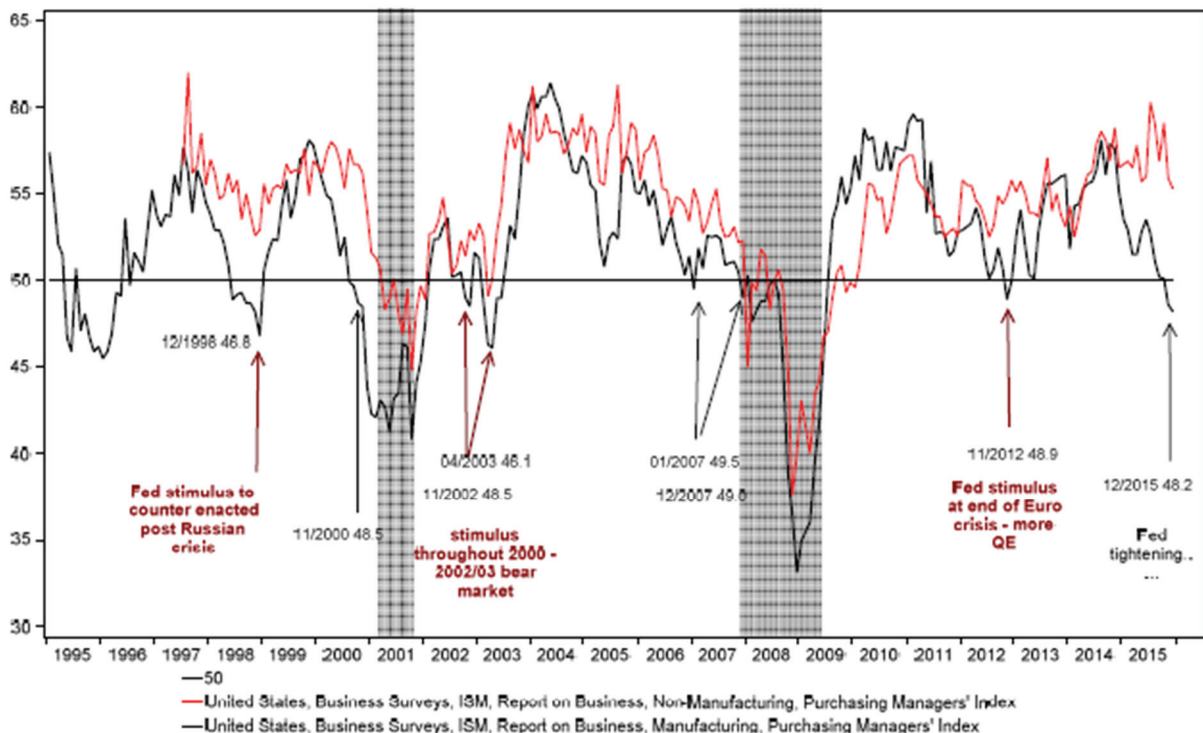
Sources: Longview Economics, Macrobond

Non recession–related bear markets, though, tend to be shorter and smaller in size. The average size of the corrections is 21.2% and the median is 19.1%. The range is 10.1% (1967 – 1968) up to 45.8% (1938 – 1942 at the start of WWII). The average duration of these pullbacks/Bear Markets is 9.1 months (with a median of 6 months and a range of 1 month through to 41 months). There are, though, only four examples which lasted 10 months or longer (i.e. 1938 – 1942; 1933 – 1935; 1946 – 1948; and 1976 – 1978).

In terms of current potential shocks, a number of risks reside in those economies and those areas of the global economy that have taken on the most debt in this cycle. In particular China, other key EM economies and parts of the global energy, materials and industrials complex (e.g. see 22 Jan 2016: "Oil: How Much Will US Shale Be Squeezed?").There's a strong argument that the weakness in many of those areas/economies (most specifically China) has accelerated. Assessing the extent of deceleration of the Chinese economy, as well as judging when it will emerge cyclically from its slowdown, is also therefore important for judging the

end of the Western bear market. There is a clear feedback loop from weak China to weak western industrial production and then ultimately into a weaker Western service sector – see Figure 5 (this feedback loop also works through exchange rate dynamics and corporate profitability).

Key factors to watch in China (and other EM) include:

- clear evidence that Chinese banks have dealt with their non performing loans;

- evidence of capacity cuts in key cyclical industries (incl. steel, coal, manufacturing & construction, in particular);

- sufficient Chinese stimulus (incl. monetary, fiscal and recapitalisations);

- evidence that capital outflows have subsided or are, at least, under control;

- evidence that the corporate sector, more generally, has moved from a cashflow deficit back to a cashflow surplus; as well as,

- evidence that excess inventories (both in the corporate sector as well as commercial and residential property sectors) have been worked off and inventory levels have returned to more sustainable levels.

Figure 5: COLVIN* Model (200 day moving average) vs S&P500
A rare move below zero for this model... consistent with a bear market environment.

Sources: Longview Economics, Macrobond. *The Colvin model is a measure of the global breadth of financial markets (i.e. similar to the concept behind the NYSE single stock advance decline line but utilising asset prices from across the global spectrum at an index level)

Other factors that are important to monitor include:

- a steepening of the US yield curve as the bond market begins to price in an economic acceleration;

- evidence of a peak in US high yield corporate debt (whether the overall high yield and/or CCC rated – see Figure 15);

- Longview Bull-Bear market models for a change of signal from bear to bull;

- long term trend lines in equity markets (i.e. 200 day moving averages) – albeit these lag bear market lows but can act as confirmation;

- turns in leading economic indicators;

- behaviour of the Fed (incl moving from a tightening to a loosening course);

- portfolio positioning & sentiment (once everyone is positioned bearishly, the worst is typically priced in); and,

- levels of speculation in markets (e.g. see NYSE margin debt (see Figure 14).

SECTION 2: THE INDUSTRIAL CYCLE AND THE BEAR MARKET

Determining the length of bear markets is never easy. While many factors are important and act as pieces of the puzzle one of the most important drivers of the length of the bear market is the length of the recession and, in particular, the length of the industrial downturn. As Figure 2 shows, while the number of data points is limited, the relationship between those two factors is strong (and much stronger than the relationship between the size of the bear market and the size of the industrial downturn or indeed the size or duration of the recession). This is aptly demonstrated by the most severe examples of the 1920s and 1930s (Figure 3). The correlation between the market downturn and the downturn in industrial production is clear (Figure 6).

Figure 6: Duration of US equity Bear Market against duration of industrial production downturn (months)
The bear market tends to continue until investors start to anticipate the end of the industrial downturn (with a bear market typically ending between three to seven months before the end of the industrial downturn).
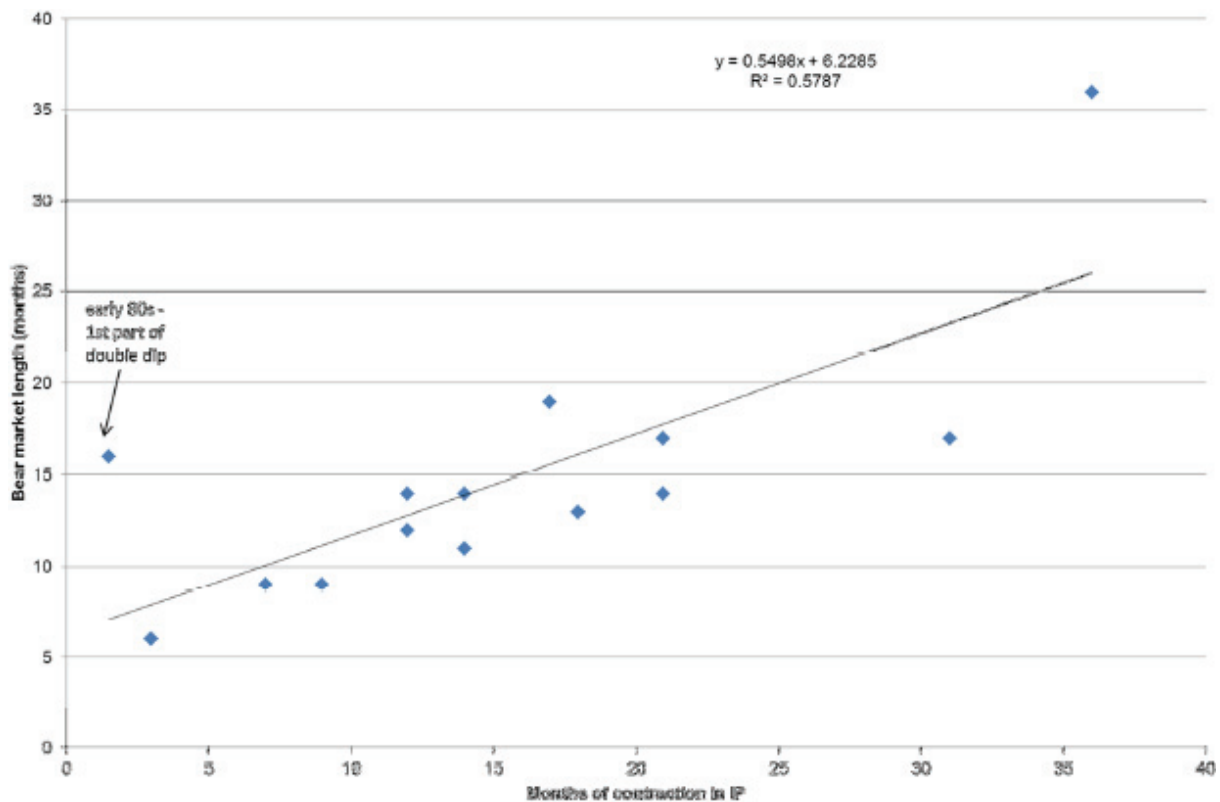
Source: Longview Economics. *Defining a bear market as a move of over 10% peak to trough (thereby encapsulating all recession related sell–offs) – we understand that many regard a 20%+ sell–off as a bear market. Whether it is 10 or 20% is not, however, important.

Indeed if we look at all 10%+ corrections in the S&P since 1928 in conjunction with all sustained (i.e. more than a few months) contractions in US industrial production (IP), we find:

- There are 15 US equity market corrections which are associated with contractions in IP. Not surprisingly, 13 of those 15 are economic recessions (and are covered in Figure 2 above). Of interest, though, two of those 15 are non–recession related equity bear markets (e.g. see 1933 – 1935 and 1966 – 1967). Both incorporate sustained periods of contraction in IP (i.e. multi month) but with no recession. One of the events is a major peak to trough contraction in IP (i.e. 1933 – 1934) while the

other is a modest contraction (i.e. 1966 – 1967) – see Figure 7 for a full list of IP contractions.

- There are only three examples of contraction in IP (since 1928) which didn't result in an equity market correction (see Figure 8). Of those three, one was specific to WWII (and its economic peculiarities).

- That leaves 14 other corrections in the S&P500 of 10% or greater since 1928 which haven't been associated with a contraction in industrial production. Of those 14 (as highlighted above), at least half are associated with shocks while a number are simple overbought corrections in bull markets – these are all examined in Figure 1 above.

Figure 7: Declines in US Industrial Production associated with US Equity Bear Markets

No.	Recession dates	Equity Market correction dates	Size of S&P500 correction	Length of bear market (months)	Date of IP contraction	Length of IP contraction (months)	Size of IP contraction	Shiller EPS contraction
1	Aug '29 to Mar '33	Sep 29 – Sep '32	86.20%	36	Jul '29 – Jul '32	36	53.6%	74.5%
2	no recession	July '33 – Mar '35	40.00%	21	Jul '33 – Sept '34	14	19.8%	n/a
3	May '37 to June '38	Mar '37 – Mar '38	54.50%	12	May '37 – May '38	12	32.5%	49.2%
4	Nov '48 to Oct '49	Jun '48 – Jun '49	20.60%	12	Jul '48 – Oct '49	14	10.1%	3.3%
5	July '53 to May '54	Jan '53 – Sep '53	14.80%	9	Jul '53 – Apr '54	9	9.5%	n/a
6	Aug '57 to Apr '58	Aug '56 – Oct '57	21.50%	14	Feb '57 – Apr '58	14	13.6%	17.0%

7	Apr '60 to Feb '61	Aug '59 – Oct '60	14.00%	14	Jan '60 – Dec '60	11	8.6%	11.7%
8	no recession	Feb '66 – Oct '66	22.20%	7	Oct '66 – Jul '67	9	1.9%	4.5%
9	Dec '69 to Nov '70	Nov '68 – May '70	36.10%	18	Oct '69 – Nov '70	13	7.0%	12.9%
10	Nov '73 to Mar '75	Jan '73 – Oct '74	48.40%	21	Nov '73 – Apr '75	17	12.9%	14.8%
11	Jan '80 to July '80	Feb '80 – Mar '80	17.10%	1.5	Mar '79 – Jul '80	16	6.6%	4.6%
12	July '81 to Nov '82	Nov '80 – Aug '82	27.10%	21	Jul '81 – Dec 82	17	9.2%	19.1%
13	July '90 to March '91	Jul '90 – Oct '90	19.90%	3	Sept '90 – Mar '91	6	4.2%	36.7%
14	March '01 to Nov '01	Mar '00 – Oct '02	49.10%	31	Jun '00 – Nov '01	17	5.9%	54.0%
15	Dec '07 – Jun '09	Oct '07 – Mar '09	56.70%	17	Nov '07 – Jun '09	19	17.1%	91.9%

Source: Longview Economics, Standard & Poor's, NBER

Figure 8: Other Declines in US Industrial Production (with no US Equity Bear Markets)

Date of IP contraction	Length of IP contraction	Size of contraction	Shiller EPS contraction	Dates of Shiller contraction	Comment
Aug '44 – Feb '46	18	35.5%	29.4%	Sept '41 – Jun '46	At end of WWII – stock market occupied discounting War outcomes
Jan '56 – Jul '56	6	4.9%	7.6%	Mar '56 – Jan '57	Sudden mid cycle contraction
Jun '59 – Oct '59	4	6.5%	n/a	no contraction	Small contraction ahead of larger contraction as outlined above (i.e. Jan '60 to Dec '60)
Current IP contraction					
Dec '14 to present	13	1.8%	10.4% (so far)	Sept '14 start	Current contraction – ongoing Source: Longview

Source: Longview Economics.

Figure 9: US Industrial Production (IP) & S&P500 index (contracting IP period shown in green) 1924 – 39

In the 1920s & 30s the market downturn and the industrial downturn closely mirrored each other in duration and timing.
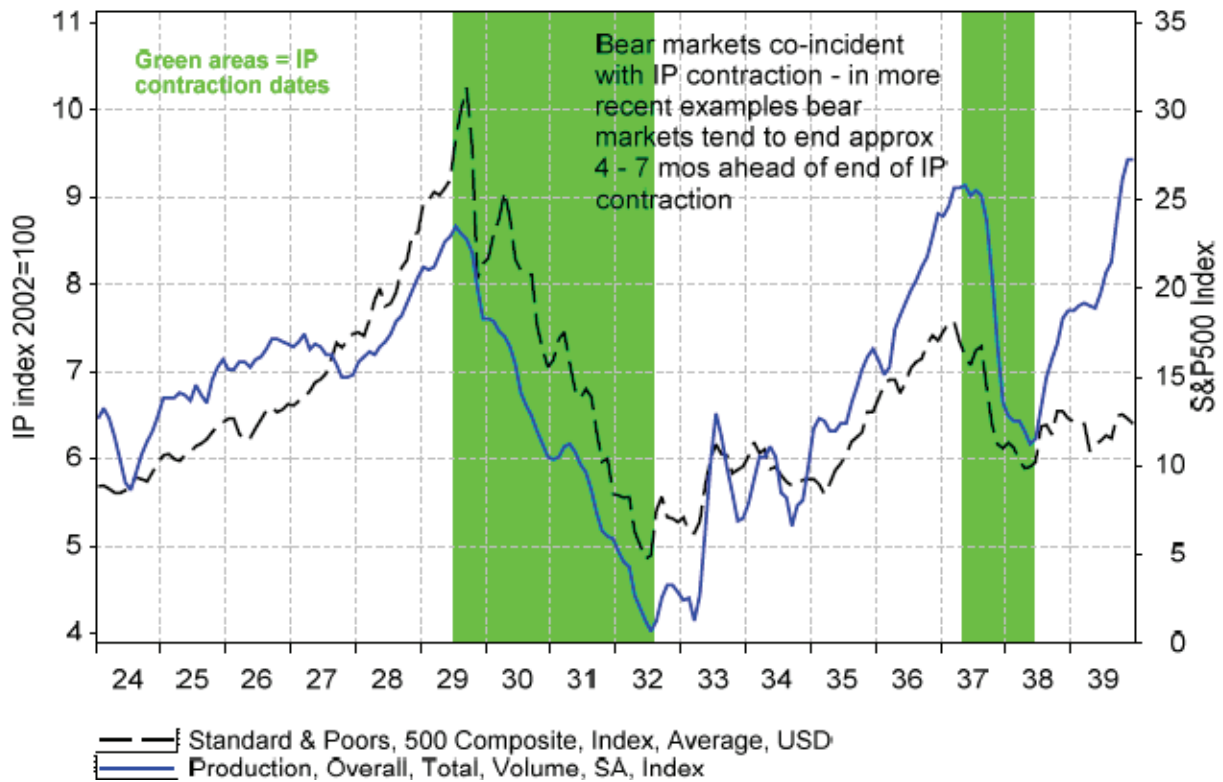
Sources: Reuters EcoWin

Figure 10: US IP & S&P500 index (contracting IP period/recessions in grey) 1967 – 83

Sources: Longview Economics, Macrobond

SECTION 3: TECHNICAL INDICATORS OF BEAR MARKET RISK

All our key BULL–BEAR market models are generating bear market signals (three of the models are included below). Global risk appetite has been persistently risk averse in recent months with the deterioration having started in late 2014 (see Figure 11). The global and the single stock breadth of the financial markets has also been deteriorating for over a year – see Colvin model (see Figure 5) and the percentage of stocks above their 200 day moving average model (see Figure 12). False signals have occurred in the past – August 2004 and the end of the Euro crisis are the two main examples. In late 2004, the signals from the models were not across the board. At the end of the Euro crisis, significant US monetary stimulus was hinted at (i.e. see Federal Reserve's Sept 2012 meeting) and then enacted.

Figure 11: RAG PERSISTENCE Model (5) (i.e. for risk appetite/risk aversion) vs Global S&P1200

This model has moved below zero on a sustained basis – that is typically consistent with a cyclical equity bear market.

Sources: Longview Economics, Macrobond. Note: This model measures periods of excessive risk appetite and periods of excessive risk aversion. Readings consistently above zero illustrate periods of persistent risk seeking behaviour in global financial markets (i.e. typical of equity bull markets – e.g. see 2004 – 2007). Readings below zero illustrate the opposite – and are therefore typical of equity bear markets. The model works by measuring daily risk appetite across global financial markets and then smoothing that over a long time frame (i.e. to illustrate the trend). Consistent sub-zero readings illustrate persistence of risk aversion (i.e. selling of risk appetite on a global basis). Persistent readings above zero are the reverse – and are typical of bull markets.

Figure 12: Percentage of S&P500 stocks> 200 day moving averages vs
S&P500 (since 2000)
The (single stock) breadth of the equity market typically deteriorates
ahead of a bear market. In 2007, that deterioration lasted six months
before market weakness. In the run-up to 2000, that deterioration lasted
three years.
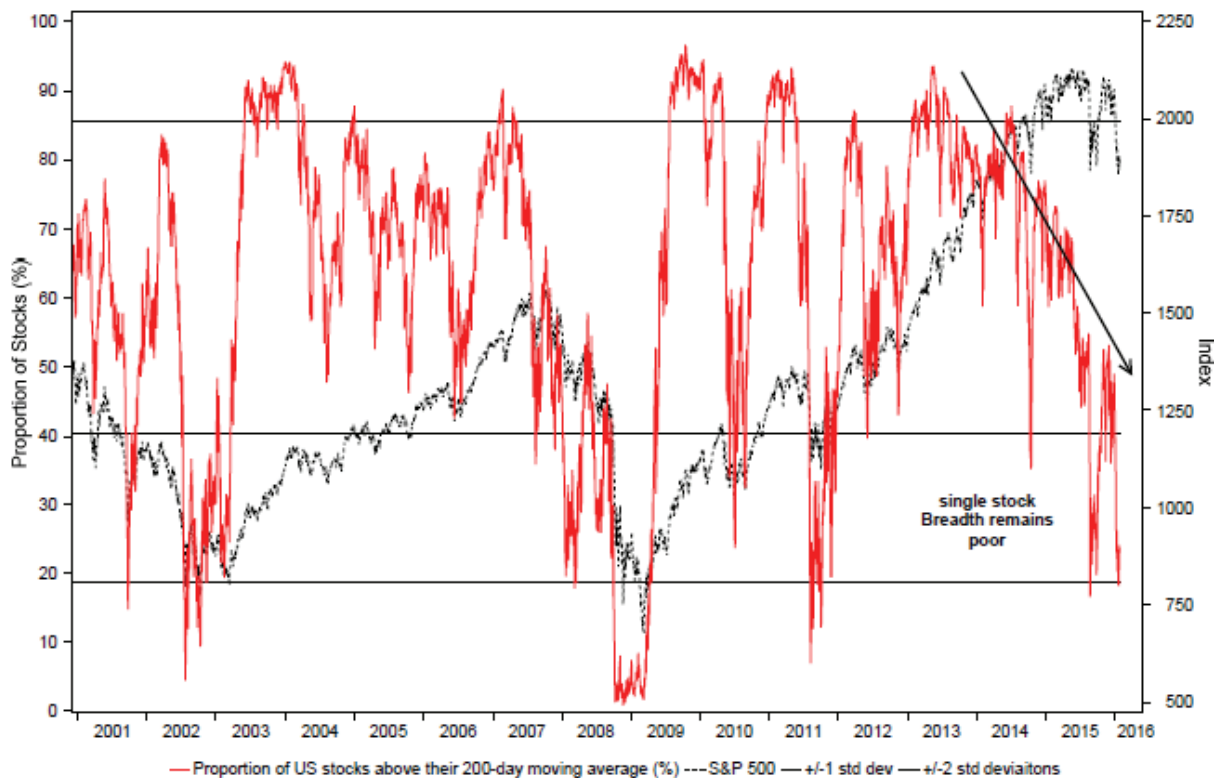
Sources: Longview Economics, Macrobond

Figure 13: Longview Trend Signal Model

The Longview trend model uses short and long moving averages (of the relative performance of equities vs bonds) to determine bull and bear signals.

—0 ---S&P 1200   —MACD (20/100 week): rel performance Global equities vs US bonds —Signal line (100)
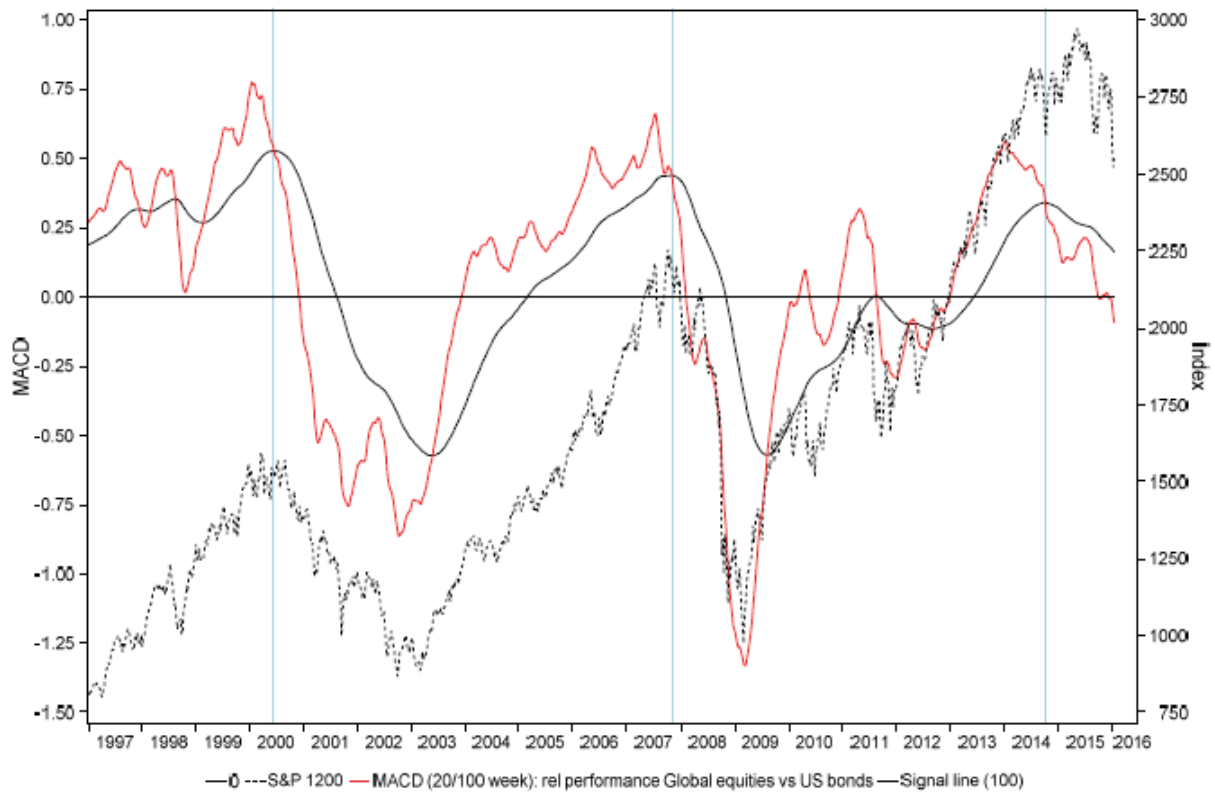
Sources: Longview Economics, Macrobond

SECTION 4: OTHER INTERESTING FACTORS

Figure 14: NYSE net margin debt (as % of NYSE market cap) – shown with S&P500

NYSE net margin debt is one indicator of the level of speculation in the equity market. This model is calculated by netting off credit & free cash balances less debit balances (then sized by S&P500 market cap)
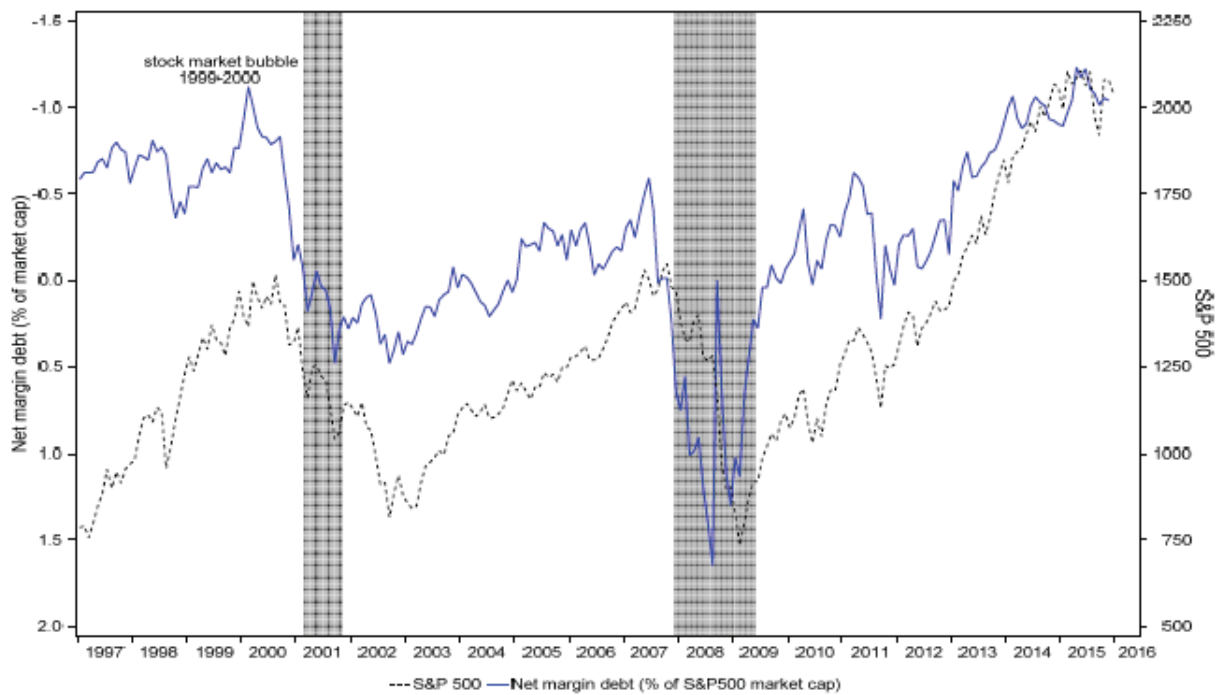
Sources: Longview Economics, Macrobond

Figure 15: US CCC rated high yield debt YIELD – shown with US recessions
Economies deteriorate at the margin – as such the behaviour of lower rated high yield debt is an interesting indication of the health, at the margin, of the US economy
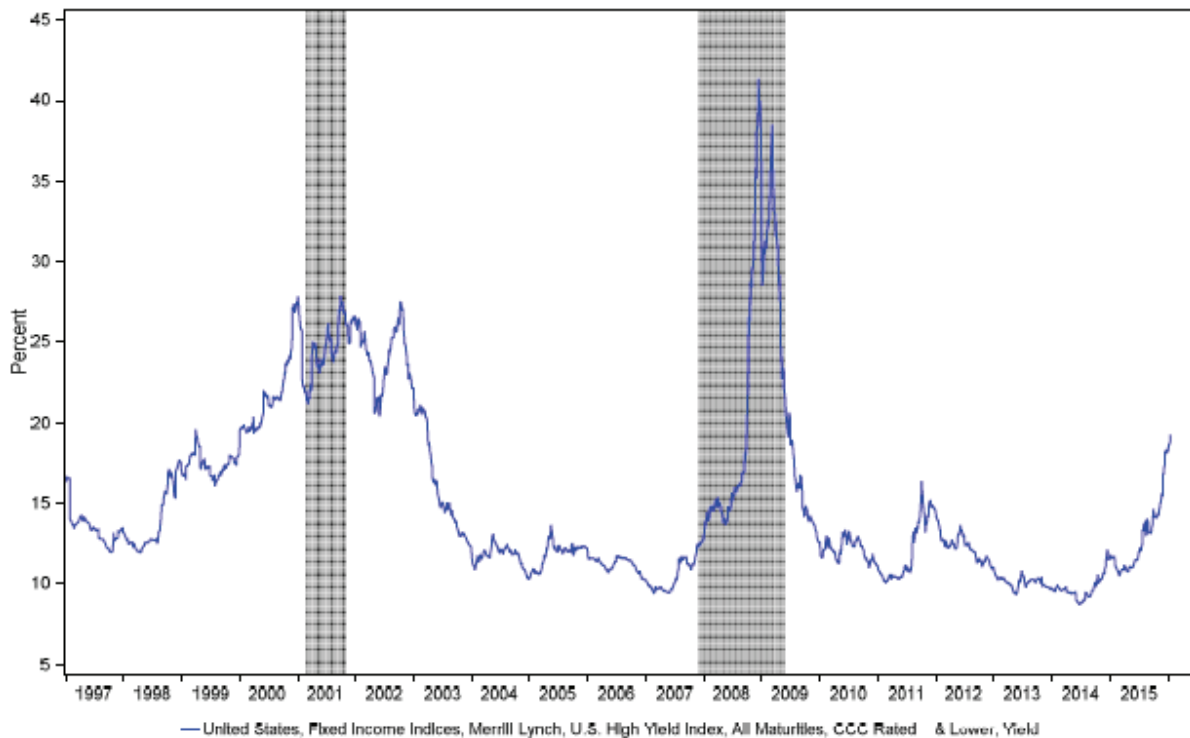
Sources: Longview Economics, Macrobond

CONCLUSION

Equity Bear Markets are driven by one or more of three key factors: shocks, US recessions, and/or a tightening cost of capital. Some Bear Markets are simply driven by one of those three factors. Others can incorporate two or indeed all three factors. Today, the risk of all three factors being present is relatively high. The risks of a US recession is rising – according to the Shadow Fed Funds rate, US monetary policy has already tightened by 325bps (with that signal confirmed by high yield spreads), while shock risks are high in a number of EM economies, including most pertinently, China. Those factors, coupled with our Bull–Bear models of investor behaviour suggest that there's a high likelihood that global equities are already in a Bear Market.

If correct, then assessing the likely end of the Bear Market becomes critical. Multiple factors need to be considered in order to gain some insights into that conundrum. Most importantly is the need to forecast the end of the recession. Recessions typically draw to a close once the corporate financing gap moves from deficit back into surplus. Watching those and related

factors will therefore be critical. For full analysis (and suggested key factors to watch) see Section 1a. Our current central expectation is a shallow US recession which, if correct, would be most likely to result in a mid-range magnitude Bear Market (i.e. S&P500 local high to local low of 20% to 35%).

DISCLAIMER

Chris Watling is CEO and Chief Market Strategist with Longview Economics. Longview Economics is an independent consultancy specialising in macroeconomic, thematic and commodity research. It offers strong macro and quantitative views across all major asset classes and markets. Chris is a regular speaker at PortfolioConstruction Forum programs.